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POLAR FRONTIERS

A Historical Encyclopedia

Volume 1, A–L

William James Mills

With contributions by David Clammer, Sir Ranulph Fiennes, Jenny Mai Handford, Rear Admiral John Myres, Geoff Renner and David Stam

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Contents

Entries Listed in Chronological Order, xi
Entries Listed by Category, xix
Maps, xxiii
Introduction, xlv

EXPLORING POLAR FRONTIERS
A Historical Encyclopedia

Volume 1, A–L

Abazzi, Luigi Duke of (1873–1933), 1
Adams, Jameson (1880–1962), 3
Adelaide Island (Antarctic Peninsula), 4
Adélie Land (Antarctica), 4
Adventurers, 5
Airplanes, 5
Airships, 8
Alexander Island (Antarctic Peninsula), 9
Alexandra Land (Franz Josef Land), 9
Alger Island (Franz Josef Land), 10
Amdrup, Georg (1866–1947), 10
Amsterdam Island (Svalbard), 12
Amund Ringnes Island (Canada), 12
Amundsen, Roald (1872–1928), 13
Amundsen Sea (Antarctica), 20
Anderson, William (1921–), 20
Andersson, Gunnar (1874–1960), 22
Andrée, Salomon (1854–1897), 23
Anjou, Peter (1796–1869), 26
Antarctic Peninsula, 27
Antarctic Peninsula, East Coast, 28
Antarctic Sound (Antarctic Peninsula), 30
Antarctica, 30
Anvers Island (Palmer Archipelago, Antarctic Peninsula), 31
Arctic Ocean, 32
Argentina, 33
Argentine Antarctic Territory, 34
Argentine Islands (Antarctic Peninsula), 35
Armitage, Albert (1864–1943), 35
Atkinson, Edward (1882–1929), 37
Auckland Islands (Sub-Antarctic), 39
Austin, Horatio (1801–1865), 40
Australia, 42
Australian Antarctic Territory, 44

Austria, 44
Axel Heiberg Island (Canada), 45
Back, George (1796–1878), 47
Badigin, Konstantin (1910–1984), 49
Baffin Bay, 51
Baffin Island (Canada), 52
Baffin, William (1584?–1622), 54
Baldwin, Evelyn (1862–1933), 55
Balleny Islands (Antarctic), 57
Balleny, John (ca. 1770–ca. 1843), 57
Balloons, 58
Banks Island (Canada), 60
Barents Island (Svalbard), 60
Barents Sea (Arctic Ocean), 61
Barents, Willem (ca. 1550–1597), 62
Beechey, John (1764–1848), 65
Beechey Strait (Canada), 67
Bartlett, Bob (1875–1946), 67
Bathurst Island (Canada), 70
Bear Island (Svalbard), 70
Bear Islands (Russia), 71
Beaufort Sea (Arctic Ocean), 71
Beechey, Frederick (1796–1856), 72
Beechey Island (Canada), 73
Belcher, Edward (1799–1877), 75
Belgium, 77
Bellingshausen, Fabian von (1778–1852), 77
Bellingshausen Island (South Sandwich Islands), 80
Bellingshausen Sea (Antarctica), 80
Bellot Strait (Canada), 80
Bering Strait (Arctic), 81
Bering, Vitus (1681–1741), 82
Bernier, Joseph-Elzéar (1852–1934), 85
Biscoe Islands (Antarctic Peninsula), 87
Biscoe, John (1794–1843), 88
Black, Richard (1902–1992), 89
Booth Island (Antarctic Peninsula), 91
Boothia Peninsula (Canada), 91
Borchgrevink, Carsten (1864–1934), 93
Borden Island (Canada), 95
Borough, Stephen (1525–1584), 95
Bouvet de Lozier, Jean (1705–c.1788), 96
Bouvet Island (Sub-Antarctic), 96
Boyd, Louise (1887–1972), 98
Brabant Island (Palmer Archipelago, Antarctic Peninsula), 98
Bransfield, Edward (ca. 1783–1852), 99
Brazil, 100
Bristol Island (South Sandwich Islands), 100
British Antarctic Survey, 100
British Antarctic Territory, 101
Brock Island (Canada), 102
Bruce, William Speirs (1867–1921), 102
Brunel, Olivier (ca. 1540–1585), 105
Brusilov, Georgiy (1884–1914), 106
Buchan, David (1780–after 1838), 108
Bulgaria, 110
Bull, Henrik (1844–1930), 110
Button, Thomas (d. 1634), 111
Byam Martin Island (Canada), 113
Bylot Island (Canada), 113
Bylot, Robert (fl. 1610–1616), 113
Byrd, Richard (1888–1957), 115

Cabot, John (ca. 1450–ca. 1498), 123
Cabot, Sebastian (ca. 1484–1557), 124
Caird Coast (Antarctica), 126
Campbell Island (Sub-Antarctic), 126
Campbell, Victor (1875–1956), 127
Canada, 129
Candlemas Island (South Sandwich Islands), 130
Cartography of the Arctic, 130
Chancellor, Richard (d. 1556), 134
Charcot Island (Antarctic Peninsula), 135
Charcot, Jean-Baptiste (1867–1936), 135
Chichagov, Vasily (1726–1809), 139
Chile, 141
Chilean Antarctic Territory, 142
China, 142
Chkalov, Valeriy (1904–1938), 142
Christensen, Lars (1884–1965), 143
Chukchi Sea (Arctic Ocean), 147
Chun, Carl (1852–1914), 147
Clarence Island (South Shetland Islands), 148
Clavering, Douglas (1794–1827), 148
Coats Land (Antarctica), 149
Colbeck, William (1871–1930), 150
Collinson, Richard (1811–1883), 152
Cook, Frederick (1865–1940), 153

Cook Island (South Sandwich Islands), 157
Cook, James (1728–1779), 157
Cooper, Mercator (fl. 1850s), 160
Cope, John (1893–1947), 161
Cornwall Island (Canada), 163
Cornwallis Island (Canada), 163
Coronation Island (South Orkney Islands), 164
Corte-Real Brothers (fl. 1500), 164
Crozet Islands (Sub-Antarctic), 166
Cunningham, John (1575–1651), 167
Czech Republic, 168

Dallmann, Eduard (1830–1896), 169
Danco Coast (Antarctic Peninsula), 170
Danes Island (Svalbard), 171
David, Edgeworth (1858–1934), 171
Davis, John (ca. 1550–1605), 173
Davis, John (fl. 1820), 176
Davis Strait (North Atlantic), 177
De Long, George (1844–1881), 178
De Long Islands (Russia), 181
Dease, Peter (1788–1863), 181
Deception Island (South Shetland Islands), 183
Denmark, 185
Devon Island (Canada), 186
Dezhnev, Semen (ca. 1605–1673), 187
Discovery Investigations, 188
Dogs, 189
Drifting Ice Stations, 192
Drygalski, Erich von (1865–1949), 196
Dumont d’Urville, Jules (1790–1842), 198
Dundee Antarctic Whaling Expedition, 200
Dundee Island (Antarctic Peninsula), 201
D’Urville Island (Antarctic Peninsula), 201

East Siberian Sea (Arctic Ocean), 203
Eckener, Hugo (1868–1954), 203
Ecuador, 205
Edge Island (Svalbard), 205
Edward VII Land (Antarctica), 205
Egede, Hans (1686–1758), 206
Eglinton Island (Canada), 207
Elephant Island (South Shetland Islands), 208
Ellef Ringnes Island (Canada), 209
Ellesmere Island (Canada), 209
Ellsworth Land (Antarctica), 211
Ellsworth, Lincoln (1880–1951), 212
Emerald Island (Canada), 216
Enderby Brothers, 217
Enderby Land (Antarctica), 218
Erik the Red (ca. 950–ca. 1002), 218
Eriksson, Leif (d. ca. 1020), 219

Farthest North, 221
Farthest South, 221
Contents

Fiala, Anthony (1869–1950), 222
Fienne, Ranulph (1944–), 224
Filchner, Wilhelm (1877–1957), 228
Filchner-Ronne Ice Shelf (Antarctica), 230
Finland, 230
Foster, Henry (1796–1831), 231
Foxe Basin (Canada), 232
Foxe, Luke (1586–1635), 233
France, 234
Franklin, Jane (1791–1875), 235
Franklin, John (1786–1847), 237
Franklin Search Expeditions, 243
Franz Josef Land (Russia), 245
Frobisher, Martin (1539–1594), 247
Fuchs, Vivian (1908–1999), 250
Furneaux, Tobias (1735–1781), 252
Geomagnetic Poles, 255
George Land (Franz Josef Land), 255
George V Land (Antarctica), 255
Gerlache, Adrien de (1866–1934), 256
Gerlache Strait (Antarctic Peninsula), 258
Germany, 258
Gerritsz, Dirck (1544–ca.1608), 260
Giaever, John (1901–1970), 260
Glen, Sandy (1912–), 263
Gould, Laurence (1896–1995), 265
Graah, Wilhelm (1793–1863), 267
Graham Bell Island (Franz Josef Land), 268
Great Britain, 268
Greely, Adolphus (1844–1935), 269
Greenland, 272
Greenland, East, 273
Greenland, Inland Ice, 274
Greenland, North, 277
Greenland, West, 279
Greenwich Island (South Shetland Islands), 279
Gvozdev, Mikhail (ca. 1700–ca. 1760), 280
Hall, Charles Francis (1821–1871), 283
Hall Island (Franz Josef Land), 286
Hall, James (d. 1612), 286
Hasselburg, Frederick (fl. 1810), 287
Hayes, Isaac (1832–1881), 288
Hayes Island (Franz Josef Land), 290
Heard Island (Sub-Antarctic), 290
Hearne, Samuel (1745–1792), 291
Hedenström, Mathias von (1780–1845), 293
Hempleman-Adams, David (1956–), 294
Herald Island (Russia), 296
Herbert, Wally (1934–), 297
Heroic Era of Antarctic Exploration, 299
Herschel Island (Canada), 301
Hillary, Edmund (1919–), 302
Hoel, Adolf (1879–1964), 304
Holm, Gustav (1849–1940), 306
Hooker Island (Franz Josef Land), 308
Hope Bay (Antarctic Peninsula), 308
Hope Island (Svalbard), 309
Hoseason Island (Palmer Archipelago, Antarctic Peninsula), 309
Hudson Bay (Canada), 309
Hudson, Henry (ca. 1550–1611), 310
Hudson Strait (Canada), 314
Hudson’s Bay Company, 315
India, 317
Indigenous Peoples, 317
Ingrid Christensen Coast (Antarctica), 318
International Geophysical Year, 319
International Polar Years, 320
Inuit Contribution to Polar Exploration, 321
Irizar, Julian (1869–1935), 323
Italy, 324
Jackson, Frederick (1860–1938), 327
Jackson Island (Franz Josef Land), 330
James Ross Island (Antarctic Peninsula), 331
James, Thomas (ca. 1590–ca. 1635), 331
Jan Mayen (Norway), 332
Japan, 333
Joinville Island (Antarctic Peninsula), 334
Jones Sound (Canada), 334
Kane, Elisha Kent (1820–1857), 335
Kara Sea (Arctic Ocean), 338
Kellett, Henry (1806–1875), 339
Kemp Land (Antarctica), 342
Kemp, Peter (d. 1834), 342
Kennedy, William (1814–1890), 342
Kerguelen Islands (Sub-Antarctic), 344
Kerguelen-Trémarec, Yves (1734–1797), 347
King Charles Land (Svalbard), 348
King Christian Island (Canada), 349
King Christian IX Land (East Greenland), 349
King Christian X Land (East Greenland), 349
King Frederik VI Coast (East Greenland), 351
King Frederik VIII Land (East Greenland), 352
King George Island (South Shetland Islands), 353
King William Island (Canada), 354
Knight, James (ca. 1640–ca. 1720), 355
Knight, John (d. 1606), 357
Knuth, Eigil (1903–1996), 358
Koch, Lauge (1892–1964), 360
Koldewey, Karl (1837–1908), 363
Kolguyev Island (Russia), 365
Korea, 366
Kotzebue, Otto von (1787–1846), 366
<table>
<thead>
<tr>
<th>Location/Name</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lancaster Sound (Canada)</td>
<td>369</td>
</tr>
<tr>
<td>Laptev, Dmitriy (fl. 1730s–1740s)</td>
<td>370</td>
</tr>
<tr>
<td>Laptev, Khariton (d. 1763)</td>
<td>371</td>
</tr>
<tr>
<td>Laptev Sea (Arctic Ocean)</td>
<td>372</td>
</tr>
<tr>
<td>Larsen, Carl Anton (1860–1924)</td>
<td>373</td>
</tr>
<tr>
<td>Larsen, Henry (1899–1964)</td>
<td>375</td>
</tr>
<tr>
<td>Laurie Island (South Orkney Islands)</td>
<td>378</td>
</tr>
<tr>
<td>Lemaire Channel (Antarctic Peninsula)</td>
<td>379</td>
</tr>
<tr>
<td>Leskov Island (South Sandwich Islands)</td>
<td>379</td>
</tr>
<tr>
<td>Libraries on Polar Expeditions</td>
<td>379</td>
</tr>
<tr>
<td>Liège Island (Palmer Archipelago, Antarctic Peninsula)</td>
<td>381</td>
</tr>
<tr>
<td>Lindénow, Godskje (d. 1612)</td>
<td>381</td>
</tr>
<tr>
<td>Lindsay, Martin (1905–1981)</td>
<td>382</td>
</tr>
<tr>
<td>Livingston Island (South Shetland Islands)</td>
<td>384</td>
</tr>
<tr>
<td>Lougheed Island (Canada)</td>
<td>384</td>
</tr>
<tr>
<td>Low, Albert (1861–1952)</td>
<td>385</td>
</tr>
<tr>
<td>Low Island (South Shetland Islands)</td>
<td>386</td>
</tr>
<tr>
<td>Lyakhovskiy Islands (Russia)</td>
<td>386</td>
</tr>
<tr>
<td>Lyon, George (1795–1832)</td>
<td>387</td>
</tr>
<tr>
<td>Mac. Robertson Land (Antarctica)</td>
<td>389</td>
</tr>
<tr>
<td>Mackenzie, Alexander (1764–1820)</td>
<td>389</td>
</tr>
<tr>
<td>Mackenzie King Island (Canada)</td>
<td>390</td>
</tr>
<tr>
<td>Mackintosh, Aeneas (1879–1916)</td>
<td>391</td>
</tr>
<tr>
<td>Macmillan, Donald (1874–1970)</td>
<td>393</td>
</tr>
<tr>
<td>Macquarie Island (Sub-Antarctic)</td>
<td>396</td>
</tr>
<tr>
<td>Magnetic Poles</td>
<td>397</td>
</tr>
<tr>
<td>Malygin, Stepan (d. 1764)</td>
<td>399</td>
</tr>
<tr>
<td>Man-hauling</td>
<td>399</td>
</tr>
<tr>
<td>Manning, Thomas (1911–1998)</td>
<td>401</td>
</tr>
<tr>
<td>Marguerite Bay (Antarctic Peninsula)</td>
<td>404</td>
</tr>
<tr>
<td>Marie Byrd Land (Antarctica)</td>
<td>406</td>
</tr>
<tr>
<td>Marion Dufresne, Marc-Joseph (1724–1772)</td>
<td>407</td>
</tr>
<tr>
<td>Markham, Clements (1830–1916)</td>
<td>408</td>
</tr>
<tr>
<td>Mawson, Douglas (1882–1958)</td>
<td>410</td>
</tr>
<tr>
<td>McClintock, Leopold (1819–1907)</td>
<td>414</td>
</tr>
<tr>
<td>McClure, Robert (1807–1873)</td>
<td>417</td>
</tr>
<tr>
<td>McClure Strait (Canada)</td>
<td>419</td>
</tr>
<tr>
<td>Medals</td>
<td>419</td>
</tr>
<tr>
<td>Meighen Island (Canada)</td>
<td>421</td>
</tr>
<tr>
<td>Melville Island (Canada)</td>
<td>422</td>
</tr>
<tr>
<td>Middendorff, Alexander von (1815–1894)</td>
<td>423</td>
</tr>
<tr>
<td>Middleton, Christopher (ca. 1690–1770)</td>
<td>425</td>
</tr>
<tr>
<td>Mikkelsen, Ejnar (1880–1971)</td>
<td>426</td>
</tr>
<tr>
<td>Minin, Fedor (fl. 1730s–1740s)</td>
<td>429</td>
</tr>
<tr>
<td>Montagu Island (South Sandwich Islands)</td>
<td>430</td>
</tr>
<tr>
<td>Moor, William (d. 1765)</td>
<td>430</td>
</tr>
<tr>
<td>Moore, Thomas (1819–1872)</td>
<td>432</td>
</tr>
<tr>
<td>Morrell, Benjamin (1795–1839)</td>
<td>433</td>
</tr>
<tr>
<td>Munk, Jens (1579–1628)</td>
<td>435</td>
</tr>
<tr>
<td>Murav'yev, Stepan (fl. 1730s–1740s)</td>
<td>437</td>
</tr>
<tr>
<td>Muscovy Company</td>
<td>438</td>
</tr>
<tr>
<td>Mylius-Erichsen, Ludvig (1872–1907)</td>
<td>439</td>
</tr>
<tr>
<td>Nansen, Fridtjof (1861–1930)</td>
<td>443</td>
</tr>
<tr>
<td>Nares, George (1831–1915)</td>
<td>446</td>
</tr>
<tr>
<td>Nares Strait (Canada and Greenland)</td>
<td>449</td>
</tr>
<tr>
<td>Nathorst, Alfred (1850–1921)</td>
<td>450</td>
</tr>
<tr>
<td>Nelson Island (South Shetland Islands)</td>
<td>452</td>
</tr>
<tr>
<td>Netherlands</td>
<td>452</td>
</tr>
<tr>
<td>Neumayer Channel (Antarctic Peninsula)</td>
<td>454</td>
</tr>
<tr>
<td>New Siberian Islands (Russia)</td>
<td>454</td>
</tr>
<tr>
<td>New Zealand</td>
<td>455</td>
</tr>
<tr>
<td>Nicholas of Lynn (Fourteenth Century)</td>
<td>455</td>
</tr>
<tr>
<td>Nobile, Umberto (1885–1978)</td>
<td>457</td>
</tr>
<tr>
<td>Nordenskiöld, Adolf Erik (1832–1901)</td>
<td>459</td>
</tr>
<tr>
<td>Nordenskiöld, Otto (1869–1928)</td>
<td>465</td>
</tr>
<tr>
<td>Norse Arctic Exploration</td>
<td>467</td>
</tr>
<tr>
<td>North East Land (Svalbard)</td>
<td>468</td>
</tr>
<tr>
<td>North Pole</td>
<td>469</td>
</tr>
<tr>
<td>Northbrook Island (Franz Josef Land)</td>
<td>471</td>
</tr>
<tr>
<td>Northeast Passage</td>
<td>472</td>
</tr>
<tr>
<td>Northwest Passage</td>
<td>474</td>
</tr>
<tr>
<td>Norway</td>
<td>477</td>
</tr>
<tr>
<td>Novaya Zemlya (Russia)</td>
<td>479</td>
</tr>
<tr>
<td>Oates Land (Antarctica)</td>
<td>483</td>
</tr>
<tr>
<td>Oththere (Ninth Century)</td>
<td>483</td>
</tr>
<tr>
<td>Open Polar Sea</td>
<td>483</td>
</tr>
<tr>
<td>Operation Deep Freeze</td>
<td>485</td>
</tr>
<tr>
<td>Operation Highjump</td>
<td>487</td>
</tr>
<tr>
<td>Operation Tabarin</td>
<td>489</td>
</tr>
<tr>
<td>Operation Windmill</td>
<td>491</td>
</tr>
<tr>
<td>Ousland, Borge (1962–)</td>
<td>492</td>
</tr>
<tr>
<td>Ovtsyn, Dmitriy (fl. 1730s–1750s)</td>
<td>493</td>
</tr>
<tr>
<td>Pakhtusov, Petr (1800–1835)</td>
<td>497</td>
</tr>
<tr>
<td>Pakistan</td>
<td>498</td>
</tr>
<tr>
<td>Palmer Archipelago (Antarctic Peninsula)</td>
<td>499</td>
</tr>
<tr>
<td>Palmer, Nathaniel (1799–1877)</td>
<td>499</td>
</tr>
<tr>
<td>Papanin, Ivan (1894–1986)</td>
<td>501</td>
</tr>
<tr>
<td>Parry, Edward (1790–1855)</td>
<td>502</td>
</tr>
<tr>
<td>Parry Islands (Canada)</td>
<td>506</td>
</tr>
<tr>
<td>Paulet Island (Antarctic Peninsula)</td>
<td>506</td>
</tr>
<tr>
<td>Payer, Julius von (1842–1915)</td>
<td>507</td>
</tr>
<tr>
<td>Peary Land (North Greenland)</td>
<td>509</td>
</tr>
</tbody>
</table>
Peary, Robert (1856–1920), 510
Peel Sound (Canada), 516
Pendleton, Benjamin (fl. 1820s–1830s), 517
Penny, William (1809–1892), 518
Peru, 520
Pet, Arthur (fl. 1580s), 521
Peter I Island (Antarctica), 522
Petermann Island (Antarctic Peninsula), 522
Phipps, Constantine (1744–1792), 522
Plaisted, Ralph (1927–), 524
Poland, 526
Poles of Inaccessibility, 526
Pomor Contribution to Arctic Exploration, 527
Ponies, 528
Powell, George (ca. 1796–1824), 529
Prince Charles Foreland (Svalbard), 530
Prince Edward Islands (Sub-Antarctic), 531
Prince Harald Coast (Antarctica), 531
Prince of Wales Island (Canada), 532
Prince of Wales Strait (Canada), 532
Prince Olaf Coast (Antarctica), 532
Prince Patrick Island (Canada), 532
Prince Regent Inlet (Canada), 533
Prince Astrid Coast (Antarctica), 534
Prince Elizabeth Land (Antarctica), 534
Prince Martha Coast (Antarctica), 535
Prince Ragnhild Coast (Antarctica), 535
Pronchishchev, Vasiliy (d.1736), 536
Pytheas (Fourth Century B.C.), 536
Queen Elizabeth Islands (Canada), 539
Queen Mary Land (Antarctica), 539
Queen Maud Land (Antarctica), 540
Rae, John (1813–1893), 541
Rasmussen, Knud (1879–1933), 544
Richardson, Carsten (fl. 1600s), 548
Riiser-Larsen, Hjalmar (1890–1965), 549
Ritscher, Alfred (1879–1963), 552
Robert Island (South Shetland Islands), 554
Ronne, Finn (1899–1980), 554
Ross Dependency (Antarctica), 557
Ross Ice Shelf (Antarctica), 557
Ross Island (Antarctica), 558
Ross, James Clark (1800–1862), 560
Ross, John (1777–1856), 563
Ross Sea (Antarctica), 567
Rudolf Island (Franz Josef Land), 568
Russia, 569
Rymill, John (1905–1968), 572
Samoylovich, Rudolf (1884–1940), 575
Saunders Island (South Sandwich Islands), 576
Schrader, Karl (fl. 1880s), 577
Schröder-Stranz, Herbert (1884–1912), 578
Scoresby, William, Jr. (1789–1857), 581
Scott Island (Antarctica), 583
Scott, Robert Falcon (1868–1912), 583
Sealing and Antarctic Exploration, 589
Sedov, Georgiy (1877–1914), 591
Seven Islands (Svalbard), 592
Severnaya Zemlya (Russia), 593
Seymour Island (Antarctic Peninsula), 594
Shackleton, Ernest (1874–1922), 594
Sheffield, James (fl. 1820s), 600
Shirase, Nobu (1861–1946), 600
Shmidt, Otto (1891–1956), 602
Shparo, Dmitriy (1941–), 604
Signy Island (South Orkney Islands), 607
Simpson, Jim (1911–2002), 607
Siple, Paul (1908–1968), 610
Sledges and Sleds, 612
Smith, Benjamin Leigh (1828–1913), 615
Smith Island (South Shetland Islands), 616
Smith, William (1790–1847), 617
Snow Hill Island (Antarctic Peninsula), 618
Snow Island (South Shetland Islands), 618
Somerset Island (Canada), 619
South Africa, 620
South Georgia (Sub-Antarctic), 621
South Orkney Islands (Antarctic), 622
South Pole, 623
South Sandwich Islands (Sub-Antarctic), 624
South Shetland Islands (Antarctic), 625
Southern Ocean, 626
Spain, 627
Spitsbergen (Svalbard), 627
Stefansson, Vilhjalmur (1879–1962), 629
Steger, Will (1944–), 634
Stenhouse, Joseph (1887–1941), 637
Sub-Antarctic Islands, 638
Submarines, 639
Surveying and Mapping, 641
Svalbard (Norway), 643
Sverdrup Islands (Canada), 644
Sverdrup, Otto (1855–1930), 644
Sweden, 648
Switzerland, 648
Taylor, Thomas Griffith (1880–1963), 651
Terra Australis Incognita, 652
Thule Island (South Sandwich Islands), 654
Toll, Eduard von (1858–1902), 654
Tolstoukhov, Ivan (fl. 1680s), 657
Torell, Otto (1828–1900), 658
Transantarctic Mountains, 661
Trinity Island (Palmer Archipelago, Antarctic Peninsula), 662
Trinity Peninsula (Antarctic Peninsula), 662
Entries Listed in Chronological Order

This chronology lists all expeditions receiving separate entries in *Exploring Polar Frontiers*. For comprehensive listings of Arctic and Antarctic expeditions, see C. A. Holland's *Arctic exploration and development* (1994) and R. K. Headland's *Chronological list of Antarctic expeditions and related historical events* (1989). See also the Polar Timeline for a graphical depiction of who explored where and when.

<table>
<thead>
<tr>
<th>Date</th>
<th>Entry</th>
<th>Region(s) Visited</th>
</tr>
</thead>
<tbody>
<tr>
<td>325 B.C. to 1498</td>
<td></td>
<td></td>
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<tr>
<td>ca. 325 B.C.</td>
<td>Pytheas</td>
<td>Arctic Circle</td>
</tr>
<tr>
<td>ca. 800–1500</td>
<td>Norse Arctic Exploration</td>
<td>North Atlantic, Greenland to White Sea</td>
</tr>
<tr>
<td>ca. 880</td>
<td>Oththere</td>
<td>Barents Sea and White Sea</td>
</tr>
<tr>
<td>982–985</td>
<td>Erik the Red</td>
<td>West Greenland</td>
</tr>
<tr>
<td>986</td>
<td>Erik the Red</td>
<td>West Greenland</td>
</tr>
<tr>
<td>1001–1002</td>
<td>Leif Eriksson</td>
<td>Baffin Island, Labrador, and Newfoundland</td>
</tr>
<tr>
<td>1360</td>
<td>Nicholas of Lynn</td>
<td>West Greenland</td>
</tr>
<tr>
<td>1497</td>
<td>John Cabot</td>
<td>First voyage seeking the Northwest Passage</td>
</tr>
<tr>
<td>1498</td>
<td>John Cabot</td>
<td>Further explorations along the eastern seaboard of North America</td>
</tr>
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</table>

**Sixteenth Century**

<table>
<thead>
<tr>
<th>Year</th>
<th>Entry</th>
<th>Region(s) Visited</th>
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</thead>
<tbody>
<tr>
<td>1500</td>
<td>G. Corte-Real</td>
<td>South Greenland, Labrador, and Newfoundland</td>
</tr>
<tr>
<td>1501</td>
<td>G. Corte-Real</td>
<td>Labrador and Newfoundland</td>
</tr>
<tr>
<td>1502</td>
<td>M. Corte-Real</td>
<td>Labrador and Newfoundland</td>
</tr>
<tr>
<td>1508–1509</td>
<td>Sebastian Cabot</td>
<td>Claimed discovery of Hudson Strait and Hudson Bay</td>
</tr>
<tr>
<td>1553–1554</td>
<td>Hugh Willoughby</td>
<td>First voyage seeking the Northeast Passage</td>
</tr>
<tr>
<td>1553–1554</td>
<td>Richard Chancellor</td>
<td>White Sea and Russia</td>
</tr>
<tr>
<td>1556–1557</td>
<td>Stephen Borough</td>
<td>Novaya Zemlya and Vaygach Island, Russia</td>
</tr>
<tr>
<td>1576</td>
<td>Martin Frobisher</td>
<td>Frobisher Bay, Baffin Island</td>
</tr>
<tr>
<td>1577</td>
<td>Martin Frobisher</td>
<td>Frobisher Bay, Baffin Island</td>
</tr>
<tr>
<td>1578</td>
<td>Martin Frobisher</td>
<td>West Greenland, Hudson Strait, and Frobisher Bay</td>
</tr>
<tr>
<td>1580–1581</td>
<td>Arthur Pet</td>
<td>First to reach the Kara Sea, north Russia</td>
</tr>
<tr>
<td>1584–1585</td>
<td>Olivier Brunel</td>
<td>First Dutch Northeast Passage expedition</td>
</tr>
<tr>
<td>1585</td>
<td>John Davis</td>
<td>West Greenland and Baffin Island</td>
</tr>
<tr>
<td>1586</td>
<td>John Davis</td>
<td>West Greenland and Baffin Island</td>
</tr>
<tr>
<td>1587</td>
<td>John Davis</td>
<td>West Greenland and Baffin Island</td>
</tr>
<tr>
<td>1594</td>
<td>Willem Barents</td>
<td>Novaya Zemlya, Vaygach Island, and Kara Sea, Russia</td>
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<tr>
<td>1595</td>
<td>Willem Barents</td>
<td>Vaygach Island and Kara Sea, Russia</td>
</tr>
<tr>
<td>1596–1597</td>
<td>Willem Barents</td>
<td>Discovery of Spitsbergen and Bear Island, Svalbard; enforced wintering on Novaya Zemlya, Russia</td>
</tr>
<tr>
<td>1599</td>
<td>Dirck Gerritsz</td>
<td>Claimed first sighting of South Shetland Islands, Antarctica</td>
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**Seventeenth Century**

<table>
<thead>
<tr>
<th>Year</th>
<th>Entry</th>
<th>Region(s) Visited</th>
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<tbody>
<tr>
<td>1602</td>
<td>George Weymouth</td>
<td>Davis Strait and Hudson Strait</td>
</tr>
<tr>
<td>1605</td>
<td>John Cunningham</td>
<td>West Greenland</td>
</tr>
<tr>
<td>1606</td>
<td>John Knight</td>
<td>Labrador coast</td>
</tr>
<tr>
<td>1606</td>
<td>Godske Lindenow</td>
<td>West Greenland</td>
</tr>
<tr>
<td>1607</td>
<td>Henry Hudson</td>
<td>East Greenland and Spitsbergen</td>
</tr>
<tr>
<td>1607</td>
<td>Carsten Richardson</td>
<td>Unsuccessful attempt to reach East Greenland</td>
</tr>
<tr>
<td>1608</td>
<td>Henry Hudson</td>
<td>Barents Sea and Novaya Zemlya, Russia</td>
</tr>
<tr>
<td>Year</td>
<td>Explorer</td>
<td>Event</td>
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<tr>
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<tr>
<td>1609</td>
<td>Henry Hudson</td>
<td>Search for the Northwest Passage at 40°N</td>
</tr>
<tr>
<td>1610–1611</td>
<td>Henry Hudson</td>
<td>Discovery of Hudson Bay</td>
</tr>
<tr>
<td>1612</td>
<td>James Hall</td>
<td>West Greenland</td>
</tr>
<tr>
<td>1612–1613</td>
<td>Thomas Button</td>
<td>Discovery of the west coast of Hudson Bay</td>
</tr>
<tr>
<td>1615</td>
<td>Robert Bylot</td>
<td>Hudson Strait and Foxe Channel</td>
</tr>
<tr>
<td>1616</td>
<td>William Baffin</td>
<td>Discovery of Baffin Bay</td>
</tr>
<tr>
<td>1619–1620</td>
<td>Jens Munk</td>
<td>Hudson Bay</td>
</tr>
<tr>
<td>1631</td>
<td>Luke Foxe</td>
<td>Discovery of Foxe Basin, Canadian Arctic</td>
</tr>
<tr>
<td>1631–1632</td>
<td>Thomas James</td>
<td>Hudson Bay</td>
</tr>
<tr>
<td>1648</td>
<td>Semen Dezhnev</td>
<td>First through Bering Strait</td>
</tr>
<tr>
<td>1676</td>
<td>John Wood</td>
<td>Novaya Zemlya, Russia</td>
</tr>
<tr>
<td>1686–1689</td>
<td>Ivan Tolstoukhov</td>
<td>First round Cape Chelyuskin, Russia?</td>
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### Eighteenth Century

<table>
<thead>
<tr>
<th>Year</th>
<th>Explorer</th>
<th>Event</th>
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<tbody>
<tr>
<td>1719–1721</td>
<td>James Knight</td>
<td>Hudson Bay</td>
</tr>
<tr>
<td>1721–1736</td>
<td>Hans Egede</td>
<td>West Greenland</td>
</tr>
<tr>
<td>1725–1730</td>
<td>Vitus Bering</td>
<td>Bering Strait</td>
</tr>
<tr>
<td>1732</td>
<td>Mikhail Gvozdev</td>
<td>Russian discovery of Alaska</td>
</tr>
<tr>
<td>1733–1743</td>
<td>Vitus Bering</td>
<td>Great Northern Expedition</td>
</tr>
<tr>
<td>1734–1736</td>
<td>Stepan Murav’yev</td>
<td>Russian Arctic coast, Archangel toward the Ob’ River</td>
</tr>
<tr>
<td>1734–1738</td>
<td>Dmitriy Ovtsyn</td>
<td>Russian Arctic coast, Ob’ River to Yenisey River</td>
</tr>
<tr>
<td>1735–1737</td>
<td>Vasily Pronchishchev</td>
<td>Russian Arctic coast, Lena River to the Taymyr Peninsula</td>
</tr>
<tr>
<td>1736–1739</td>
<td>Stepan Malyyin</td>
<td>Russian Arctic coast, Pechora River to Ob’ River</td>
</tr>
<tr>
<td>1738–1739</td>
<td>Dmitriy Laptev</td>
<td>Russian Arctic coast, Lena River to Kolyma River and Anadyr River</td>
</tr>
<tr>
<td>1738–1741</td>
<td>Jean Bouvet de Lozier</td>
<td>Discovery of Bouvet Island, Southern Ocean</td>
</tr>
<tr>
<td>1739–1742</td>
<td>Fedor Minin</td>
<td>Russian Arctic coast, Yenisey River east toward the Taymyr River</td>
</tr>
<tr>
<td>1741–1742</td>
<td>Khariton Laptev</td>
<td>Russian Arctic coast, the Taymyr Peninsula</td>
</tr>
<tr>
<td>1741–1742</td>
<td>Christopher Middleton</td>
<td>Hudson Bay</td>
</tr>
<tr>
<td>1746–1747</td>
<td>William Moor</td>
<td>Hudson Bay</td>
</tr>
<tr>
<td>1764–1766</td>
<td>Vasilii Chichagov</td>
<td>Attempted high latitude crossing of the Arctic Ocean</td>
</tr>
<tr>
<td>1770–1772</td>
<td>Samuel Hearne</td>
<td>First European to reach the Arctic coast of North America</td>
</tr>
<tr>
<td>1771–1772</td>
<td>Yves Kerguelen-Trémarec</td>
<td>Discovery of Kerguelen Islands, Southern Ocean</td>
</tr>
<tr>
<td>1773–1773</td>
<td>Marc-Joseph</td>
<td>Rediscovery of Prince Edward Islands and discovery of Crozet Islands, Southern Ocean</td>
</tr>
<tr>
<td>1772–1775</td>
<td>James Cook</td>
<td>Discovery of the Southern Ocean and the South Sandwich Islands</td>
</tr>
<tr>
<td>1772–1775</td>
<td>Tobias Furneaux</td>
<td>Preceded Cook in circumnavigating Antarctica</td>
</tr>
<tr>
<td>1773</td>
<td>Constantine Phipps</td>
<td>Attempt to reach the North Pole from Spitsbergen</td>
</tr>
<tr>
<td>1773–1774</td>
<td>Yves Kerguelen-Trémarec</td>
<td>Second voyage to Kerguelen Islands, Southern Ocean</td>
</tr>
<tr>
<td>1776–1780</td>
<td>James Cook</td>
<td>Search for Pacific entrance to the Northwest Passage</td>
</tr>
<tr>
<td>1789</td>
<td>Alexander Mackenzie</td>
<td>Down the Mackenzie River to the Arctic Ocean</td>
</tr>
</tbody>
</table>

### Nineteenth Century (first half)

<table>
<thead>
<tr>
<th>Year</th>
<th>Explorer</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1808–1811</td>
<td>Mathias Hedenström</td>
<td>Survey of the New Siberian Islands, Arctic Ocean</td>
</tr>
<tr>
<td>1810</td>
<td>Frederick Hasselburg</td>
<td>Discovery of Campbell and Macquarie islands, Southern Ocean</td>
</tr>
<tr>
<td>1815–1818</td>
<td>Otto von Kotzebue</td>
<td>The first Russian Northwest Passage expedition</td>
</tr>
<tr>
<td>1817</td>
<td>William Scoresby</td>
<td>Jan Mayen and East Greenland</td>
</tr>
<tr>
<td>1818</td>
<td>David Buchan</td>
<td>Attempted high-latitude crossing of the Arctic Ocean</td>
</tr>
<tr>
<td>1818</td>
<td>John Ross</td>
<td>Rediscovery of Baffin Bay</td>
</tr>
<tr>
<td>1819</td>
<td>William Smith</td>
<td>Discovery of the South Shetland Islands, Antarctica</td>
</tr>
<tr>
<td>1819–1820</td>
<td>Edward Bransfield</td>
<td>Discovery of the Antarctic Peninsula; second sighting of Antarctic continent</td>
</tr>
<tr>
<td>1819–1820</td>
<td>Edward Parry</td>
<td>Lancaster Sound, Canada, explored and many islands of the Canadian Arctic Archipelago discovered</td>
</tr>
<tr>
<td>1819–1820</td>
<td>James Sheffield</td>
<td>Aurora Islands; South Shetland Islands, Antarctica</td>
</tr>
</tbody>
</table>
### Entries Listed in Chronological Order

<table>
<thead>
<tr>
<th>Year(s)</th>
<th>Name</th>
<th>Significant Explorations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1819–1821</td>
<td>Fabian von Bellingshausen</td>
<td>First sighting of the Antarctic continent; second circumnavigation of Antarctica; discovery of Peter I Island and Alexander Island</td>
</tr>
<tr>
<td>1819–1822</td>
<td>John Franklin</td>
<td>Arctic coast of North America, Coppermine River to Point Turnagain</td>
</tr>
<tr>
<td>1819–1822</td>
<td>Mikhail Vasil'yev</td>
<td>Russian Northwest Passage expedition</td>
</tr>
<tr>
<td>1820–1821</td>
<td>Nathaniel Palmer</td>
<td>Second circumnavigation of Antarctica; discovery of Peter I Island and Alexander Island</td>
</tr>
<tr>
<td>1820–1821</td>
<td>Benjamin Pendleton</td>
<td>South Shetland Islands and Antarctic Peninsula</td>
</tr>
<tr>
<td>1820–1821</td>
<td>James Weddell</td>
<td>South Shetland Islands, Antarctica</td>
</tr>
<tr>
<td>1820–1824</td>
<td>Peter Anjou</td>
<td>New Siberian Islands and the Arctic Ocean</td>
</tr>
<tr>
<td>1820–1824</td>
<td>Ferdinand von Wrangel</td>
<td>Chukotka Peninsula and the Arctic Ocean</td>
</tr>
<tr>
<td>1821–1822</td>
<td>Nathaniel Palmer</td>
<td>Discovery of the South Orkney Islands, Antarctica</td>
</tr>
<tr>
<td>1821–1822</td>
<td>Benjamin Pendleton</td>
<td>South Shetland Islands, Antarctica</td>
</tr>
<tr>
<td>1821–1822</td>
<td>James Weddell</td>
<td>Discovery of the South Orkney Islands, Antarctica</td>
</tr>
<tr>
<td>1821–1822</td>
<td>George Powell</td>
<td>Fury and Hecla Strait discovered in Foxe Basin, Canadian Arctic</td>
</tr>
<tr>
<td>1821–1823</td>
<td>Edward Parry</td>
<td>King Christian X Island, East Greenland</td>
</tr>
<tr>
<td>1822–1823</td>
<td>Benjamin Morrell</td>
<td>First landing on Bouvet Island, Southern Ocean? First sighting of the east coast of the Antarctic Peninsula?</td>
</tr>
<tr>
<td>1822–1824</td>
<td>James Weddell</td>
<td>Weddell Sea, Antarctica</td>
</tr>
<tr>
<td>1823</td>
<td>Douglas Clavering</td>
<td>King Christian X Island, East Greenland</td>
</tr>
<tr>
<td>1824</td>
<td>George Lyon</td>
<td>Hudson Bay, Canada</td>
</tr>
<tr>
<td>1824–1825</td>
<td>Edward Parry</td>
<td>Prince Regent Inlet, Canadian Arctic</td>
</tr>
<tr>
<td>1825–1827</td>
<td>John Franklin</td>
<td>Arctic coast of North America, Return Islands to Coppermine River</td>
</tr>
<tr>
<td>1825–1828</td>
<td>Frederick Beechey</td>
<td>Arctic coast of North America, Kotzebue Bay to Point Barrow</td>
</tr>
<tr>
<td>1827</td>
<td>Edward Parry</td>
<td>First attempt to reach the North Pole across the ice</td>
</tr>
<tr>
<td>1828–1831</td>
<td>Henry Foster</td>
<td>Deception Island, South Shetland Islands, Antarctica</td>
</tr>
<tr>
<td>1828–1831</td>
<td>Wilhelm Graah</td>
<td>King Frederik VI Coast, East Greenland</td>
</tr>
<tr>
<td>1829–1832</td>
<td>Benjamin Pendleton</td>
<td>South Shetland Islands, Antarctica; Swain's Island</td>
</tr>
<tr>
<td>1829–1832</td>
<td>Nathaniel Palmer</td>
<td>Gulf of Boothia, Boothia Peninsula, and King William Island, Canadian Arctic</td>
</tr>
<tr>
<td>1830–1833</td>
<td>John Ross</td>
<td>Third circumnavigation of Antarctica; discovery of Enderby Land and Graham Land</td>
</tr>
<tr>
<td>1832–1833</td>
<td>Petr Pakhtusov</td>
<td>East coast of Novaya Zemlya, Russia</td>
</tr>
<tr>
<td>1832–1840</td>
<td>William Penny</td>
<td>Whaling explorations off southeast Baffin Island</td>
</tr>
<tr>
<td>1833–1834</td>
<td>Peter Kemp</td>
<td>Discovery of Kemp Land, Antarctica</td>
</tr>
<tr>
<td>1833–1835</td>
<td>George Back</td>
<td>Down the Back River to America's Arctic coast</td>
</tr>
<tr>
<td>1834–1835</td>
<td>Petr Pakhtusov</td>
<td>East coast of Novaya Zemlya, Russia</td>
</tr>
<tr>
<td>1836–1837</td>
<td>George Back</td>
<td>Hudson Bay and Foxe Basin, Canadian Arctic</td>
</tr>
<tr>
<td>1837–1839</td>
<td>Peter Dease</td>
<td>Arctic coast of North America, Point Barrow to Back River</td>
</tr>
<tr>
<td>1837–1840</td>
<td>Jules Dumont d’ Urville</td>
<td>Discovery of Joinville Island and Adélie Land, Antarctica</td>
</tr>
<tr>
<td>1838–1839</td>
<td>John Balleny</td>
<td>Discovery of the Balleny Islands and Sabrina Coast, Antarctica</td>
</tr>
<tr>
<td>1838–1842</td>
<td>Charles Wilkes</td>
<td>Discovery of Wilkes Land, Antarctica</td>
</tr>
<tr>
<td>1839–1843</td>
<td>James Clark Ross</td>
<td>Discovery of Victoria Land, Ross Island, and the Ross Ice Shelf; also discoveries off the Antarctic Peninsula</td>
</tr>
<tr>
<td>1842–1844</td>
<td>Alexander von Middendorff</td>
<td>Taymyr Peninsula, Russia</td>
</tr>
<tr>
<td>1845</td>
<td>Thomas Moore</td>
<td>Magnetic survey of the Southern Ocean</td>
</tr>
<tr>
<td>1845–1848</td>
<td>John Franklin</td>
<td>Wellington Channel, Peel Sound, and King William Island, Canadian Arctic</td>
</tr>
<tr>
<td>1846–1847</td>
<td>John Rae</td>
<td>Rae Isthmus and Boothia Peninsula, Canadian Arctic</td>
</tr>
<tr>
<td>1847–1859</td>
<td>Franklin Search Expeditions</td>
<td>Franklin search expedition to America's Arctic coast</td>
</tr>
<tr>
<td>1847–1849</td>
<td>John Rae</td>
<td>Franklin search expedition to Lancaster Sound, Canadian Arctic</td>
</tr>
<tr>
<td>1848–1849</td>
<td>James Clark Ross</td>
<td>Franklin search expedition to Bering Strait</td>
</tr>
<tr>
<td>1848–1850</td>
<td>Henry Kellett</td>
<td>Franklin search expedition to Bering Strait</td>
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<tr>
<td>Year(s)</td>
<td>Person</td>
<td>Expedition Details</td>
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<tr>
<td>1848–1852</td>
<td>Thomas Moore</td>
<td>Franklin search expedition to Bering Strait</td>
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<tr>
<td>1850–1851</td>
<td>Horatio Austin</td>
<td>Franklin search expedition to Barrow Strait</td>
</tr>
<tr>
<td>1850–1851</td>
<td>Elisha Kent Kane</td>
<td>De Haven's Franklin search expedition to Barrow Strait</td>
</tr>
<tr>
<td>1850–1851</td>
<td>William Penny</td>
<td>Franklin search expedition to Barrow Strait</td>
</tr>
<tr>
<td>1850–1851</td>
<td>John Rae</td>
<td>Franklin search expedition to Victoria Island</td>
</tr>
<tr>
<td>1850–1851</td>
<td>John Ross</td>
<td>Franklin search expedition to Barrow Strait</td>
</tr>
<tr>
<td>1850–1854</td>
<td>Robert McClure</td>
<td>Franklin search expedition and first through the Northwest Passage</td>
</tr>
<tr>
<td>1850–1855</td>
<td>Richard Collinson</td>
<td>Franklin search expedition to Victoria Island</td>
</tr>
<tr>
<td>1851–1852</td>
<td>William Kennedy</td>
<td>Franklin search expedition to Prince Regent Inlet</td>
</tr>
<tr>
<td>1852–1854</td>
<td>Edward Belcher</td>
<td>Franklin search expedition to Wellington Channel</td>
</tr>
<tr>
<td>1852–1854</td>
<td>Henry Kellett</td>
<td>Franklin search expedition to Melville Island</td>
</tr>
<tr>
<td>1853</td>
<td>Mercator Cooper</td>
<td>First continental landing in the Ross Sea sector, Antarctica</td>
</tr>
<tr>
<td>1853–1854</td>
<td>John Rae</td>
<td>Boothia Peninsula, Canadian Arctic</td>
</tr>
<tr>
<td>1853–1855</td>
<td>Elisha Kent Kane</td>
<td>Smith Sound and Kane Basin, North Greenland</td>
</tr>
<tr>
<td>1853–1863</td>
<td>William Penny</td>
<td>Establishment of the whaling community in Cumberland Sound, Baffin Island, Canadian Arctic</td>
</tr>
<tr>
<td>1857–1859</td>
<td>Leopold McClintock</td>
<td>Franklin search expedition to King William Island, Canadian Arctic</td>
</tr>
<tr>
<td>1860–1861</td>
<td>Isaac Hayes</td>
<td>North Greenland and Ellesmere Island</td>
</tr>
<tr>
<td>1860–1862</td>
<td>Charles Francis Hall</td>
<td>Frobisher Bay, Baffin Island</td>
</tr>
<tr>
<td>1861</td>
<td>Otto Torell</td>
<td>Spitsbergen and North East Land, Svalbard</td>
</tr>
<tr>
<td>1864</td>
<td>Adolf Erik Nordenskiöld</td>
<td>Spitsbergen, Edge Island, and Barents Island</td>
</tr>
<tr>
<td>1864–1869</td>
<td>Charles Francis Hall</td>
<td>Repulse Bay, Melville Peninsula, and King William Island, Canadian Arctic</td>
</tr>
<tr>
<td>1866</td>
<td>Eduard Dallmann</td>
<td>Claimed discovery of Wrangell Island, Russian Arctic</td>
</tr>
<tr>
<td>1868</td>
<td>Karl Koldewey</td>
<td>East Greenland and Svalbard</td>
</tr>
<tr>
<td>1868</td>
<td>Adolf Erik Nordenskiöld</td>
<td>Record farthest north off Spitsbergen</td>
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<tr>
<td>1869–1870</td>
<td>Karl Koldewey</td>
<td>East Greenland</td>
</tr>
<tr>
<td>1871–1873</td>
<td>Charles Francis Hall</td>
<td>Hall Basin and Robeson Channel, North Greenland</td>
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<tr>
<td>1872–1873</td>
<td>Adolf Erik Nordenskiöld</td>
<td>First crossing of North East Land, Svalbard</td>
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<tr>
<td>1872–1874</td>
<td>Julius Payer</td>
<td>Discovery of Franz Josef Land, Russian Arctic</td>
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<tr>
<td>1872–1874</td>
<td>George Nares</td>
<td>Oceanographic studies in the Southern Ocean</td>
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<tr>
<td>1873–1874</td>
<td>Eduard Dallmann</td>
<td>Antarctic Peninsula</td>
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<tr>
<td>1875–1876</td>
<td>George Nares</td>
<td>Ellesmere Island and North Greenland</td>
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<tr>
<td>1878–1880</td>
<td>Adolf Erik Nordenskiöld</td>
<td>First transit of the Northeast Passage</td>
</tr>
<tr>
<td>1879–1881</td>
<td>George De Long</td>
<td>Attempt to reach the North Pole from Bering Strait</td>
</tr>
<tr>
<td>1880</td>
<td>Benjamin Leigh Smith</td>
<td>Discovery of a navigable route to Franz Josef Land</td>
</tr>
<tr>
<td>1881–1882</td>
<td>Benjamin Leigh Smith</td>
<td>Franz Josef Land</td>
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<tr>
<td>1881–1884</td>
<td>Adolphus Greely</td>
<td>Ellesmere Island, Canadian Arctic</td>
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<tr>
<td>1882–1883</td>
<td>Karl Schrader</td>
<td>South Georgia, Southern Ocean</td>
</tr>
<tr>
<td>1883</td>
<td>Adolf Erik Nordenskiöld</td>
<td>Inland Ice and East Greenland</td>
</tr>
<tr>
<td>1883–1885</td>
<td>Gustav Holm</td>
<td>King Christian IX Land, East Greenland</td>
</tr>
<tr>
<td>1885–1886</td>
<td>Eduard von Toll</td>
<td>New Siberian Islands, Russian Arctic</td>
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<tr>
<td>1886</td>
<td>Robert Peary</td>
<td>Greenland Inland Ice</td>
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<tr>
<td>1888–1889</td>
<td>Fridtjof Nansen</td>
<td>First crossing of Greenland</td>
</tr>
<tr>
<td>1891</td>
<td>Erich von Drygalski</td>
<td>Greenland Inland Ice</td>
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<tr>
<td>1891–1892</td>
<td>Robert Peary</td>
<td>Northwest Greenland</td>
</tr>
<tr>
<td>1892–1893</td>
<td>Erich von Drygalski</td>
<td>Greenland Inland Ice</td>
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<tr>
<td>1892–1893</td>
<td>Dundee Antarctic Whaling Expedition</td>
<td>Weddell Sea and the Antarctic Peninsula</td>
</tr>
<tr>
<td>1892–1893</td>
<td>Carl Anton Larsen</td>
<td>Weddell Sea and the Antarctic Peninsula</td>
</tr>
<tr>
<td>1892–1893</td>
<td>Eduard von Toll</td>
<td>Russian Arctic coast and the New Siberian Islands</td>
</tr>
<tr>
<td>1893–1894</td>
<td>Frederick Jackson</td>
<td>Arctic coast of Russia from Vaygach Island to Lapland</td>
</tr>
<tr>
<td>1893–1894</td>
<td>Carl Anton Larsen</td>
<td>Discovery of Oscar II and Foyen coasts, Antarctic Peninsula</td>
</tr>
<tr>
<td>Year(s)</td>
<td>Explorer/Adventurer</td>
<td>Accomplishment/Location</td>
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<tr>
<td>1893–1895</td>
<td>Henrik Bull</td>
<td>Claimed first landing on the Antarctic continent</td>
</tr>
<tr>
<td>1893–1895</td>
<td>Robert Peary</td>
<td>Northwest Greenland</td>
</tr>
<tr>
<td>1893–1896</td>
<td>Fridtjof Nansen</td>
<td>First crossing of the Arctic Ocean</td>
</tr>
<tr>
<td>1894</td>
<td>Walter Wellman</td>
<td>Attempt to reach the North Pole from Svalbard</td>
</tr>
<tr>
<td>1894–1897</td>
<td>Frederick Jackson</td>
<td>Franz Josef Land, Russian Arctic</td>
</tr>
<tr>
<td>1897</td>
<td>Salomon Andrée</td>
<td>Attempted balloon flight to the North Pole from Svalbard</td>
</tr>
<tr>
<td>1897–1899</td>
<td>Adrien de Gerlache</td>
<td>First wintering in the Antarctic</td>
</tr>
<tr>
<td>1898</td>
<td>Alfred Nathorst</td>
<td>Circumnavigation of Svalbard</td>
</tr>
<tr>
<td>1898–1899</td>
<td>Georg Amdrup</td>
<td>King Christian IX Land, East Greenland</td>
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<tr>
<td>1898–1899</td>
<td>Carl Chun</td>
<td>Rediscovery of Bouvet Island, Southern Ocean</td>
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<tr>
<td>1898–1899</td>
<td>Walter Wellman</td>
<td>Franz Josef Land, Russian Arctic</td>
</tr>
<tr>
<td>1898–1900</td>
<td>Carsten Borchgrevink</td>
<td>First wintering on the Antarctic continent</td>
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<tr>
<td>1898–1902</td>
<td>Robert Peary</td>
<td>Ellesmere Island and North Greenland</td>
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<tr>
<td>1898–1902</td>
<td>Otto Sverdrup</td>
<td>Axel Heiberg, Amund Ringnes, and Ellef Ringnes Islands, Canadian Arctic</td>
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<tr>
<td>1899</td>
<td>Gunnar Andersson</td>
<td>Bear Island, Svalbard</td>
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<tr>
<td>1899</td>
<td>Alfred Nathorst</td>
<td>King Christian X Land, East Greenland</td>
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<tr>
<td>1899–1900</td>
<td>Luigi Duke of Abruzzi</td>
<td>Attempt to reach the North Pole from Franz Josef Land</td>
</tr>
<tr>
<td>1900</td>
<td>Georg Amdrup</td>
<td>King Christian IX Land, East Greenland</td>
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<tr>
<td>1900–1903</td>
<td>Eduard von Toll</td>
<td>Taymyr Peninsula and the New Siberian Islands</td>
</tr>
<tr>
<td>1901–1902</td>
<td>Evelyn Baldwin</td>
<td>Attempt to reach the North Pole from Franz Josef Land</td>
</tr>
<tr>
<td>1901–1903</td>
<td>Erich von Drygalski</td>
<td>Discovery of Wilhelm II Land, Antarctica</td>
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<tr>
<td>1901–1904</td>
<td>Otto Nordenskjöld</td>
<td>Discovery of Antarctic Sound, Admiralty Sound, and Prince Gustav Channel, Antarctic Peninsula</td>
</tr>
<tr>
<td>1901–1904</td>
<td>Robert Falcon Scott</td>
<td>Ross Island; Ross Ice Shelf; Victoria Land, Antarctica; discovery of Edward VII Land</td>
</tr>
<tr>
<td>1902–1903</td>
<td>Albert Armitage</td>
<td>First ascent to the Antarctic polar plateau</td>
</tr>
<tr>
<td>1902–1903</td>
<td>Gunnar Andersson</td>
<td>South Georgia; Antarctic Peninsula; Hope Bay</td>
</tr>
<tr>
<td>1902–1903</td>
<td>William Colbeck</td>
<td>Relief expedition to McMurdo Sound; discovery of Scott Island, Antarctica</td>
</tr>
<tr>
<td>1902–1903</td>
<td>Carl Anton Larsen</td>
<td>Weddell Sea and the Antarctic Peninsula</td>
</tr>
<tr>
<td>1902–1904</td>
<td>William Speirs Bruce</td>
<td>South Orkney Islands and Weddell Sea; discovery of Coats Land, Antarctica</td>
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<tr>
<td>1902–1904</td>
<td>Ludvig Mylius-Erichsen</td>
<td>North Greenland</td>
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<tr>
<td>1903–1904</td>
<td>William Colbeck</td>
<td>Relief expedition to McMurdo Sound, Antarctica</td>
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<tr>
<td>1903–1904</td>
<td>Julian Irizar</td>
<td>Relief expedition to the Antarctic Peninsula</td>
</tr>
<tr>
<td>1903–1904</td>
<td>Albert Low</td>
<td>Canadian Eastern Arctic</td>
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<tr>
<td>1903–1905</td>
<td>Jean-Baptiste Charcot</td>
<td>Antarctic Peninsula</td>
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<tr>
<td>1903–1905</td>
<td>Anthony Fiala</td>
<td>Attempt to reach the North Pole from Franz Josef Land</td>
</tr>
<tr>
<td>1903–1906</td>
<td>Roald Amundsen</td>
<td>First to sail through the Northwest Passage</td>
</tr>
<tr>
<td>1905–1906</td>
<td>Robert Peary</td>
<td>Attempt to reach the North Pole from Ellesmere Island</td>
</tr>
<tr>
<td>1906</td>
<td>Walter Wellman</td>
<td>First attempt to reach the North Pole by airship</td>
</tr>
<tr>
<td>1906–1907</td>
<td>Joseph-Elzéar Bernier</td>
<td>Canadian Eastern Arctic</td>
</tr>
<tr>
<td>1906–1908</td>
<td>Ejnar Mikkelsen</td>
<td>Search for land off northern Alaska</td>
</tr>
<tr>
<td>1906–1908</td>
<td>Ludvig Mylius-Erichsen</td>
<td>King Frederik VIII Land, East Greenland</td>
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<tr>
<td>1906–1920</td>
<td>William Speirs Bruce</td>
<td>Prince Charles Foreland and Spitsbergen, Svalbard</td>
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<tr>
<td>1907</td>
<td>Walter Wellman</td>
<td>Second attempt to reach the North Pole by airship</td>
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<tr>
<td>1907–1909</td>
<td>Frederick Cook</td>
<td>Claimed first to the North Pole</td>
</tr>
<tr>
<td>1907–1909</td>
<td>Ernest Shackleton</td>
<td>Ross Island; Ross Ice Shelf; South Magnetic Pole; close approach to the South Pole</td>
</tr>
<tr>
<td>1908</td>
<td>Jameson Adams</td>
<td>First ascent of Mt. Erebus, Ross Island, Antarctic</td>
</tr>
<tr>
<td>1908–1909</td>
<td>Joseph-Elzéar Bernier</td>
<td>Melville and Banks Islands, Canadian Arctic</td>
</tr>
<tr>
<td>1908–1909</td>
<td>Edgeworth David</td>
<td>First to the South Magnetic Pole</td>
</tr>
<tr>
<td>Year(s)</td>
<td>Name(s)</td>
<td>Achievement(s)</td>
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<tr>
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<tr>
<td>1908–1909</td>
<td>Robert Peary</td>
<td>Claimed first to the North Pole</td>
</tr>
<tr>
<td>1908–1910</td>
<td>Jean-Baptiste Charcot</td>
<td>Antarctic Peninsula; Charcot Island</td>
</tr>
<tr>
<td>1908–1912</td>
<td>Vilhjalmur Stefansson</td>
<td>Coronation Gulf and Victoria Island, Canadian Arctic</td>
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<tr>
<td>1909</td>
<td>Walter Wellman</td>
<td>Third attempt to reach the North Pole by airship</td>
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<tr>
<td>1909–1912</td>
<td>Ejnar Mikkelsen</td>
<td>King Frederik VIII Land, East Greenland</td>
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<tr>
<td>1910–1911</td>
<td>Joseph-Elzéar Bernier</td>
<td>Baffin Island</td>
</tr>
<tr>
<td>1910–1912</td>
<td>Roald Amundsen</td>
<td>First to the South Pole</td>
</tr>
<tr>
<td>1910–1912</td>
<td>Robert Falcon Scott</td>
<td>Second to the South Pole</td>
</tr>
<tr>
<td>1910–1912</td>
<td>Nobu Shirase</td>
<td>Ross Ice Shelf; Edward VII Land, Antarctica</td>
</tr>
<tr>
<td>1912–1913</td>
<td>Herbert Schröder-Stranz</td>
<td>North East Land and Spitsbergen, Svalbard</td>
</tr>
<tr>
<td>1911</td>
<td>Edward Wilson</td>
<td>Ross Island, Antarctica</td>
</tr>
<tr>
<td>1911–1912</td>
<td>Victor Campbell</td>
<td>Cape Adare and Inexpressible Island, Victoria Land, Antarctica</td>
</tr>
<tr>
<td>1911–1912</td>
<td>Wilhelm Filchner</td>
<td>Discovery of Luipold Coast, Antarctica</td>
</tr>
<tr>
<td>1911–1912</td>
<td>Thomas Griffith Taylor</td>
<td>Victoria Land, Coats Land, Antarctica</td>
</tr>
<tr>
<td>1911–1914</td>
<td>Douglas Mawson</td>
<td>Discovery of George V Land and Queen Mary Land, Antarctica</td>
</tr>
<tr>
<td>1911–1938</td>
<td>Adolf Hoel</td>
<td>Norwegian expeditions to Svalbard, Franz Josef Land, and East Greenland</td>
</tr>
<tr>
<td>1912</td>
<td>Knud Rasmussen</td>
<td>First Thule Expedition. Across the Inland Ice to Danmark Fjord, North Greenland</td>
</tr>
<tr>
<td>1912–1913</td>
<td>Edward Atkinson</td>
<td>Ross Island and Ross Ice Shelf, Antarctica</td>
</tr>
<tr>
<td>1912–1913</td>
<td>Frank Wild</td>
<td>Queen Mary Coast, Antarctica</td>
</tr>
<tr>
<td>1912–1914</td>
<td>Georgy Brusilov</td>
<td>Northeast Passage, Arctic Ocean, and Franz Josef Land</td>
</tr>
<tr>
<td>1912–1914</td>
<td>Georgiy Sedov</td>
<td>Novaya Zemlya, Russia, and an attempt on the North Pole from Franz Josef Land</td>
</tr>
<tr>
<td>1912–1936</td>
<td>Jean-Baptiste Charcot</td>
<td>Jan Mayen and East Greenland</td>
</tr>
<tr>
<td>1913</td>
<td>Boris Vil'kitkiy</td>
<td>Discovery of Severnaya Zemlya, Russian Arctic</td>
</tr>
<tr>
<td>1913–1914</td>
<td>Bob Bartlett</td>
<td>Wrangell Island, Russian Arctic</td>
</tr>
<tr>
<td>1913–1917</td>
<td>Donald MacMillan</td>
<td>‘Crocker Land’, Ellesmere Island, King Christian Island, North Greenland</td>
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<tr>
<td>1913–1918</td>
<td>Vilhjalmur Stefansson</td>
<td>Discovery of Brock, Borden, Meighen, and Lougheed islands, Canadian Arctic</td>
</tr>
<tr>
<td>1914–1915</td>
<td>Boris Vil'kitkiy</td>
<td>Second transit of the Northeast Passage</td>
</tr>
<tr>
<td>1914–1916</td>
<td>Ernest Shackleton</td>
<td>Weddell Sea, Elephant Island, South Georgia</td>
</tr>
<tr>
<td>1914–1917</td>
<td>Aneas Mackintosh</td>
<td>Ross Island and Ross Ice Shelf, Antarctica</td>
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<tr>
<td>1914–1921</td>
<td>Otto Sverdrup</td>
<td>Relief voyages to the Russian Arctic</td>
</tr>
<tr>
<td>1915–1916</td>
<td>Joseph Stenhouse</td>
<td>Ross Sea, Antarctica</td>
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<tr>
<td>1916</td>
<td>Frank Wild</td>
<td>Elephant Island, South Shetland Islands, Antarctica</td>
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<tr>
<td>1916–1918</td>
<td>Knud Rasmussen</td>
<td>Second Thule Expedition. Peary Land, North Greenland</td>
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<tr>
<td>1918–1925</td>
<td>Roald Amundsen</td>
<td>Northeast Passage and the Arctic Ocean</td>
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<tr>
<td>1920–1922</td>
<td>John Cope</td>
<td>Danco Coast, Antarctic Peninsula</td>
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<tr>
<td>1920–1923</td>
<td>Lauge Koch</td>
<td>Peary Land, North Greenland</td>
</tr>
<tr>
<td>1921–1922</td>
<td>Donald MacMillan</td>
<td>Foxe Basin, Canadian Arctic, and the west coast of Baffin Island</td>
</tr>
<tr>
<td>1921–1922</td>
<td>Ernest Shackleton</td>
<td>South Georgia</td>
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<tr>
<td>1921–1923</td>
<td>Vilhjalmur Stefansson</td>
<td>Wrangell Island, Russian Arctic</td>
</tr>
<tr>
<td>1921–1924</td>
<td>Knud Rasmussen</td>
<td>Hudson Bay and across Arctic North America</td>
</tr>
<tr>
<td>1922</td>
<td>Frank Wild</td>
<td>Southern Ocean, Elephant Island, South Georgia</td>
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<tr>
<td>1922–1925</td>
<td>Joseph-Elzéar Bernier</td>
<td>Canadian Eastern Arctic</td>
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<tr>
<td>1925</td>
<td>Roald Amundsen</td>
<td>Attempted flight to the North Pole</td>
</tr>
<tr>
<td>1925</td>
<td>Donald MacMillan</td>
<td>Northwest Greenland and Ellesmere Island</td>
</tr>
<tr>
<td>1925–1951</td>
<td>Discovery Investigations</td>
<td>Oceanographic voyages and survey work in the Southern Ocean</td>
</tr>
<tr>
<td>1926</td>
<td>Richard Byrd</td>
<td>Claimed first flight to the North Pole</td>
</tr>
<tr>
<td>1926</td>
<td>George Hubert Wilkins</td>
<td>Alaskan Arctic coast</td>
</tr>
<tr>
<td>1926–1945</td>
<td>Bob Bartlett</td>
<td>Arctic voyages of Effie M. Morrissey</td>
</tr>
<tr>
<td>1926–1957</td>
<td>Donald MacMillan</td>
<td>Later Arctic voyages of Bowdoin</td>
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<tr>
<td>Year(s)</td>
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<td>Accomplishments</td>
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<tr>
<td>1926–1959</td>
<td>Lauge Koch</td>
<td>Geological expeditions to East Greenland</td>
</tr>
<tr>
<td>1927</td>
<td>Gino Watkins</td>
<td>Edge Island, Svalbard</td>
</tr>
<tr>
<td>1927</td>
<td>George Hubert Wilkins</td>
<td>Arctic Ocean</td>
</tr>
<tr>
<td>1927–1928</td>
<td>Lars Christensen</td>
<td>First <em>Norvegia</em> expedition to Bouvet Island, Southern Ocean</td>
</tr>
<tr>
<td>1928</td>
<td>Umberto Nobile</td>
<td>Exploration of the Arctic Ocean by airship</td>
</tr>
<tr>
<td>1928</td>
<td>Rudolf Samoylovich</td>
<td>Relief expedition to Svalbard and Franz Josef Land</td>
</tr>
<tr>
<td>1928</td>
<td>George Hubert Wilkins</td>
<td>First aircraft flight across the Arctic Ocean</td>
</tr>
<tr>
<td>1928–1929</td>
<td>Lars Christensen</td>
<td>Second <em>Norvegia</em> expedition to Bouvet and Peter I islands, Southern Ocean</td>
</tr>
<tr>
<td>1928–1929</td>
<td>George Hubert Wilkins</td>
<td>First aircraft flights in the Antarctic</td>
</tr>
<tr>
<td>1928–1930</td>
<td>Richard Byrd</td>
<td>First flight to the South Pole; discovery of Marie Byrd Land</td>
</tr>
<tr>
<td>1928–1930</td>
<td>Laurence Gould</td>
<td>Geological investigations of the Rockefeller Mountains and Queen Maud Mountains, Antarctica</td>
</tr>
<tr>
<td>1929</td>
<td>Alfred Wegener</td>
<td>Umanak, West Greenland</td>
</tr>
<tr>
<td>1929–1930</td>
<td>Hjalmar Riiser-Larsen</td>
<td>Third <em>Norvegia</em> expedition. Discovery of Queen Maud Land, Antarctica</td>
</tr>
<tr>
<td>1929–1930</td>
<td>George Hubert Wilkins</td>
<td>Further exploration of the Antarctic Peninsula by air</td>
</tr>
<tr>
<td>1929–1931</td>
<td>Douglas Mawson</td>
<td>Australian Antarctic Territory. Discovery of Mac. Robertson Land, Princess Land and Banzare Coast</td>
</tr>
<tr>
<td>1930–1931</td>
<td>Lars Christensen</td>
<td>Fourth <em>Norvegia</em> expedition. Antarctic circumnavigation and discovery of Princess Ranghild Coast</td>
</tr>
<tr>
<td>1930–1931</td>
<td>Gino Watkins</td>
<td>King Christian IX Land and the Inland Ice, Greenland</td>
</tr>
<tr>
<td>1930–1931</td>
<td>Alfred Wegener</td>
<td>Umanak, West Greenland, and the Inland Ice</td>
</tr>
<tr>
<td>1930–1932</td>
<td>Georgiy Ushakov</td>
<td>Severnaya Zemlya, Russian Arctic</td>
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<tr>
<td>1931</td>
<td>Louise Boyd</td>
<td>King Christian X Land, East Greenland</td>
</tr>
<tr>
<td>1931</td>
<td>Hugo Eckener</td>
<td>Exploration of the Russian Arctic by airship</td>
</tr>
<tr>
<td>1931</td>
<td>Knud Rasmussen</td>
<td>Sixth Thule Expedition. King Frederik VI Coast and King Christian IX Land, East Greenland</td>
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<tr>
<td>1931</td>
<td>George Hubert Wilkins</td>
<td>First attempt to reach the North Pole by submarine</td>
</tr>
<tr>
<td>1932</td>
<td>Otto Schmidt</td>
<td>First single–season transit of the Northeast Passage</td>
</tr>
<tr>
<td>1932–1933</td>
<td>Knud Rasmussen</td>
<td>Seventh Thule Expedition. King Frederik VI Coast and King Christian IX Land, East Greenland</td>
</tr>
<tr>
<td>1932–1933</td>
<td>Gino Watkins</td>
<td>King Christian IX Land, Greenland</td>
</tr>
<tr>
<td>1933</td>
<td>Louise Boyd</td>
<td>King Christian X Land, East Greenland</td>
</tr>
<tr>
<td>1933</td>
<td>Hjalmar Riiser-Larsen</td>
<td>Attempt to sledge along the coast of Queen Maud Land, Antarctica</td>
</tr>
<tr>
<td>1933–1934</td>
<td>Lars Christensen</td>
<td>Antarctic circumnavigation</td>
</tr>
<tr>
<td>1933–1934</td>
<td>Lincoln Ellsworth</td>
<td>Bay of Whales, Antarctica</td>
</tr>
<tr>
<td>1933–1934</td>
<td>Otto Schmidt</td>
<td><em>Chelyushkin</em> rescue, Bering Strait and Chukchi Sea</td>
</tr>
<tr>
<td>1933–1935</td>
<td>Richard Byrd</td>
<td>Extended exploration of Marie Byrd Land and the Queen Maud Mountains, Antarctica</td>
</tr>
<tr>
<td>1934</td>
<td>Martin Lindsay</td>
<td>Across Greenland’s Inland Ice to King Christian IX Land</td>
</tr>
<tr>
<td>1934–1935</td>
<td>Lincoln Ellsworth</td>
<td>Antarctic Peninsula</td>
</tr>
<tr>
<td>1934–1937</td>
<td>John Rymill</td>
<td>Antarctic Peninsula</td>
</tr>
<tr>
<td>1934–1937</td>
<td>Paul-Émile Victor</td>
<td>King Christian IX Land, East Greenland</td>
</tr>
<tr>
<td>1935</td>
<td>Georgiy Ushakov</td>
<td>Arctic Basin north of Russia</td>
</tr>
<tr>
<td>1935–1936</td>
<td>Lincoln Ellsworth</td>
<td>First Trans-Antarctic flight</td>
</tr>
<tr>
<td>1935–1936</td>
<td>Sandy Glen</td>
<td>North East Land, Svalbard</td>
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<tr>
<td>1936–1937</td>
<td>Lars Christensen</td>
<td>Aerial survey of the coast of East Antarctica</td>
</tr>
<tr>
<td>1936–1941</td>
<td>Thomas Manning</td>
<td>Foxe Basin and Baffin Island, Canadian Arctic</td>
</tr>
<tr>
<td>1937</td>
<td>Louise Boyd</td>
<td>King Christian X Land, East Greenland</td>
</tr>
<tr>
<td>1937</td>
<td>Valeriy Chkalov</td>
<td>Long distance flight over the North Pole</td>
</tr>
<tr>
<td>1937</td>
<td>Rudolf Samoylovich</td>
<td>Oceanographic studies in the northern Laptev Sea, Russian Arctic</td>
</tr>
<tr>
<td>1937–1938</td>
<td>Ivan Papanin</td>
<td>First Arctic drifting ice station</td>
</tr>
<tr>
<td>1937–1940</td>
<td>Konstantin Badigin</td>
<td>Sedov’s drift across the Arctic Ocean</td>
</tr>
<tr>
<td>1938</td>
<td>Louise Boyd</td>
<td>King Frederik VIII Land, East Greenland</td>
</tr>
<tr>
<td>Year</td>
<td>Explorer</td>
<td>Description</td>
</tr>
<tr>
<td>-----------</td>
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<tr>
<td>1938–1939</td>
<td>Lincoln Ellsworth</td>
<td>“American Highland,” Princess Elizabeth Land, Antarctica</td>
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<tr>
<td>1938–1939</td>
<td>Eigil Knuth</td>
<td>King Frederick VIII Land, East Greenland</td>
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<tr>
<td>1938–1939</td>
<td>Alfred Ritscher</td>
<td>Queen Maud Land, Antarctica (&quot;Neu Schwabenland&quot;)</td>
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<tr>
<td>1939–1941</td>
<td>Richard Byrd</td>
<td>U.S. Antarctic Service Expedition</td>
</tr>
<tr>
<td>1940–1941</td>
<td>Richard Black</td>
<td>East Base, Stonington Island, Antarctic Peninsula</td>
</tr>
<tr>
<td>1940–1941</td>
<td>Paul Siple</td>
<td>West Base, Bay of Whales, Antarctica</td>
</tr>
<tr>
<td>1940–1942</td>
<td>Henry Larsen</td>
<td>First west-to-east transit of the Northwest Passage</td>
</tr>
<tr>
<td>1943–1945</td>
<td>Operation Tabarin</td>
<td>British bases built at Deception, Port Lockroy, and Hope Bay</td>
</tr>
<tr>
<td>1944</td>
<td>Henry Larsen</td>
<td>First single season transit of the Northwest Passage</td>
</tr>
<tr>
<td>1946–1947</td>
<td>Operation Highjump</td>
<td>U.S. naval exercise maps 60 percent of Antarctica’s coastline</td>
</tr>
<tr>
<td>1947–1948</td>
<td>Operation Windmill</td>
<td>U.S. naval exercise carries out ground surveys in Wilkes Land, Antarctica, and elsewhere</td>
</tr>
<tr>
<td>1947–1948</td>
<td>Finn Ronne</td>
<td>Stonington Island. Aerial surveys over Filchner-Ronne Ice Shelf and along the Weddell Sea coast, Antarctica</td>
</tr>
<tr>
<td>1947–1950</td>
<td>Eigil Knuth</td>
<td>Peary Land, North Greenland</td>
</tr>
<tr>
<td>1948–1953</td>
<td>Paul-Émile Victor</td>
<td>Greenland Inland Ice</td>
</tr>
<tr>
<td>1949</td>
<td>Thomas Manning</td>
<td>Prince Charles Island, Foxe Basin, Canadian Arctic</td>
</tr>
</tbody>
</table>

**Twentieth Century (second half)**

<table>
<thead>
<tr>
<th>Year</th>
<th>Explorer</th>
<th>Description</th>
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<tbody>
<tr>
<td>1952–1953</td>
<td>Thomas Manning</td>
<td>Banks Island, Canadian Arctic</td>
</tr>
<tr>
<td>1952–1954</td>
<td>Jim Simpson</td>
<td>King Frederik VIII Land, East Greenland</td>
</tr>
<tr>
<td>1955–1956</td>
<td>Operation Deep Freeze</td>
<td>U.S. stations established at Little America V and in McMurdo Sound, Antarctica</td>
</tr>
<tr>
<td>1955–1958</td>
<td>Vivian Fuchs</td>
<td>First crossing of Antarctica</td>
</tr>
<tr>
<td>1956–1957</td>
<td>Operation Deep Freeze</td>
<td>U.S. stations South Pole, Byrd, Ellsworth, and Wilkes established</td>
</tr>
<tr>
<td>1956–1958</td>
<td>Edmund Hillary</td>
<td>First to the South Pole in motor vehicles</td>
</tr>
<tr>
<td>1957–1958</td>
<td>Finn Ronne</td>
<td>Ellsworth Station, Filchner Ice Shelf, Antarctica</td>
</tr>
<tr>
<td>1958</td>
<td>William Anderson</td>
<td>First submarine under the North Pole</td>
</tr>
<tr>
<td>1967</td>
<td>Ralph Plaisted</td>
<td>Attempt to reach the North Pole from Ellesmere Island</td>
</tr>
<tr>
<td>1968</td>
<td>Ralph Plaisted</td>
<td>North Pole from Ellesmere Island by snowmobile</td>
</tr>
<tr>
<td>1968–1969</td>
<td>Wally Herbert</td>
<td>First across the Arctic Ocean</td>
</tr>
<tr>
<td>1979</td>
<td>Dmitriy Shpary</td>
<td>First to reach the North Pole from Eurasia</td>
</tr>
<tr>
<td>1979–1982</td>
<td>Ranulph Fiennes</td>
<td>First circumnavigation of the Earth by its polar axis</td>
</tr>
<tr>
<td>1986</td>
<td>Dmitriy Shpary</td>
<td>First to reach the Northern Pole of Inaccessibility over the ice</td>
</tr>
<tr>
<td>1986</td>
<td>Will Steger</td>
<td>First confirmed dogsled expedition to the North Pole without air support</td>
</tr>
<tr>
<td>1986–1990</td>
<td>Ranulph Fiennes</td>
<td>Four unsuccessful attempts to reach the North Pole on unsupported expeditions</td>
</tr>
<tr>
<td>1988</td>
<td>Dmitriy Shpary</td>
<td>First crossing of the Arctic Ocean from Eurasia to America</td>
</tr>
<tr>
<td>1989–1990</td>
<td>Will Steger</td>
<td>First crossing of Antarctica by its longest axis</td>
</tr>
<tr>
<td>1989–1998</td>
<td>Dmitriy Shpary</td>
<td>Bering Strait</td>
</tr>
<tr>
<td>1990</td>
<td>Borge Ousland</td>
<td>Claimed first unsupported expedition to the North Pole</td>
</tr>
<tr>
<td>1992–1993</td>
<td>Ranulph Fiennes</td>
<td>First unsupported crossing of the Antarctic landmass</td>
</tr>
<tr>
<td>1994</td>
<td>Borge Ousland</td>
<td>First solo, unsupported expedition to the North Pole</td>
</tr>
<tr>
<td>1995</td>
<td>Will Steger</td>
<td>Attempted crossing of the Arctic Ocean</td>
</tr>
<tr>
<td>1996–1997</td>
<td>Ranulph Fiennes</td>
<td>Attempted solo crossing of Antarctica</td>
</tr>
<tr>
<td>1996–1997</td>
<td>Borge Ousland</td>
<td>First solo crossing of Antarctica</td>
</tr>
<tr>
<td>1997</td>
<td>Will Steger</td>
<td>Attempted summer journey from the North Pole</td>
</tr>
</tbody>
</table>

**Twenty-first Century**

<table>
<thead>
<tr>
<th>Year</th>
<th>Explorer</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>2000</td>
<td>Ranulph Fiennes</td>
<td>Attempted unsupported expedition to the North Pole</td>
</tr>
<tr>
<td>2000</td>
<td>David Hempleman-Adams</td>
<td>First balloon flight to the North Pole</td>
</tr>
<tr>
<td>2001</td>
<td>Borge Ousland</td>
<td>First solo crossing of the Arctic Ocean</td>
</tr>
</tbody>
</table>
Entries Listed by Category

*Exploring Polar Frontiers* contains three types of entries: geographical, subject, and biographical/expeditionary. This topic finder lists selected entries by geographical location and subject and shows how these entries are interrelated. Terms in italics (for example, *Countries* or *Canadian Arctic Waters*) serve as headings for related entries but have no corresponding entry in the text. For biographical/expeditionary entries, see Entries Listed in Chronological Order and Polar Timeline.

**ENTRIES BY GEOGRAPHICAL LOCATION**

**ANTARCTICA**

Adélie Land

Antarctic Peninsula

Antarctic Peninsula, East Coast

James Ross Island
Seymour Island
Snow Hill Island
Vega Island

Antarctic Peninsula, North

Antarctic Sound
Dundee Island
D’Urville Island
Joinville Island
Paulet Island
Trinity Peninsula

Hope Bay

Antarctic Peninsula, West Coast

Adelaide Island
Alexander Island
Argentine Islands
Biscoe Islands
Booth Island
Charcot Island

Danco Coast
Gerlache Strait
Lemaire Channel
Marguerite Bay
Neumayer Channel
Palmer Archipelago

Anvers Island
Brabant Island
Hoseason Island
Liège Island
Trinity Island
Wiencke Island

Petermann Island

Australian Antarctic Territory

Enderby Land
George V Land
Kemp Land

Mac. Robertson Land
Oates Land
Princess Elizabeth Land
Ingrid Christensen Coast
Queen Mary Land
Wilhelm II Land

Coats Land
Caird Coast
Ellsworth Land
Filchner-Ronne Ice Shelf
Marie Byrd Land

Queen Maud Land
Prince Harald Coast
Prince Olav Coast
Princess Astrid Coast
Princess Martha Coast
Princess Ragnhild Coast

Ross Dependency

Balleny Islands
Edward VII Land
Oates Land
Ross Ice Shelf
Ross Island
Scott Island

Victoria Land

South Pole

Transantarctic Mountains

Wilkes Land

**ARCTIC OCEAN**

Barents Sea
Beaufort Sea
Chukchi Sea

Bering Strait
Drifting Ice Stations
East Siberian Sea
Kara Sea
Laptev Sea

North Pole
Northeast Passage

Northwest Passage
Canada

Canadian Arctic Waters
- Barrow Strait
- Bellot Strait
- Foixe Basin
- Hudson Bay
- Hudson Strait
- Jones Sound
- Lancaster Sound
- McClure Strait
- Peel Sound
- Prince of Wales Strait
- Prince Regent Inlet
- Wellington Channel

Canadian Islands South of Parry Channel
- Baffin Island
- Banks Island
- Bylot Island
- Ellesmere Island
- Herschel Island
- King William Island
- Prince of Wales Island
- Somerset Island
- Victoria Island

Queen Elizabeth Islands
- Parry Islands
- Bathurst Island
- Beechey Island
- Borden Island
- Brock Island
- Byam Martin Island
- Cornwall Island
- Cornwallis Island
- Devon Island
- Eglinton Island
- Emerald Island
- Lougheed Island
- Mackenzie King Island
- Melville Island
- Prince Patrick Island

Sverdrup Islands
- Amund Ringnes Island
- Axel Heiberg Island
- Ellef Ringnes Island
- King Christian Island
- Meighen Island

Waters between Canada and Greenland
- Baffin Bay
- Davis Strait
- Nares Strait

Greenland
- Greenland, East
- King Christian IX Land
- King Christian X Land
- King Frederik VI Coast
- King Frederik VIII Land
- Greenland, Inland Ice
- Greenland, North
- Peary Land
- Greenland, West

Norway
- Jan Mayen
- Svalbard
- Barents Island
- Bear Island
- Edge Island
- Hope Island
- King Charles Land
- North East Land
- Prince Charles Foreland
- Seven Islands
- Spitsbergen
- Amsterdam Island
- Danes Island
- White Island

Russia
- Bear Islands
- Franz Josef Land
- Alexandra Land
- Alger Island
- George Land
- Graham Bell Island
- Hall Island
- Hayes Island
- Hooker Island
- Jackson Island
- Northbrook Island
- Rudolf Island
- Wilczek Land
- Herald Island
- Kolguev Island
- New Siberian Islands
- De Long Islands
- Lyakhovskiy Islands
- Novaya Zemlya
- Severnaya Zemlya
- Vaygach Island
- Victoria Island
- Wrangell Island

Southern Ocean
- Amundsen Sea
- Bellingshausen Sea
- Peter I Island
- Ross Sea
- Balleny Islands
- Scott Island
South Orkney Islands
Coronation Island
Laurie Island
Signy Island
South Shetland Islands
Clarence Island
Deception Island
Elephant Island
Greenwich Island
King George Island
Livingston Island
Low Island
Nelson Island
Robert Island
Smith Island
Snow Island
Sub-Antarctic Islands
Auckland Islands
Bouvet Island
Campbell Island
Crozet Islands
Heard Island
Kerguelen Islands
Macquarie Island
Prince Edward Islands
South Georgia
South Sandwich Islands
Bellingshausen Island
Bristol Island
Candelemas Island
Cook Island
Leskov Island
Montagu Island
Saunders Island
Thule Island
Vindication Island
Visokoi Island
Zavodovski Island
Weddell Sea

Countries
Argentina
Australia
Austria
Belgium
Brazil
Bulgaria
Chile
China
Czech Republic
Denmark
Ecuador
Finland
France
Germany
Great Britain
British Antarctic Survey
India
Italy
Japan
Korea
Netherlands
New Zealand
Norway
Pakistan
Peru
Poland
South Africa
Spain
Sweden
Switzerland
Ukraine
United States
Uruguay

ENTRIES BY SUBJECT

Cartography and Mapping
Cartography of the Arctic
Surveying and Mapping
Terra Australis Incognita

Commercial Concerns and Exploration
Enderby Brothers
Hudson’s Bay Company
Muscovy Company
Sealing and Antarctic Exploration
Whaling and Antarctic Exploration
Whaling and Arctic Exploration

Expedition Goals
Farthest North
Farthest South
North Pole
Northeast Passage
Northwest Passage
South Pole

Historical Conceptions of the Polar Regions
Cartography of the Arctic
Open Polar Sea
Terra Australis Incognita

Means of Transport
Airplanes
Airships
Balloons
Dogs
Drifting Ice Stations
Man-Hauling
Ponies
Sledges and Sleds
Submarines
Unsupported Expeditions

Indigenous Peoples
Inuit Contribution to Polar Exploration
Norse Arctic Exploration
Pomor Contribution to Arctic Exploration

“New” Explorers
Adventurers
Women Explorers

Poles
Geomagnetic Poles
Magnetic Poles
North Pole
Poles of Inaccessibility
South Pole

Territorial Claims
Adélie Land
Argentine Antarctic Territory
Australian Antarctic Territory
British Antarctic Territory
Chilean Antarctic Territory
Queen Maud Land
Ross Dependency
List of Maps

Antarctica, xxiv
Antarctic Territorial Claims and the Peri-Antarctic Islands, xxv
The Weddell Sea and the Antarctic Peninsula Quadrant, xxvi
Queen Maud and Enderby Quadrant, xxvii
The Indian Ocean Quadrant, xxviii
The Ross Sea Quadrant, xxix
The Antarctic Peninsula and Its Historic Bases, xxx
The South Shetland Islands, xxxi
The Arctic, xxxii
North Greenland, xxxiii
South Greenland, xxxiv
Svalbard, xxxv
Franz Josef Land, xxxvi
Novaya Zemlya and the Kara Sea, xxxvii
Severnaya Zemlya and the Taymyr Peninsula, xxxvii
The Lena Delta and the New Siberian Islands, xxxix
The Bering Strait Region, xl
Hudson Bay, Foxe Basin, and Baffin Island, xli
Ellesmere Island, Devon Island, and the Sverdrup Islands, xlii
The Central and Western Canadian Arctic, xliii

xxiii
Antarctic Territorial Claims and the Peri-Antarctic Islands
Queen Maud and Enderby Quadrant
The Indian Ocean Quadrant
The Ross Sea Quadrant
The Antarctic Peninsula and Its Historic Bases
The Arctic
South Greenland
Svalbard
Severnaya Zemlya and the Taymyr Peninsula
The Lena Delta and the New Siberian Islands
Ellesmere Island, Devon Island, and the Sverdrup Islands
The Central and Western Canadian Arctic
Introduction

On 20 May 1916, three disheveled men arrived unannounced at the Stromness whaling station on the remote sub-Antarctic island of South Georgia. They had lost their ship 1,000 miles further south, spent five months on the ice drifting north, and undertaken two hazardous voyages in open boats to Elephant Island and South Georgia before finally crossing the latter’s exceptionally rugged interior to safety. The familiar but almost unbelievable tale of how Sir Ernest Shackleton overcame impossible odds to bring all of his men back to safety is rightly regarded as one of the classic stories of his or any age. So too the tragic end of Captain Robert Scott and his four companions as they sought to return from the South Pole in 1925 after arriving there one month after Roald Amundsen. These are the best-known stories of polar exploration, but there are numerous others hardly less notable during the 1,000-year history of Arctic and Antarctic exploration by people of predominantly European descent. These explorers, of course, were not the first to reach the Arctic. The Inuit and their predecessors have lived there for millennia. It was indeed his adoption of Inuit travel techniques that enabled Amundsen to beat Scott to the Pole, and the debate has been long and loud as to whether Scott, too, should have made greater use of their knowledge.

Unusually for a work on this subject, the organization of *Exploring Polar Frontiers* is alphabetical rather than chronological. In addition to entries for several hundred expeditions—identified generally by their leader’s name—the alphabetical sequence includes all major areas explored, the countries and commercial concerns sending out expeditions, the hopes and ideas that inspired them, and the techniques used. This structure has advantages. The reader may decide in which order to read entries, chronologically being just one possibility. Each polar region has its own history, as does each country participating in polar exploration. So also have the techniques employed, and—equally significantly—not employed. These histories may be traced by locating the main entries and following the “see also” references. *Exploring Polar Frontiers* is both a print and an electronic book. E-book technology allows links to materials in the e-book to be followed up at the click of a mouse, but the intricate network of relationships between explorers and their expeditions should be at least equally apparent in the printed text. Expeditions indeed can never be understood in isolation. Each has a context, partly set by what previous explorers have done and how others have interpreted their achievements, but also by cultural, political, and economic factors. Polar expeditions are expensive, and sponsoring governments and individuals have to be convinced that they are worthwhile whether the payoff is territorial gain, scientific knowledge, commercial profit, or simply to have their names preserved on the map. What is judged worthwhile at different time periods can be instructive: Denmark’s centuries-long search for its “lost” Norse colonies in Greenland; the British and Dutch investigation of navigable routes to the Far East through the Northwest and Northeast Passages or across the North Pole; the hunt for the great Southern Continent; and then—perhaps strangest of all—the obsession with reaching the North and South geographic poles. Merely to tell where individual explorers went and what they did once there is to leave the story half-told. Why they wanted to go in the first place and who was persuaded to send them is often equally interesting.

With the aid of my contributors and advisory committee I have sought to provide a book that will serve as an introduction to new readers and as an informative resource for others already familiar with the subject. The latter may find the geographical entries particularly instructive, these histories having never been told before. Such readers are also likely to discover among the expedition entries many previously unknown to them. For example, those knowledgeable of Antarctica may wish to extend their interests to Greenland where many lessons were learned that proved fruitful when applied in the south. Given the intention to ensure accessibility to new readers, certain practices have been adopted that might have been different in a strictly academic work. In particular, place-names are generally given in English except where there is no commonly used equivalent. For units of measurement I have followed the practice of F. G. Alberts, compiler and editor of the authoritative reference work *Geographic names of the Antarctic* (1995), who combines English and metric measures (miles and meters). Given the different types of “mile”—Ptolemaic, English, nautical, etc., each of different lengths—conversion to kilometers is clearly fraught with difficulties especially since the type of mile employed in the literature is often unclear. To encourage further reading, in “references and further reading” I have cited reprints and English translations where these exist rather than first editions, since the former are likely to be much easier to acquire. Transliteration of Russian names follows the system published by the United States Board on Geographic Names in 1944 and
approved by the British Permanent Committee on Geographical Names in 1948.

Much of Exploring Polar Frontiers was written in the early hours of the morning and on weekends. The rest was completed at the Scott Polar Research Institute, University of Cambridge, where I had privileged access to the world’s finest polar library. When I was appointed institute librarian in 1989 I had little knowledge of polar exploration but believed it to be a subject in which I could easily become interested. My developing understanding was considerably extended in 1998 by an invitation to lecture on Antarctic history on tourist cruises organized by Quark Expeditions of Darien, Connecticut. With Quark I have since visited the Antarctic Peninsula and South Georgia several times and the North Pole and Franz Josef Land once. It is unlikely that this book would have materialized without these opportunities.

At the Scott Polar Research Institute, it has been my privilege to work alongside several historians of the first rank, both colleagues and visitors. Among the former, Robert Headland has always been more than generous with his support and advice. No one could possibly know more concerning polar history. His Chronological list of Antarctic expeditions and related historical events (1989) is one of the two pillars upon which this book is founded. The other is the equally magisterial Arctic exploration and development c.500 B.C. to 1915 by the institute’s former archivist Clive Holland.

It was as a visitor to the institute that I first met the four members of my advisory committee: William Barr, Ann Savours, Dr. Erki Tammiksaar, and Geoff Renner. Geoff Renner, a former member of the British Antarctic Survey and a veteran of many private expeditions, assisted by sharing his first-hand experience of expeditions and by writing the entry “Surveying and Mapping.” The significance of the contributions of William Barr, Ann Savours, and Erki Tammiksaar are best indicated by the frequency with which their names appear in the recommended further reading. Many entries could not have been written without access to William Barr’s pioneering studies of Russian and German expeditions. Without Barr’s research, for example, the classic story of Herbert Schröder-Stranz’s disastrous expedition to Svalbard in 1912–1913 would be unknown outside a very small circle of German scholars. Erki Tammiksaar has continued Barr’s work; the entries for Peter Anjou and Mathias von Hedenström are particularly indebted to him. Ann Savours has been most generous in sharing with me her great knowledge of Antarctic and Canadian Arctic exploration. Others who did much to help this project on its way include those who contributed entries—David Clammer, Jenny Mai Handford, Sir Ranulph Fiennes, Rear Admiral John Myres, and Dr. David Stam—and those who commented on draft text: Janni Andreassen, Tony Billingshurst, Viktor Boyarsky, Dr. Michael Bravo, Gillian Cartwright, Dr. Peter Clarkson, Dr. Colin Bull, Laurie Dexter, Dr. Paul Dingwall, Dr. Peter Friend, Dr. Tom Griffiths, Dr. Geoffrey Hattersley-Smith, Robert Headland, Sir Wally Herbert, Dr. Brian Powell, Dr. Beau Riffenburgh, Jason Roberts, Dr. Gordon Robin, Peter Rymill, The Hon. Alexandra Shackleton, Hilary Shibata, Ann Simpson, Dr. John Smellie, Peter Speak, Dr. Peter Steele, Dr. Charles Swithinbank, Mike Tarver, Kelly Tyler, Professor Peter Wadhams, Dr. David Wilson, and Dr. Urban Wråkberg.

All these assisted in the writing of Exploring Polar Frontiers, but I alone bear responsibility for the resulting text.

The idea of an encyclopedia of polar exploration was originally conceived by Bob Neville of ABC-CLIO. I am also grateful for the assistance of Carol Smith and her ABC-CLIO editorial team who did much to smooth out the rougher corners of my original text.

I wish to conclude with three personal acknowledgments: to my wife Tze-yun who presented me with three magnificent children during the writing of this book—Jacqueline, Anthony, and John—to Sally Stonehouse, who is always indispensable; and to Leo Chen, Charles Molata, and David Adlam of the Maxillofacial team of Addenbrookes Hospital, who together ensured that three eventful years finally did conclude with the publication of Exploring Polar Frontiers.
**Abruzzi, Luigi, Duke of**  
(1873–1933)

On 24 April 1900, an Italian expedition reached 86°34’N, the farthest north achieved to date. It was led by Luigi Amedeo di Savoia, Duke of the Abruzzi, nephew of the king of Italy and a famous mountaineer.

**Closest to the North Pole, 1899–1900**

Prior to the late nineteenth century, European royalty had been content with sponsoring expeditions to the polar regions and leaving exploration to others. By the 1890s, however, for the first time, much of the Arctic could be visited in comfort by anyone able to afford an adequately powered steamer. Motives for going there varied. Louis-Philippe-Robert, Duc d’Orléans (1869–1926), went initially to hunt big game. The more scientifically minded Albert I, Prince of Monaco (1848–1922), conducted oceanographic research and provided transport for others. Luigi, Duke of the Abruzzi, was different. He was a proven man of action, whose attempt to reach the Pole would be made for the honor of Italy and the Italian monarchy.

Although it claimed to be the oldest royal family in Europe, the House of Savoy had occupied the throne of newly united Italy only since 1861. Luigi was raised in the foothills of the Alps, and many members of his family were expert mountaineers, including his aunt, Margherita, whose influence would secure for him the sponsorship of her husband, King Umberto. In 1896, Italy experienced national humiliation when thousands of Italian soldiers were killed in Abyssinia at Adwa, the worst colonial defeat experienced by any European power in Africa. Realizing that nothing could do more to relieve the prevailing national mood of gloom and self-recrimination, Queen Margherita welcomed Luigi’s proposal to lead an expedition in 1897 to attempt the first ascent of the Alaskan peak Mount St. Elias, and she obtained Umberto’s backing for it. Luigi’s triumphant return from Alaska filled Italy’s cities with welcoming crowds, who were for once happy to celebrate their royal family rather than berate it.

At this date, reaching the North Pole was the greatest sporting challenge of all. In 1895, Norwegian explorer Fridtjof Nansen had attempted to drift across the Pole in his purpose-built vessel *Fram*. When it became clear that *Fram* would pass some way south of the Pole, Nansen had sought to reach it across the ice, getting as far as 86°13’N before being forced to turn south to Franz Josef Land. Several more attempts had been made, including a Swedish plan to float to the Pole by balloon led by Salomon Andrée in 1897. He and his two companions had not been seen since. Abruzzi and his friend and colleague Umberto Cagni, a young naval officer he had met during an around-the-world voyage in 1889–1891, were aware that traveling to the Pole presented similar logistical problems as climbing Mount St. Elias. The chief difficulties posed by this mountain were its atrocious Arctic weather and the more than 60 miles of glacier to be traversed before the climb could begin. The distance to the Pole would be much greater—475 miles—and the journey would be across sea ice rather than land ice. From what they had read, it seemed that their mountaineering skills would prove useful in surmounting the endless pressure ridges that cut across the pack. In February 1898, the two men visited Spitsbergen north of Norway to experience Arctic conditions for themselves. Watched by some rather skeptical Norwegians, they tried skis and snowshoes
before rejecting both. Next January, Nansen received an unexpected visitor, when Abruzzi came to pump him for advice.

By this time, Abruzzi's plans were far advanced. The attempt would be made from Franz Josef Land, and Siberian dogs would provide the motive force—121 dogs were to be obtained in Archangel, Russia. For a vessel, he could afford the best, purchasing the 570-ton steam-whaler *Jason*, whose distinguishing polar history included taking Nansen himself to East Greenland in 1888 before his epic crossing of the Inland Ice and in 1892–1893 and 1893–1894 exploring the Antarctic Peninsula under the captaincy of Carl Anton Larsen. Renaming it *Stella Polare* (Polar Star), Abruzzi placed the ship in the charge of the experienced Norwegian sealer Carl Julius Evensen, who had accompanied Larsen to the Antarctic in 1893–1894 and knew the Arctic as well as any man. In addition to second-in-command Cagni, the party included eight other Italians, four of whom were mountain guides from the Italian Alps, and nine Norwegian seamen experienced in Arctic conditions. Sufficient provisions were carried for four years.

On 12 June 1899, *Stella Polare* sailed from Oslo. After picking up the dogs at Archangel, they set a course for Franz Josef Land, far north across the Barents Sea. Ice conditions were comparatively benign, and by 20 July they were anchored off Cape Flora, Northbrook Island, where a depot was established and scientific observations made. Clearly, the closer to the Pole his base was, the better it would be for the success of the expedition, and Abruzzi's hope was to reach Rudolf Island, or perhaps even “King Oscar Land” or “Petermann Land,” reported by Julius Payer as lying still farther north. When *Stella Polare* eventually forced its way into the British Channel, Abruzzi was surprised to see another ship heading south. It was *Capella*, returning with an American expedition, led by Walter Wellman. Wellman had been compelled to winter in southern Franz Josef Land and had then barely reached Rudolf Island on his “polar” journey, but the more fortunate Abruzzi landed at Rudolf Island two days later on 8 August.

Abruzzi's plan was to winter in *Stella Polare*, for which purpose considerable care had been taken in fitting the ship out to ensure snug accommodations. Their chosen anchorage in Teplitz Bay, however, proved far from snug, and on 8 September strong winds drove the pack into the bay, setting up a pressure ridge that holed the ship almost immediately. The damage was less serious than it appeared at first sight, but with water levels rising in the hold and the decks aslant, Abruzzi was forced to improvise winter quarters on land out of two large tents enclosed within two further layers of canvas. Rather surprisingly, temperatures in the two central tents—for the Italians and Norwegians respectively—never fell below 0°C. While Cagni took charge of repairing the ship, a regular routine of scientific observations was maintained, and Abruzzi refined his plans for the polar journey. In that endeavor, however, he himself was not to participate. While practicing dogsledging, he and Cagni careened over an ice cliff. Neither came to any harm, but in making their way back to the base, several of Abruzzi's fingers became frostbitten. He thought no more of it until some days later, when he noticed that he had lost all feeling in his fingertips. Soon afterward, the tips of three of the fingers on his left hand had to be amputated. Unable for a time even to dress himself, he reluctantly handed over leadership of the Polar Party to Cagni.

On 21 February 1900, twelve men set out toward the Pole with thirteen sledges pulled by 104 dogs and provisioned for forty-five days. Within two days, they returned; Cagni had fallen through the ice and was lucky to be alive. Other members of the party were showing signs of frostbite. It was going to be even harder than they expected. On 11 March, they tried again. Abruzzi had divided his men into three groups, Cagni's Polar Party and two supporting teams who were to turn back at intervals along the way. First due back were Lieutenant Francesco Querini, Norwegian engineer Henrik A. Stökken, and the alpine guide Felice Ollier. Concern arose when this party failed to arrive some time after their expected date. On 18 April, the second support team returned, led by medical officer Dr. Achille Cavalli Molinelli. He had turned back on 31 March, eight days later than Querini, of whom there was still no sign. Most likely, some incident had befallen his party on the sea ice. Ignorant of this probable tragedy, far out on the pack Cagni continued on toward the Pole, accompanied by the alpine guides Giuseppe Petigax, Alessio Fenouillet, and Simone Canepa.

Soon after Molinelli's party had turned back, Cagni decided that by going on two-thirds rations, he could give himself more time and still be back at Rudolf Island in early June before the ice was too much thawed. Each day the loads were becoming lighter, and better traveling conditions could be expected closer to the Pole. The strategy involved considerable risk, but Cagni was determined to get as far north as possible. Indeed, soon his party was covering up to 28 miles a day and on 24 April reached 86°34'N, 21 nautical miles closer to the Pole than Nansen had reached. For some time, it had been clear that the Pole itself was beyond them, and here they turned back, arriving at Rudolf Island on 23 June, after battling for days against westward-drifting ice, which had threatened to deposit them in the Barents Sea. In 104 days, they had traveled 750 miles.

Meanwhile, Abruzzi had searched in vain for Querini. Work too had begun on extricating *Stella Polare* from the ice enclosing it, which in places was 6 meters thick. On 8 August, the ship was finally blasted free with the very last of the gunpowder and eight days later was ready to depart from Rudolf Island. Even then, it was uncertain whether they would have to spend another winter in Franz Josef Land, and it took all of fifteen days to reach Cape Flora, Northbrook Island, through the ice-blocked British Channel. Abruzzi had left a depot there, and there was some slight hope that Querini and his companions might have been able to reach it, but there was no sign of them. Further bad news awaited Abruzzi at the northern Norwegian
port of Hammerfest, where he arrived on 5 September. His uncle, King Umberto, had been assassinated by an anarchist.

Like his ascent of Mount St. Elias, Abruzzi’s attainment of the record farthest north was welcomed in Italy as a national triumph. Indeed, he had achieved more than just a “sporting exploit,” bringing back scientific results sufficient to fill a 723-page volume. This journey, however, was to be his only polar expedition, and though he was to lead many more expeditions, all were to the mountains, the most famous being to the Karakorum Range, in the Himalayas where K2’s Abruzzi Ridge still bears his name.

See also: Andrée, Salomon; Farthest North; Franz Josef Land; Italy; Larsen, Carl Anton (1892–1893, 1893–1894); Nansen, Fridtjof; North Pole; Payer, Julius; Rudolf Island; Wellman, Walter (1898–1899)

References and further reading:

Adams, Jameson (1880–1962)
Although a number of peaks had previously been climbed on the Antarctic Peninsula and off-lying islands, the ascent led by British explorer Jameson Adams of the volcano Mount Erebus during Ernest Shackleton’s first expedition in 1908 was the first significant Antarctic mountaineering achievement. A full account of Shackleton’s first expedition is given under his name.

The First Ascent of Mount Erebus, 1908
Having been forced to select Cape Royds, Ross Island, as his wintering station, Shackleton was unable to lay depots on the Ross Ice Shelf for his planned attempt on the South Pole until the sea separating Cape Royds from Hut Point froze over. With the time and opportunity to attempt a first ascent of the towering volcano Mount Erebus, he had asked his second-in-command, the naval officer Lieutenant Jameson Boyd Adams, to lead the party. It was divided into two groups: an advance party consisting of Professor T. W. Edgeworth David, Dr. Douglas Mawson, and Dr. Alistair F. Mackay, and a supporting party consisting of Adams, Dr. Eric Marshall, and Sir Philip Brocklehurst. The supporting party was less well equipped than the advance party, but Adams was given permission by Shackleton to continue to the summit, should it appear feasible.

On 5 March 1908, the six men set out with one sledge. Initially, rapid progress was made, and they reached 840 meters on the first night and 1,720 meters on the second. Adams now decided that the supporting party should accompany the advance party to the summit, though they had not brought crampons and had to share a cumbersome three-man sleeping bag. Because the slope was too steep for the sledge, it was left, along with the tent poles and most of the food, as a makeshift depot. Much of the remaining food and equipment was transferred to the advance party’s sleeping bags, which had been designed to double as knapsacks. By the third evening, they had reached 2,670 meters. Here a severe blizzard struck, trapping them in their tents for two days. Emerging incautiously from one of the tents, Brocklehurst lost his glove in a sudden gust of wind. Following after it, he was blown into a ravine, from which he escaped with considerable difficulty and no little luck.

On 9 March, they awoke to find that the blizzard had blown itself out. They slowly ascended a 34-degree slope, cutting steps much of the way to reach the rim of the vast former crater, which fell away in a precipice beneath them. Camp was made at 3,475 meters. The next morning, leaving Brocklehurst behind with badly frostbitten toes, they found a way down to the floor of the old crater, where they spent the day exploring

![The crater of Erebus (Shackleton, E. H. 1909. The heart of the Antarctic. London: William Heinemann, vol. 1, p. 188)](image-url)
a weird landscape with lumps of lava exposed beneath the snow and strange ice towers, which were identified by David as fumaroles. From the same camp, the next day they headed for the summit, reaching it after hiking four hours across gentle gradients. At 3,795 meters they found a vast crater, a half-mile wide and 275 meters deep. Continuous hissing sounds could be heard, followed periodically by a dull boom, the signal for a mass of steam to sweep up past them, rising sometimes to 300 meters. After taking photographs and collecting such specimens as they could carry, they returned to Brock-lehurst at the camp, ate a hurried meal, and set off down the mountain. Soon they found themselves above a smooth ice slope, 150–175 meters high. Rather than retracing their steps, they trusted to luck, first launching their loads and then themselves downhill, slowing their progress insofar as they could with their ice axes. This process was to be repeated several times that day, as they descended 1,500 meters in four hours. Still 6 miles out from Cape Royds, with signs of a blizzard coming on, they left their sledge and most of their equipment at the first campsite and hurried back to the hut as fast as they could.

Some nine months later, on 9 January 1909, Adams was one of those with Shackleton when he reached 88°23’S, just 97 nautical miles short of the South Pole. The return journey was a desperately “near-thing,” and Adams was left behind to look after Eric Marshall 30 miles from Hut Point. It took as much courage to stay behind as to go on, but Shackleton got through as he always did. Adams participated in no further expeditions and in later life was notoriously difficult to extract from White’s Club in London. Among expedition colleagues, he was noted for colorful language and a sharp temper, but no one had more grit.

See also: Ross Island; Shackleton, Ernest (1907–1909)
References and further reading:

Adelaide Island (Antarctic Peninsula)

Located at 67°15’S, 68°30’W, this large island—75 miles long and 20 miles wide, with an area of 1,270 square miles—lies off the west coast of the Antarctic Peninsula on the north side of Marguerite Bay. Crowned in the south by Mount Gaudry (2,565 meters) and in the north by Mount Reeves (1,920 meters), it was first sighted on 15 February 1832 by the British sealer John Biscoe and named for Queen Adelaide of Great Britain. At the time, Biscoe believed it to be the most southerly land known, though it is in fact slightly farther north than Alexander Island, which Biscoe also saw, as had Fabian von Bellinghausens before him. Biscoe grossly underestimated its length—8 miles versus 75—for reasons for which no one has yet provided a satisfactory answer, though Jean-Baptiste Charcot suggested that he might have been more distant from it than he thought. It was not until sixty years later that it was next sighted, by the Norwegian whaler Carl Julius Evensen in November 1893 (see Larsen, Carl Anton). When Charcot reached it on 25 December 1904, he found it so much larger than Biscoe’s report that he did not initially identify it as Adelaide and instead named it the Loubet Coast, a name he transferred to the neighboring mainland after his next visit in January 1909. On this occasion, he was able to carry out the first survey, proving it to be indeed an island. Further survey work on the straits separating Adelaide from the mainland was carried out by John Rymill’s British Graham Land Expedition in July and August 1936 and from the Falkland Islands Dependencies Survey (FIDS) Base E in the late 1940s. Base T was established on the island by FIDS in 1961 and operated until 1977. In 1983, it was handed over to Chile and since then has operated as a summer station under the name Teniente Luis Carvajal Villarroel. The major British Antarctic Survey station Rothera, on the southeast coast of the island at Rothera Point, was opened on 1 February 1976, initially under the name Base R. The landing strip there was rebuilt and considerably extended in 1989–1990.

Adélie Land (Antarctica)

Adélie Land is the name given to that sector of continental Antarctica claimed by France. Extending along the coast from Pourquoi-Pas Point at 136°11’E to Point Alden at 142°02’E and lying between Wilkes Land and George V Land, it was discovered in January 1840 by Jules Dumont d’Urville and named by him for his wife. This coast was seen in the same month by the U.S. Exploring Expedition of Charles Wilkes but was not visited again until 1912, when Douglas Mawson established the main base of his Australasian Antarctic Expedition at Cape Denison in George V Land, just to the east of Adélie Land at 67°00’S, 142°40’E. The most significant journey undertaken to this region during the expedition was that of Francis H. Bickerton’s Western Party, which sledged to Cape Robert, 158 miles from Cape Denison, in the process discovering the first Antarctic meteorite.

Although Adélie Land was unvisited by any French expedition for over eighty years, a French presidential decree on 27 March 1924 used Dumont d’Urville’s original discovery to reserve mining, hunting, and fishing rights to Adélie Land, very much with a view to raising revenue by charging licensing fees to whaling ships operating offshore in emulation of the Falkland Island and Ross Sea dependencies established by the British in 1908 and 1923. The limits of Adélie Land were formally defined in the presidential decree of 1 April 1938 as constituting “The islands and territories situated south of the 60-degree parallel of south latitude and between the 136-degree and 142-degree meridians of longitude east of Greenwich.”
In January 1947, Paul-Émile Victor was charged by the French government with organizing and carrying out expeditions on France’s behalf to the polar regions, most notably to Greenland and Adélie Land. To this end, he established Expéditions Polaires Françaises (EPF), a primarily logistical agency with scientific input from relevant national bodies. The first EPF Antarctic expedition sailed from Brest on 26 November 1948 in Commandant Charcot. November was very late in the year to set out for Antarctica, and partly as a consequence, expedition leader André-Franck Liotard was forced to abandon his plan to establish a station on Adélie Land after two abortive attempts to penetrate a belt of pack ice 70 miles thick. EPF was more successful the following year, landing in January 1950 to construct Port-Martin station at 66°49’S, 140°24’E. Eleven men wintered the first year, beginning the scientific program and a topographic survey of the surrounding area in the following season. On 24 January 1952, the main hut burned down. Although seven men remained behind to winter in a previously built refuge on Petrel Island in the Géologie Archipelago, EPF’s activities were severely curtailed until a new station, Dumont d’Urville (66°40’S, 140°01’E), could be opened on Petrel Island in 1956. This all-year station has remained the major French Antarctic base ever since. Situated at times within 60 miles of the South Magnetic Pole, whose position is constantly changing, Dumont d’Urville is well sited for a range of geophysical studies, and ionospheric research in particular has been conducted there since the 1960s. It is also located in a region memorably described by Mawson as “the home of the blizzard,” with cold katabatic winds sweeping down from the high ice plateau. In July 1972, a wind speed of 204 mph was recorded there, the highest yet measured in Antarctica. Antarctica’s thickest ice is also found in Adélie Land, where the ice sheet reaches a maximum depth of 4,750 meters in a depression some 2,000 meters below sea level by the sheer weight of ice.

In 1957, EPF opened Charcot Station (69°22’S, 139°01’E), situated 200 miles inland and close to the South Magnetic Pole. A comprehensive scientific program was conducted there during the International Geophysical Year (IGY), until the station’s closure at the end of IGY in January 1959. See also: Dumont d’Urville, Jules; France; International Geophysical Year; Magnetic Poles; Mawson, Douglas (1911–1914); Victor, Paul-Émile; Wilkes, Charles

References and further reading:

Adventurers

In recent decades, the Arctic and Antarctic have become the chosen theaters for feats of endurance, making of polar travel a form of extreme sport, with self-discovery replacing geographical discovery as the primary expeditionary motive. Although there has long been an element of “adventuring” in polar exploration, at least since it has involved extended overland travel, the origins of modern adventuring may be located in the 1960s with the Arctic expeditions of Dr. Hugh Simpson and Bjørn Staib. Compared with earlier explorers, Simpson and Staib were unconcerned with topographic and other forms of survey; instead, Simpson introduced physiological research as the chief field of scientific study. These features have characterized subsequent adventuring expeditions. Their goals were also to become familiar: (1) to cross the Greenland ice cap—Staib (1962) and Simpson (1965); (2) to reach the North Pole—Staib (1964) and Simpson (1969); and (3) to continue across the Arctic Ocean—Staib (1964).

This encyclopedia contains entries for some of the most notable adventurers—Sir Ranulph Fiennes, David Hempleman-Adams, Børge Ousland, Dmitriy Shparo, Will Steger, and Naomi Uemura—but there are many others. Favorite objectives include reaching the Geographic and Magnetic Poles and crossing Antarctica, Greenland, the Arctic Ocean, and the Bering Strait. Although all are testing, some goals are easier to achieve than others: the North Magnetic Pole, for example, by no means constitutes so severe a challenge as the North Geographic Pole, with which it is sometimes confused. See also: Bering Strait; Fiennes, Ranulph; Greenland, Inland Ice; Hempleman-Adams, David; Magnetic Poles; North Pole; Ousland, Børge; Shparo, Dmitriy; South Pole; Steger, Will; Uemura, Naomi; Unsupported Expeditions

Airplanes

From a later perspective, it seems obvious that airplanes would transform polar exploration. Providing transportation at speed, at altitudes from which it was possible to see great distances, and capable of landing on snow, ice, and water, the airplane was the perfect tool for resolving most of the remaining questions concerning geographical exploration of the Arctic and Antarctic. Were there islands, or even continents, not yet found in the Arctic Ocean? Did the Transantarctic Mountains reach across Antarctica? Was the Ross Sea joined to the Weddell Sea to make two Antarctic continents rather than one? Once equipped with appropriate cameras, clearly airplanes would most wonderfully facilitate mapping. Although their benefits were obvious to pioneers such as Roald Amundsen as early as 1912, it was not until the late 1920s that airplanes began to fulfill their promise and not until after World War II that their superiority over airships was demonstrated beyond doubt.

The first polar flight was made in a balloon by Salomon Andrée in 1897, with catastrophic results, when his steering system failed. Unlike balloons, airships—or dirigibles—were designed to be steered. Their advantages and disadvantages are described in their entry, but throughout the early years of the airplane, airships presented a formidable rival. When tested by Amundsen in 1925 and 1926, the airship proved superior,
reaching not just the North Pole but Alaska across the Arctic Ocean in 1926, whereas airplanes failed to take him beyond 87°44’N in 1925.

Immediately following his return from Antarctica in 1912, Amundsen learned to fly and obtained the first pilot’s license in Norway. He purchased a Farman biplane for use on a proposed drift across the Arctic Ocean but was forced to postpone his expedition when World War I broke out. Douglas Mawson planned to take a Vickers REP monoplane to Antarctica in 1911. Unfortunately, it crashed during a trial flight and was taken south without its wings to serve as an “air-tractor sledge.” The first successful polar flights were made in 1914 by Jan Nagórski (1888–1976)—also known as Jan Isiofovich Nagurskiy—a Polish-born aviator employed by the Russian Navy to search for Georgiy Sedov’s missing North Pole expedition. The flights were made in a Morris Farman biplane with a 70-horsepower engine, maximum speed of 60 miles per hour, and maximum flying endurance of about five hours. After the plane was brought to Novaya Zemlya in disassembled form on Pechora and then reassembled, during August 1914 Nagórski made twenty flights along the west coast at heights of between 800 meters and 1,200 meters, reaching a farthest north of 76°N. In addition to looking for the missing expedition, he also took many photographs and reported on ice conditions to the search vessels.

John Cope had ambitious plans to conduct an aerial survey of Antarctica from King Edward VII Land to the Pole in 1920 but was unable to raise sufficient funds. Sir Ernest Shackleton’s plans to make use of a small Avro seaplane on his last expedition (1921–1922), were prevented by his untimely death, and the plane remained uncollected at Cape Town. When Amundsen was at last able to resume his interest in aviation in 1923, he was no more successful than before; the ski-undercarriage of his Junkers plane buckled on landing before he could attempt to fly from Alaska to the North Pole. Meanwhile, Odd Dahl wrecked his ski-equipped Orion when landing on sea ice north of Russia, where Amundsen’s Maud was still seeking a way into the polar pack to begin its much-delayed drift across the Arctic Ocean. In truth, although explorers could see the potential of airplanes, airplane technology had yet to catch up with their dreams.

Amundsen’s flight toward the North Pole with Lincoln Ellsworth in Dornier Wal seaplanes in 1925 is described in the entry under his name. In the same year, Richard Byrd conducted the first flights in the Canadian High Arctic, logging fifty hours and more than 5,000 miles in three Loening biplane
amphibians. With technology rapidly improving, Byrd claimed the Pole on 9 May 1926 in the tri-motor Fokker VII-3m monoplane Josephine Ford. At the same time, George Hubert Wilkins began a three-year campaign of air exploration from Alaska, which culminated in 1928 with his first crossing of the Arctic Ocean in a single-engine Lockheed Vega ski-plane. This achieved, Wilkins next turned his attention to the Antarctic to make the first flights there from Deception Island, again in Lockheed Vega monoplanes. On 29 November 1929, Byrd reached the South Pole in the Ford tri-motor monoplane Floyd Bennett, the most newsworthy exploit of an expedition (1928–1930) otherwise distinguished as the first effective application of airplanes in an integrated campaign to explore new territory. Airplanes proved indispensable when a race developed between the Australian Mawson and the Norwegian Hjalmar Riiser-Larsen to claim territory in the Enderby Land/Queen Maud Land region. Byrd’s second Antarctic expedition (1933–1935) extended the scientific use of airplanes, enabling him to explore large areas of Marie Byrd Land and the Transantarctic Mountains. While Byrd was revolutionizing polar logistics, Ellsworth’s first transantarctic flight in the Northrop prototype monoplane Polar Star between 22 November and 4 December 1935 served as a reminder that the Heroic Era of polar aviation was far from over.

Meanwhile, Soviet pilots had explored the use of airplanes for ice reconnaissance in support of shipping along the Northern Sea Route. The first Arctic flight was made in 1924 over the Kara and Barents Seas by Boris Chukhnovskiy (1898–1975) in a Junkers floatplane. Five years later, the Soviet Arctic Air Service was organized. By 1934, it was conducting winter as well as summer reconnaissance duties under the supervision of Otto Shmidt’s Chief Administration of the Northern Sea Route, and from 1937 Soviet aviators were routinely landing on the Arctic Ocean pack, something not voluntarily done by others until the 1950s. Such expertise was a prerequisite for the establishment of the first drifting ice station (see Papanin, Ivan), which was followed soon afterward by Valeriy Chkalov’s flight between Moscow and Washington State via the North Pole in a Tupolev ANT-25. Both projects were intended to demonstrate Soviet supremacy in Arctic aviation.

Elsewhere in the Arctic, Gino Watkins pioneered the use of airplanes for topographic surveys in East Greenland, where two de Havilland Gypsy Moth biplanes enabled him to extend a survey inland of the coastal range for the first time in 1930–1931. Watkins’s work was continued on a larger scale in 1932 by Danish expeditions led by Knud Rasmussen and Lauge Koch, using Heinkel HM II float seaplanes, and by a Norwegian expedition led by Anders Orvin, using a Lockheed Vega (see Hoel, Adolf). Koch’s later surveys also relied heavily on airplanes. The first comprehensive air survey of Svalbard was conducted by Hoel in 1936 and 1938.

Advances in plane capability and awareness that the Arctic Ocean constituted a critical theater of operations, should hostilities break out with the Soviet Union after World War II, resulted in a shift of focus farther north. First to act was Great Britain, organizing its first Aries flight in 1945 just two days after Victory-in-Europe Day. Aries was a converted four-engine Lancaster, whose payload of bombs had been replaced by fuel tanks. The expedition’s objectives were to investigate problems of navigation in high latitudes, make a magnetic survey in the vicinity of the North Magnetic Pole, test the reliability of magnetic compasses nearby, and observe the effects of polar flying on aircrew. The first two flights were made to the North Pole and North Magnetic Pole, respectively. The United States began a secret program of flights from Alaska the following year. B-29 Superfortresses flew daily to the North Pole and across the Bering Sea. The program’s aim was to locate forward bases, preferably islands, where planes might be stationed. Several ice islands, but no land, were discovered, which led in turn to the establishment of the U.S. ice station program in 1952. Regular U.S. Navy flights across the Arctic Ocean from Thule Air Base, North Greenland, began in 1962 under the codename Project Birdseye. Intended to assist submarine operations, they reported on ice and weather conditions and conducted a range of scientific studies.

All this time, the Soviet Union was at least equally active. From 1941 on, the Arctic Institute of Leningrad pioneered the “flying laboratory method,” whereby “leapfrog detachments” occupied short-term stations scattered across the Arctic Ocean to conduct soundings and make temperature and salinity measurements. Each detachment consisted of several scientists and specialist support personnel equipped with a range of airplanes. One team, led by Aleksandr Kuznetsov and piloted by Ivan Cherevichnyy, landed at the North Pole on 23 April 1948. It was most probably the first occasion on which anyone stood at the Pole (Pala 1999). Soundings made during this visit were also the first to indicate the presence of submarine mountain ranges: as the team drifted on the ice, a sudden reduction in observed depth was later identified as an underwater mountain ridge, which they named the Lomonosov Ridge. High-latitude air expeditions continued until the
breakup of the Soviet Union in 1991. From 1950, the duties of personnel at these detachments included the establishment, supply, and evacuation of drifting ice stations and, more recently, the servicing of automatic weather stations.

Airplanes have proved no less essential in postwar Antarctica, where most national programs today depend upon them. Standout achievements include the photographing of 60 percent of the continental coastline during Operation Highjump (1946–1947) and the establishment of the U.S. station Amundsen–Scott at the South Pole by Operation Deep Freeze in 1956–1957.

See also: Airships; Amundsen, Roald; Andrée, Salomon; Balloons; Byrd, Richard; Chkalov, Valeriy; Cope, John; Drifting Ice Stations; Ellsworth, Lincoln; Hoel, Adolf; Koch, Lauge (1926–1959); Mawson, Douglas; Operation Deep Freeze; Operation Highjump; Papanin, Ivan; Rasmussen, Knud (1932–1933); Risier-Larsen, Hjalmar (1929–1930); Sedov, Georgiy; Shackleton, Ernest (1921–1922); Shmidt, Otto; Watkins, Gino (1930–1931); Wilkins, George Hubert

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Airships
Although never employed in the Antarctic, airships, or dirigibles, played an important role in Arctic exploration, particularly in the 1920s and early 1930s. Following the pioneering flights by Walter Wellman, there were three major airship expeditions. On the first of these, in 1926, the North Pole was seen, quite possibly for the first time, and the Arctic Ocean crossed. The second, in 1928, was a notorious disaster. The third, in 1931, was an eminently practical demonstration of the airship’s capabilities to survey otherwise inaccessible lands.

Dirigibles are hydrogen-filled powered airships that, unlike balloons, can be steered and have means of self-propulsion. Their movements are thus influenced but not determined by wind direction and strength. It was not until the innovations introduced in 1897 by Alberto Santos-Dumont, and in particular his construction of rigid-body airships with aluminum-sheeted hulls, that the potential of the airship for Arctic exploration became clear. It was unfortunately too late to benefit the Swedish explorer Salomon Andrée, who was forced to make use of the inferior balloon in his disastrous attempt to reach the North Pole in 1897. The first Arctic airship expeditions also failed to make full use of the new technology. They were organized by the Chicago-based journalist Walter Wellman, employing an airship made in Paris by L. Godard. However, to facilitate transport to Spitsbergen, instead of having a rigid body and aluminum hull, Wellman’s airship Americi had no interior frame and maintained its shape solely through hydrogen pressure within an envelope of cotton and silk coated in rubber. After a completely abortive first attempt in 1906, Wellman managed flights of four and a half hours and 30 miles, respectively, in 1907 and 1909, accomplishing little but providing good copy for his newspaper.

Further improvements in airship technology followed during World War I, many being introduced by Count Ferdinand von Zeppelin. As a result, in 1926 Roald Amundsen, Lincoln Ellsworth, and Umberto Nobile not only succeeded in flying Norge to the North Pole but continued on to complete the first aerial crossing of the Arctic Ocean, finally landing near Nome, Alaska, after a journey lasting seventy hours, forty minutes. In 1928, Nobile sought to repeat this success in Italia, only to meet disaster on return from the Pole, when ice clogging the controls caused the airship to crash. To combat well-publicized accidents such as that one, Hugo Eckener, director of the Zeppelin Airship Company, undertook an Arctic demonstration flight to show off the superior capabilities of his airship Graf Zeppelin over the increasingly competitive airplane. Despite its effectiveness as a publicity stunt—one aspect of which was a planned exchange of passengers at the North Pole with the submarine Nautilus—and a successfully accomplished aerial photographic survey of Novaya Zemlya and the newly discovered Severnaya Zemlya, two archipelagos north of the Soviet Union, Eckener’s exploit could not stave off the inevitable, this being the last of the great airship expeditions.

It was not, however, the last use of airships in the Arctic. In August 1958, the U.S. Naval Air Development Center conducted an experimental flight using Snow Goose, a standard ZPG-2 airship 106 meters long, 33.5 meters high, and powered by two engines. The purpose was to assess the usefulness of airships in providing logistical support to Arctic research. After taking off from Churchill, Manitoba, on 7 August, Snow Goose flew north to reach Resolute, Cornwallis Island, after a flight lasting twenty-four hours. From Resolute, it continued another seventeen hours to the drifting ice station T-3, then at 79°N, 121°W. The planned landing was prevented by fog, though mailbags were dropped before heading back to Churchill, which was reached after a twenty-seven-hour flight. The operation proved the suitability of airships for low-altitude visual and photographic reconnaissance work in the Arctic. It also showed them to be capable of providing suitably stable platforms for a range of scientific investigations. Mooring and ground-handling facilities at Resolute, however, were found to be inadequate, and as a result the intended program of several flights was cut to one.

It is by no means improbable that airships may one day return to the Arctic. For cheap, long-distance transport, only ships can compare.


**Alexander Land (Antarctic Peninsula)**

Located at 71°00'S, 70°00'W, this 16,700-square-mile island lies to the west of the base of the Antarctic Peninsula. It is 240 miles long and varies in width from 150 miles in the south to 50 miles in the north, being separated from the Peninsula by George VI Sound and Marguerite Bay. There are several mountain ranges, the highest peak being Mount Stephenson (ca. 3,100 meters) in the Douglas Range.

The island was first seen on 27 January 1821 by Fabian von Bellingshausen, who named it Alexander I Land for the Russian tsar. It was subsequently seen from a distance by John Biscoe in February 1832, Carl Evensen in November 1893 (see Larsen, Carl Anton), Adrien de Gerlache in February 1898, and Jean-Baptiste Charcot in January 1905. In January 1909, Charcot was able to come within 2 miles of the ice cliffs forming the island's coast on his second expedition, by far the closest approach to date. Although Charcot believed that it was an island and mapped it as such, firm proof was not provided until the discovery of George VI Sound by John Rymill's British Graham Land Expedition (BGLE) in 1935, which also obtained the first air photographs.

Along with Charcot Island, Alexander Island was the preferred location for East Base on the U.S. Antarctic Services Expedition (1939–1941). However, USS *Bear* was unable to penetrate the thick ice customarily surrounding this island, and Stonington Island in Marguerite Bay was chosen instead. In 1940 Finn Ronne and Carl Eklund established its insularity beyond doubt, on a sledge journey reaching to the farthermost end of George VI Sound where it met the sea. The expedition also conducted a detailed aerial survey. Further aerial photographs were obtained by the Eastern Group of Operation Highjump, but it was not until the Ronne Antarctic Research Expedition that nearly complete coverage was obtained. The first accurate map was compiled in 1959 by the Falkland Islands Dependencies Survey (FIDS), on the basis of these photographs and ground surveys conducted from Base E on Stonington Island from 1948 to 1950.

In February 1961, the FIDS Base KG—Fossil Bluff (71°20'S, 68°17'W)—was established on the east coast of Alexander Island at a location where BGLE had found excellent fossils in 1936. This station was manned throughout the year in 1961–1962 and from 1968 to 1975 by the British Antarctic Survey, since which time it has operated as a summer station only.

**Alexandra Land (Franz Josef Land)**

Located at 80°40'N, 47°00'E, Alexandra Land is the westernmost island in Franz Josef Land, Russia. At 411 square miles, it is the fourth-largest island in that archipelago, and in the north includes one of its few extensive ice-free areas. Although possibly first seen about 1865 by the Norwegian walrus hunter Nils Rønnbeck, discovery is generally credited to Benjamin Leigh Smith in 1880, who named it for Princess Alexandra, wife of Edward, Prince of Wales. As originally conceived by Smith, Alexandra Land included “Prince George's Land”—now George Land—the separate insularity of which was established by Frederick Jackson in 1897. The official Russian name is Zemlya Aleksandry.

Although Smith did not land and was unable to see west of Cape Lobley, a boat party led by Jackson charted the southern coast as far as Cape Mary Harmsworth in July and August 1895. This cape, named for the wife of Jackson's sponsor, Alfred Harmsworth, is the westernmost point in Franz Josef Land. In spring 1897, accompanied by Albert Armitage, Jackson sledged along the northern and western coasts to this cape, looking in vain for the mythical island “Gillis Land” from a high point on the nearby ice cap, before following the south coast back toward his base on Northbrook Island. In August of the same year, Jackson landed briefly from *Windward* to collect natural history specimens before departing for London. Cape Mary Harmsworth was also the location where Valerian Albánov, navigator of an expedition led by Georgiy Brusilov, scrambled ashore on 8 July 1914 with nine companions after traveling over the sea ice from *St. Anna*, beset some 70 miles north of Rudolf Island.

Alexandra Land was considered one of the most likely places to have been reached by survivors from Umberto Nobile's *Italia* expedition, and several expeditions searched for them there in 1928: Hjalmar Riser-Larsen sailed along the west and south coasts in *Hobby*: Oscar Wisting searched the west coast in S/S *Veslekari*; and the Soviet icebreaker *Sedov* explored the south coast and landed a party to search the vicinity of Cape Lobley. Two years later, Gunnar Horn's Norwegian expedition in *Bratvaag* landed briefly at Cape Mary Harmsworth.

During World War II, the secret German meteorological station Schatzgräber was established at Cambridge Bay on the east coast. In September 1943, ten men were landed from the weather ship *Kehdingen* escorted by the submarine *U-387*. The station was supplied from the air by two airdrops in May 1944.
Not long afterward, many in the party developed trichinosis after eating raw polar bear. Initially assuming that their illness was caused by some contagious disease, the base leader prohibited all outside contact, and a telegram for help was only sent when he too became ill and had to hand over command. In the meantime, meteorological work ceased because too few men were fit to send up the weather balloons. Schatzgräber was finally closed and its staff evacuated by airplane in July 1944. There were plans to reopen it later in the war, but they were thwarted when the party assigned was diverted instead to East Greenland following the capture of a station there. In October 1944, U-387 was sent to erect an automatic weather station in its place but was unable to reach Cambridge Bay through heavy ice.

The landing strip constructed by the Germans was later incorporated into a Soviet military station and airfield. Established in 1952, Nagorskoye (80°48'N, 47°30'E) was named for Yan Iosifovich Nagurskiy, a Polish-born aviator whose flights over Novaya Zemlya in search of Georgiy Sedov's missing expedition marked the first successful employment of airplanes in the Arctic. Following a period of use as a Moscow University Institute of Geography summer field station, this station is currently maintained by the military and is the only station remaining open in Franz Josef Land (as of 2002).

See also: Armitage, Albert; Brusilov, Georgiy; Franz Josef Land; Germany; Jackson, Frederick (1894–1897); Nobile, Umberto; Riiser-Larsen, Hjalmar; Sedov, Georgiy; Smith, Benjamin Leigh

References and further reading:

Alger Island (Franz Josef Land)
Located at 80°23'N, 56°00'E, Alger Island is a small island in Franz Josef Land, Russia, that lies north of McClintock Island and just south of Markham Strait, which separates the southern central islands of the archipelago from the northern central group. It was discovered by the relief vessel Capella in late July or early August 1899 during Walter Wellman's expedition and probably named for Russell Alexander Alger (1836–1907), U.S. secretary of war from 1897 to 1899 and later senator from Michigan. Its official Russian name is Ostrov Aldzher.

The island's comparatively ice-free coast enabled Evelyn Baldwin to establish two bases there in 1901, his winter quarters at Camp Ziegler—named for his sponsor William Ziegler—and West Camp Ziegler some 6 miles farther west, consisting of two and one portable huts, respectively. Baldwin had wished to winter farther north in Franz Josef Land but chose Alger Island instead when he found all channels to Rudolf Island blocked by ice. His ship America was moored close to the main camp, providing accommodation for the majority of expedition members, with just the seven Russians wintering at Camp Ziegler itself to look after the dogs and ponies. America left Alger Island on 1 July 1902.

On 6 March 1905, Russell Williams Porter and G. Duncan Butland reached Camp Ziegler after having lost their sledge and most of their equipment under a snowdrift on Hooker Island. They were on their way from Cape Flora, Northbrook Island, to join up with their expedition leader, Anthony Fiala, at Rudolf Island. At Camp Ziegler, much to their surprise, they found two other members of the expedition—Charles E. Rilliet and seaman Mackiernan—who had wintered in Baldwin's huts, which now lay deeply buried in snow. Leaving Butland behind with Rilliet, Porter continued on three days later with Mackiernan. When Fiala closed his base on Rudolf Island in late May 1906, he chose to await the relief ship at Camp Ziegler rather than stay at Cape Flora with the many dissident members of his expedition.

Alger Island was among the places visited in 1930 by Gunnar Horn in the Norwegian vessel Bratvaag. In the dispute over the Soviet Union's annexation of Franz Josef Land in 1926, Fiala had offered the camps associated with his and Baldwin's expeditions to the Norwegian government. His offer was not taken up and in any case would have done nothing to prevent the Soviet flag being raised over Camp Ziegler, as Horn then observed. No doubt it had been erected by a sledding party from the nearby Soviet station on Hooker Island.

See also: Baldwin, Evelyn; Fiala, Anthony; Franz Josef Land; Wellman, Walter (1898–1899)

References and further reading:

Amdrup, Georg (1866–1947)
Lieutenant Georg Carl Amdrup was one of a series of Danish naval officers who, between 1829 and 1907, were largely responsible for mapping the east coast of Greenland. The section of coast surveyed by Amdrup was particularly inaccessible.

The Unreachable Coast, 1898–1899
In the constricted waters of the Denmark Strait, between Greenland and Iceland, the ice brought south from the Arctic Ocean by the East Greenland Current is jammed tight against the East Greenland coast. All that was known of this region was a rough sketch compiled by the French explorer Jules de Blosseville in 1833 and left in Iceland before his vessel was wrecked, and he and his crew never seen again. Farther north, between 69° and 70°15'N, the coast had been roughly surveyed by William Scoresby Jr. in 1822 and by Carl Hartvig Ryder in 1892, but on both occasions only from the sea. The task set for Amdrup was thus to explore and survey the region between Ammassalik and Scoresby Sound. The expedition was organized by the Commission for Geological and Geographical Investigations in Greenland and sponsored by the Carlsberg Fund.

Amdrup had one great advantage over Ryder, the leader of the previous Danish expedition. In 1894, a station had been
established by the explorer Gustav Holm at Ammassalik. It would provide an ideal logistics base for his explorations, which accordingly were divided into two phases. During a preliminary expedition to Ammassalik, he planned to extend Holm’s survey farther north by land, taking the opportunity to lay depots as far north as possible to assist his second expedition, during which he intended to coast south in a small boat.

Accompanied by botanist Christian Kruuse, medical officer and ornithologist Knud A. E. Poulsen, and two sailors, A. Jakobsen and Søren P. Nielsen, on 16 August 1898 Amdrup sailed from Copenhagen in the Royal Greenland Trading Company vessel *Godthaab*, reaching Ammassalik on 31 August.

Before winter set in, a sledging journey was undertaken between 10 September and 3 October, which succeeded in laying a depot at 66°07’N. Meteorological, magnetic, and astronomical studies were conducted at Ammassalik during the winter, which also provided opportunities for extended observation of the customs and culture of the East Greenland Inuit. Amdrup’s expedition was only the second to winter there. Following a brief reconnaissance inland in early February, the main journey north began on 22 February. Traveling in a lightly built boat, 7 meters long, they were initially greatly impeded by ice, as was to be expected so early in the year and, even by 11 July, Amdrup’s party had reached no farther than Kangerdlugssuatsiaq, just 80 miles from Ammassalik. By that time, however, conditions were improving, and they were able to get on more rapidly, reaching Agga Island at 67°22’N on 19 July. Beyond, the way north was completely blocked by ice, so Amdrup decided to lay his depot at a well-marked spot on the nearby mainland before returning to Ammassalik, where he arrived on 18 August. On 3 September, he and his companions sailed back to Copenhagen. In addition to extending his topographic survey a significant distance north of Ammassalik and conducting a range of scientific studies, Amdrup brought back large ethnographic collections.

*Five Hundred Miles in an Open Boat, 1900*

For his second expedition, Amdrup had planned to reach East Greenland much farther north and then follow the coast south, first by ship and then by boat. He acquired the famous expedition vessel *Antarctic* for that purpose, and his party included several who would later lead their own expeditions or make distinguished contributions on those led by others, among them the geologist Dr. Otto Nordenskjöld, geodesist Johan Peter Koch, and sailor Ejnar Mikkelsen.
On 14 June 1900, *Antarctic* sailed from Copenhagen. Reaching the coast via Iceland on 11 July at about 74°N, the party made a landing on Sabine Island to collect fossils. *Antarctic* then coasted south to Cape Dalton, some way south of Scoresby Sound, beyond where the ice was packed too tightly for navigation. Here, at 69°24'N, Amdrup, Mikkelsen, and two others were landed and a hut was built before *Antarctic* departed north again, now under the command of deputy-leader Dr. Nikolaj E. K. Hartz, who was charged with exploring north to King Oscar Fjord at 72°N.

On 22 July, Amdrup and his three colleagues set out south in the 5.5-meter rowing boat, *Agga II*. Provisioned for two and a half months and with a good supply of ammunition, they were prepared to winter on the coast if necessary. To assist in hauling the boat over ice, all supplies were kept as light as possible and stored in watertight boxes designed to float should their boat sink. Through skill and good fortune, such precautions proved unnecessary, and on 2 September, Amdrup reached Ammassalik, having conducted a detailed coastal survey for 500 miles from Cape Dalton.

Meanwhile, Hartz in *Antarctic* had discovered Carlsberg and Nathorst fjords to the north of Scoresby Sound and sent out parties to explore Jameson Land on foot. After a brief return to Iceland, on 12 September *Antarctic* arrived at Ammassalik to pick up Amdrup, who returned to Copenhagen on 4 October.

A live musk ox and ten lemmings were included among the fine natural history collections brought back. Ethnographic items consisted chiefly of objects discovered in Inuit graves and abandoned huts. Amdrup saw no sign of current Inuit occupation of the coast, apart from a ruined house at Nualik (67°18'N), where no fewer than thirty-eight bodies were found inside. From this tragedy, he inferred that the Inuit were still attempting to colonize the region, where signs of their hunting activity were widespread.

In a distinguished subsequent career, Amdrup retained his interest in Greenland and in East Greenland in particular. In 1913, by then a vice admiral, he was appointed a member of the Greenland Commission, and in 1937 took over responsibility for publication of its famous journal, *Meddelelser om Grønland*.

**References and further reading:**


**Amund Ringnes Island (Canada)**

Located at 78°00'N, 96°00'W, this member of the Sverdrup Islands lies west of Axel Heiberg, east of Ellef Ringnes, and north of Cornwall Islands. It is separated from them by Massey Sound, Hassel Sound, and Hendriksen Strait, respectively. The presence of land west of Axel Heiberg was first noted by Otto Sverdrup on 16 April 1900. Gunnar Isachsen and Sverre Hassel were sent to investigate and landed briefly on 20 April. These two returned the following year, traveling west from Cape Ludwig along the south coast before crossing to Ellef Ringnes Island. They returned via Cape Sverre, the island’s northernmost point, and along the east coast. Sverdrup named the island for the elder of two brewing brothers, sponsors of his expedition. It has an area of 2,029 square miles.

The next visit occurred on 15 June 1908, when Frederick Cook reported landing on a small island off the northwest coast, the first landfall on his claimed return journey from the North Pole. Eight years later, Donald MacMillan traveled along
the south coast on his way west to King Christian Island. Later in 1916, Vilhjalmur Stefansson traveled along the west coast heading south from Meighen Island. Neither landed; the next landing was made in 1929 by the Royal Canadian Mounted Police (RCMP) patrol led by A. H. Joy.

The island was one that the RCMP planned to search in 1932 for signs of Hans Krüger’s missing three-man expedition, last seen two years before. In the event, Constable R. W. Hamilton’s patrol was prevented from doing so by lack of dog food. The possibility that this omission could have been significant was raised many years later in 1957, when Dr. Ray Thorsteinsson of the Geological Survey of Canada found a message left by Krüger on Meighen Island, in which he stated his intention to make for Cape Sverre. When Thorsteinsson searched the island in August 1958, however, no evidence was found indicating that Krüger had in fact reached it, and he therefore concluded that Krüger and his companions had either died on the way or else had opted to land somewhere else as yet unknown.


References and further reading:


Amundsen, Roald (1872–1928)

Best known as the man who beat Robert Falcon Scott to the South Pole, the Norwegian explorer Roald Amundsen can claim achievements unmatched by any other polar explorer. In addition to the South Pole, they include the first transit of the Northwest Passage, the third transit of the Northeast Passage, the first flight across the Arctic Ocean, and—more controversially—the first sighting of the North Pole. The last claim is contentious in that it is true only if neither Frederick Cook nor Robert Peary reached the Pole by sledge nor Richard Byrd by air.

Almost alone among his contemporaries, Roald Engelbregt Gravning Amundsen determined from an early age that he was to be a polar explorer and took every step to acquire the skills necessary for his chosen career. Growing up in Norway, he benefited from national expertise in skiing and in all the skills necessary for his growing expertise. Although never practicing as a doctor, he learned enough as a medical student to be able to dispense with the need for a doctor on his later expeditions. The next requirement was to obtain credible experience as a seaman in the polar regions, and this he did, first by signing up on a sealing voyage to the Arctic and then by joining Adrien de Gerlache’s Antarctic expedition as first mate.

The First Transit of the Northwest Passage, 1903–1906

Amundsen’s dream of being the first to sail through the Northwest Passage was aroused in boyhood by the achievements of his compatriot Fridtjof Nansen in crossing Greenland in 1888 and coming closest to the North Pole in 1895. While wintering in the Antarctic with Gerlache, Amundsen hit upon the idea that a transit of the Northwest Passage would be more likely to be funded if combined with studies to determine the current location of the North Magnetic Pole. After receiving instruction in magnetism from the leading authority Georg von Neumayer, Amundsen next obtained Nansen’s influential backing. The money came in slowly, but by 1901 enough had been raised to purchase the 47-ton herring boat Gjøa and equip it with a 13-horsepower engine. In addition to Amundsen, the vessel would have a crew of just six: the Danish naval lieutenant Godred Hansen as second-in-command, mates Anton Lund and Helmer Hanssen, engineer Gustav Juel Wiik, assistant Peder Ristvedt, and cook Adolf Lindstrøm. All but the two mates were also given responsibility for scientific duties: Hansen would take charge of surveying and astronomy, and Ristvedt of meteorology, Lindstrøm of botany and zoology, and Wiik would assist Amundsen with the magnetic observations.

Fitting out an expedition is an expensive business, and not for the last time, Amundsen found his funds insufficient to meet the claims of his creditors. Faced with the prospect of having to abandon the voyage, he called his colleagues together to explain the situation and persuaded them to leave secretly overnight. Thus, only a few close associates were there to see Gjøa depart from Christiania (present-day Oslo) late on 16 June 1903. Twelve sledge dogs with further supplies were collected in West Greenland before Gjøa headed north and west to enter Lancaster Sound, where Beechey Island was reached on 22 August. There Amundsen landed to conduct the magnetic observations that were to dictate the future course of his expedition. Recent studies had suggested that the Magnetic Pole might now be near Melville Island. If so, he would continue west to winter as close to this island as possible. The needle, however, pointed not west but south. That was good news in that the Northwest Passage was also most likely to be found in that direction.

For once, Peel Sound was open to the south. Through persistent fog and with its compass useless so close to the Pole, Gjøa made its way to Cape Adelaide, on the Boothia Peninsula,
where the Pole had been located in 1831 by James Clark Ross. Dense ice now lay to the west, brought down through McClintock Channel. It was this way that Sir John Franklin had gone in 1846, to become beset in Victoria Strait soon afterward with the loss of all his men. Fortunately, Amundsen knew of other straits, east rather than west of King William Island. They were shallow and partially blocked by islands but probably navigable. This decision was the crux of his voyage. Farther south, off mainland North America, open water was known to reach west to Bering Strait. No one, however, had sailed before through James Ross and Rae Straits. With the return of the sun, Amundsen was eager to begin his major journey north to Port Leopold at the farthest tip of Somerset Island, during which he planned to locate the Magnetic Pole. When he set out with Hanssen on 1 March 1904, the cold was so intense—descending to \(-61.7°C (-79°F)\) and never above \(-50°C (-58°F)\)—that the sledges failed to glide properly. Because it was too cold also for the dogs, they were forced to turn back after just three days. On 16 March, Amundsen and Hanssen made a second attempt. Again, it was bitterly cold, and within ten days, they were back again at Gjøa. At least this time they had managed to cross James Ross Strait to make contact with the Netsilik Inuit of Boothia. Hanssen and Ristvedt were more successful later the same month, traveling across Simpson Strait to Adelaide Peninsula, in the process discovering the Hovgaard Islands. On 6 April, Amundsen tried again, this time accompanied by Ristvedt. After stopping for several days on Matty Island to take magnetic measurements, they crossed over to Boothia and then followed the coast north as far as the Tasmania Islands before turning back. The dip readings showed them to have come within about 30 miles of the Pole, which Amundsen calculated as 70°30’N, 96°36’W, 28 miles northeast of the position obtained by Ross seventy-three years before.

Five men stayed aboard Gjøa, with Wiik and Ristvedt stationed on shore in “Magnetic Villa,” a small hut near the magnetic and meteorological observatories, whose measurements were to be among the most significant results of the expedition. A store of fresh meat was laid in by hunting caribou, which were now migrating back toward the mainland. With them in October 1903 arrived a party of Inuit hunters. Although there had been previous encounters between white men and the Inuit of the Central Arctic, this people remained largely unstudied. No one had documented their customs, and no collections had been made of their hunting and cultural artifacts. Recalling what few words he knew of Inuktitut, Amundsen hurried out to greet them, receiving an effusive welcome. The Inuit continued to visit during the fall, many of them staying several days near Gjøa as word spread concerning the kabloonas and their willingness to trade metal and wood for weapons, clothing, and other items. Amundsen had plenty of opportunity for close observation, and his notebooks from this time are largely devoted to recording Inuit beliefs and culture. The Inuit also taught him how to erect igloos—much more comfortable than tents when traveling—as well as how to drive dogs.

Through the summer and following winter, the Inuit continued to visit Gjøa, many staying some time in the neighborhood of the kabloonas. Relations continued to be excellent, and Amundsen solved the incipient problem of Inuit pillering by setting off explosives in an unoccupied igloo. The effect was sufficiently impressive to dissuade even the most incorrigible
from causing offense to their powerful visitors. Living far from the nearest sources of metal and wood, the Inuit welcomed Amundsen's gifts, and he in return accumulated an excellent collection of artifacts.

The expedition's longest journey was made next spring, in 1905, when Hansen and Ristvedt dogsledged across Victoria Strait to investigate the east coast of Victoria Island as far as Cape Nansen, at about 72°N. On their way back, they discovered the Royal Geographical Society Islands.

On 13 August 1905, Gjoa departed from Gjoa Haven. The route west took it through Simpson Strait to Queen Maud Gulf and then along the series of narrow channels between the mainland and Victoria Island, before reaching what is now called Amundsen Gulf, south of Banks Island. The ship was past the Mackenzie Delta before the ice closed in, halting further progress that year at King Point. The expedition wintered on the mainland not far from Herschel Island, where several whalers were based. Amundsen was eager to announce the news of his successful transit of the Northwest Passage as soon as possible, and he took opportunity on 24 October to join the whaling captain William Mogg and an Inuit couple, Jim and Kappa, who were taking the mail overland to Eagle City, Alaska. Arriving there on 5 December, he sent a private telegram to Fridtjof Nansen announcing his achievement. Amundsen had granted exclusive coverage to The Times of London, but the news leaked out on the way and was soon blazoned across the world's press. The Northwest Passage had been conquered at last!

First at the South Pole, 1910–1912

For his next expedition, Amundsen's objective was to reach the North Pole. Adopting essentially the same strategy as Fridtjof Nansen (1893–1896), he planned to sail a ship as far north as possible until it was frozen into the ice at a point where the Arctic Ocean currents would hopefully take him over the Pole. Amundsen believed that Nansen had failed to reach it because he had not entered the ice sufficiently far east. Thus, his own expedition would sail through Bering Strait and then head northeast, as opposed to Nansen's westerly approach along the Northeast Passage.

Having obtained a grant from the Norwegian parliament and Nansen's permission to use the 402-ton Fram, Amundsen was preparing to leave in January 1910, when he learned in September 1909 of the claims of Robert Peary and Frederick Cook, his former colleague from Gerlache's expedition, to have reached the North Pole. With the North Pole achieved, there seemed little point in his going there too. The South Pole, however, was still unattained, although Robert Falcon Scott had recently announced plans for a British expedition. Aware that his route to Bering Strait would take him close to Antarctica when he sailed round Cape Horn, Amundsen was led to consider the possibility of making a diversion to take in the South Pole.

Revealing this new plan only to a very few others, Amundsen began preparations for an Antarctic expedition. Many of his needs were the same as those for an expedition to the North Pole, but in addition he would need a larger hut, sufficient to accommodate a wintering party, more dogs, and—not least—a team of skilled dog drivers. Attracting the latter was not easy with the North Pole as his nominal objective, for what opportunity would there be for dogsledging when the expedition would be trapped for most of the time in Fram during its leisurely ice drift? Indeed, if it were to drift right over the North Pole as Amundsen proposed, would dogs and dog drivers be needed at all? Amundsen was a persuasive man, but it was not an easy task to build up a team with the skills he needed.

As an excellent skier and dog driver, Hjalmar Johansen certainly had the necessary skills. Johansen had been Nansen's companion when the two of them attempted to slide from Fram to the North Pole. Johansen joined the expedition at Nansen's request. Other key members included Lieutenant Thorvald Nilsen, captain of Fram and second-in-command, the champion skier Olav Bjaaland, and the dog drivers Helmer Hanssen, H. Sverre Hassel, Jørgen Stubberud, and Oscar Wisting.

On 9 August 1910, Fram left Oslo with twenty men and ninety-seven dogs on board. Arriving at the Atlantic island of Madeira on 6 September, Amundsen gave letters to his brother for Nansen and the Norwegian king apologizing for his deception and hoping that the expedition's achievements would redeem him. A terse telegram was sent to Scott informing him of the changed plans. "Beg leave to inform you Fram proceeding Antarctic. Amundsen." Finally, three hours before they were due to sail, the entire crew was summoned on deck, where they found Amundsen standing beside a map of the south polar regions. Amundsen then outlined his plans, stating that he intended to take in the South Pole en route to the North Pole and asked each of them one by one whether they would travel with him. If not, he offered to pay their passage home. None took up the offer.

Although designed to resist Arctic Ocean ice, Fram coped surprisingly well with the heavy seas of the Southern Ocean. On 2 January 1911 the Antarctic Circle was crossed and the Bay of Whales entered twelve days later. Despite Ernest Shackleton's misgivings about this site as a safe location to winter, Amundsen chose it on the basis of careful study of expedition accounts, which showed the features of the inner bay to be essentially stable, although the ice forming its seafront broke away periodically. He calculated that the inner bay was founded on land and therefore safe. Moreover, the Bay of Whales was 60 miles closer to the Pole than Scott's starting point in McMurdo Sound. Choosing a site 2 miles inland for his station Framheim, Amundsen began unloading on 15 January. On 3 February, Scott's ship Terra Nova found them while reconnoitering possible landing places for the Eastern Party (see Campbell, Victor). Tense but not entirely unfriendly visits were exchanged.
With Framheim established, *Fram* sailed for Buenos Aires, Argentina, on 14 February 1911. Its crew was to carry out oceanographic research—the only significant scientific work done by the expedition apart from some meteorological and magnetic observations at Framheim—before returning to collect the shore party early the following year. For the nine-man wintering party, the main work now was to set up depots as far south as possible toward the Pole. On 10 February, the first sledging party set out to establish a depot at 80°S. This achieved, the main depot party left on 22 February, consisting of all those wintering, apart from the cook, Adolf Lindström. A depot was laid at 81°S, from where three men and the weakest dogs were sent back, while Amundsen and the others continued on through a zone scored by deep crevasses with the hope of establishing a depot at 83°S. Doing so, however, proved beyond them, as intense cold and exhaustion of the dogs forced Amundsen to settle instead for 82°S. Although less than he had hoped, this location was still far beyond Scott's farthest depot at 79°29'S. Returning to Framheim on 22 March, one last journey was made to add seal meat to the depot at 80°S.

The sun disappeared on 21 April 1911, and there was much to be done before it rose again on 24 August. In their small hut—5 meters by 4—the men refined their equipment. While Bjaaland succeeded in reducing the weight of the sledges from 75 to 22 kg without reducing their strength, Stubberud similarly reduced the weight of the sledging cases, and Wisting fashioned windproof clothing, including stockings.

Amundsen was desperate for an early start. Although he was closer to the Pole and trusted in his dogs and skiing expertise, unlike Scott, who would follow the route pioneered by Shackleton, Amundsen had to find a new route and had no motor sledges. Beginning in late August, time and again instructions were given for imminent departure, only to be rescinded at the last moment as temperatures again dropped to the unbearable. By 8 September, Amundsen felt he could delay no longer. Leaving Lindström to mind Framheim, the eight-man team initially made good progress over hard surfaces for three days, but then the temperature dropped to −56°C (−69°F). The next day was even colder. In such temperatures, even the dogs could not survive. Amundsen ordered return but not before supplies and equipment were left at the first depot, which they reached on 14 September. As they camped that night, two dogs froze to death as they lay, while Hanssen and Stubberud had badly frostbitten heels. On the next day, 40 miles out from Framheim, Amundsen allowed each sledge team to proceed independently back to Framheim, making as fast progress as possible. He himself was carried on Wisting's sledge, one of two sledges that now raced ahead. The others struggled back more slowly, Johansen and Kristian Prestrud only returning eight and a half hours later. Prestrud's dog-team had failed, and Johansen probably saved his life by staying with him. Not without reason, Johansen was bitterly critical of Amundsen's action, which seemed to him to fall little short of abandoning the weaker members of his party. At a tense meeting, he expressed his views. Amundsen never forgave him.

By 19 October, all had recovered and were ready for another attempt on the Pole. It was to be made by a reduced party of five, with Prestrud, Johansen, and Stubberud assigned instead to explore Edward VII Land. Amundsen would be accompanied by Bjaaland, Hanssen, Hassel, and Wisting, each of whom took charge of a sled pulled by a team of thirteen dogs. The first depot was reached on 24 October, the second five days later, and the third on 4 November. With such well-provided depots awaiting them, the sledges could be lightly loaded, and rapid progress was made, with the men either riding on the sledges or pulled behind them on skis for much of the way. Apart from a few inevitable scares with crevasses, their path across the Ross Ice Shelf proved easy, and Amundsen found that five hours was sufficient to travel the necessary distance each day, allowing plenty of time for the dogs to rest and for snow cairns to be built to mark their way back.

High mountains came into view on 11 November, the Queen Maud Mountains. It was a new discovery, though Amundsen was initially more excited by the thought that they might not extend sufficiently far east to block his way to the Pole. He was soon undeceived. Amundsen was lucky to strike the Transantarctic Mountains at their narrowest point. His route to the polar plateau was thus short but very steep. In a tour-de-force of ice climbing, guided by Bjaaland's expert skiing, the party ascended the Axel Heiberg Glacier in four days, in the process surmounting ice falls and climbing 1,745 meters in one day to reach the top at 3,330 meters on 21 November. They were now at 85°36'S.

Here they rested for four days. The dogs had served them exceptionally well, but there was insufficient food to keep all alive. Naming their camp the"Butcher's Shop," they slaughtered twenty-four dogs and fed them to the others. With three sledges and eighteen dogs, they headed on in conditions of minimum visibility. Beyond the mountains, they had first to negotiate their way through fractured fields of crevasses, where the ice of the plateau flowed at increasing speeds toward its outfall at the glacier head. Despite the conditions, they still achieved good distances and by 4 December were above the zone of crevasses. By now, Amundsen was becoming concerned that he would have to rely on dead-reckoning to reach the Pole, without the benefit of sun sights to check his calculations. Fortunately, the sun was seen on 8 December, and Amundsen was gratified that his sun sight gave an identical result to his reckoning at 88°16'S. Shackleton's farthest south was passed later that day.

Approaching the Pole on 14 December, the others insisted on Amundsen going on ahead to lead the dogs. At 3 p.m., to a loud shout of "Halt!" from the dog drivers, the Pole was reached and the Norwegian flag—grasped by each of the five—planted in the snow. Naming the region where the Pole lay King
Amundsen, Roald 17

Haakon VII's Plateau, Amundsen now sought to make certain of his prize. After three days of careful observations and calculations, during which the entire locality of the Pole was repeatedly traversed, a tent was erected at Polheim, close to his best estimate of the Pole's location. Leaving messages there for Scott and Haakon Amundsen, which Scott was asked to deliver to the Norwegian king should anything happen to Amundsen, the five men headed north on 18 December.

The return was rapid. Traveling by night to avoid the sun's glare in their faces, with the champion skier Bjaaland ahead and the others following, by 6 January they had descended the Axel Heiberg Glacier and reached the Ross Ice Shelf. There, their snow cairns guided them back to the three depots, with sufficient food for the men to eat seal daily and the dogs to be given double rations. Having traveled 1,860 miles in 99 days, they were back at Framheim on 25 January. Five days later, they sailed for Tasmania.

Three Frustrating Years in the Northeast Passage, 1918–1921

Once back in Norway, Amundsen's immediate aims were to complete his book on the South Pole expedition, pay off his debts, and then to undertake the postponed—but not cancelled—voyage across the Arctic Ocean. Reaching the North Pole itself was now less important, given the competing claims of Peary and Cook to have been there, but Amundsen felt obligated to Nansen to fulfill the work for which he had originally been lent Fram. Oceanography had developed rapidly since the 1890s, and much could be learned from a second Arctic drift, especially if a course could be followed at even higher latitudes. Amundsen had obtained a Farman biplane to be carried on board Fram, when World War I broke out and he felt obligated to present it to the Norwegian government. Unable to raise funds through other means, he turned businessman and for once in his life actually made money. By investing in shipping, he made 1 million kroner by 1916, enough to fit out a new expedition and, in particular, to construct a vessel to his own design to replace the elderly Fram. Maud's hull was to be even rounder than Fram's, and it was built out of the finest materials. Two of the South Pole party joined the expedition: Hanssen as ship's master and Wisting as mate. The scientific program would be directed by Dr. Harald U. Sverdrup, one of only two of the ten men on board who had previous polar experience.

There was a real risk that Maud might be attacked by German submarines when it left Tromsø on 15 July 1918. Because of this danger, Amundsen decided not to repeat the long voyage south through the Atlantic round Cape Horn to Bering Strait, but instead to follow the Northeast Passage. He chose his time of departure according to British intelligence, which suggested that any submarines in the Arctic would have been withdrawn for resupply, but did not feel safe from attack until he was past the White Sea to the north of Russia. At Yugor Strait, second engineer G. Olonkin joined the party. The strait was blocked by ice, and they were delayed nearly four weeks before entering the Kara Sea on 17 August. There, too, heavy ice was encountered, but by the end of the month Maud had reached Dikson to collect the expedition's twenty dogs. Beyond lay the most difficult section of their route, the formidable Taymyr Peninsula. For once, the Taymyr did not live up to its reputation, and on 9 September Maud succeeded in rounding Eurasia's northernmost point at Cape Chelyuskin. Only Adolf Erik Nordenskiöld in 1879, Nansen in 1893, and Boris Vil'kitskiy in 1914 had achieved this previously (though see also Tolstoukhov, Ivan). Once past the cape, Maud met dense ice, and by 13 September it was clear that they must winter. With no harbor nearby, Maud was anchored in an open bay between two islands, where it was soon firmly frozen in.

The winter was largely uneventful, with Amundsen prevented from exploring Severnaya Zemlya farther north by a chapter of accidents. First, he was knocked over by a dog and fractured his arm. Then, he was savaged by a polar bear and was lucky to escape alive. Finally, he suffered carbon monoxide poisoning and was left with serious heart palpitations. Since the interior of Severnaya Zemlya remained completely unknown, his inability to explore it caused him some frustration, though given the dangerous state of the ice in Vil'kitskiy Strait, it was possibly for the best that he was unable to attempt a crossing. Before Maud resumed the voyage, during which Amundsen thought there was a real danger that it might be crushed, carpenter Peter Tessem and able seaman Paul Knudsen were sent back with the expedition's scientific results to Dikson, 500 miles away. As a member of Otto Sverdrup's expedition in 1914–1915, Knudsen knew where three depots had been located along the coast. Tessem had suffered from headaches and wanted to go home. Neither survived the journey. From what was discovered later, it seems that Knudsen died first, possibly through illness or overexertion. Tessem continued alone. About 30 miles from the radio station on Dikson Island, he abandoned his sledge and equipment. His skis and sleeping bag were dropped some 12 miles on. His body was found under a precipice within 2 miles of safety, though whether he had fallen down it or lain down to rest and never awoken remains unclear. The scientific records were recovered, apart from the meteorological observations, which had been eaten by a bear.

Amundsen succeeded in blasting Maud free with explosives on 12 September 1919. In a bad ice year, the ship made its way east to the New Siberian Islands, beyond where Amundsen hoped to enter the polar pack. Instead, he found only a narrow lead between the pack and the coast and no way north. Eventually, he was forced to anchor for the winter at Aijon Island, off Chaun Bay on the Chukotka Peninsula. At Amundsen's suggestion, Sverdrup spent the next seven months with the Chukchi studying their culture. This particular group had had little previous contact with outsiders, and Sverdrup was able...
to compile a useful study. At the same time, Hanssen, Wisting, and seaman E. Tønnesen traveled around the coast to reach the radio station at Anadyr’ in southern Chukotka, leaving just four to winter on Maud. With the exception of Tønnesen, who embarked on a ship for Alaska, the others were all back on board Maud by mid-June 1920, ready for its departure on 6 July when the ice cleared.

Before making another attempt to enter the polar pack, Amundsen decided to visit Nome, Alaska, to effect essential repairs to the ship and allow him to see a doctor for continuing problems with his health. Four more of the crew departed at this point, leaving just Amundsen, Wisting, Sverdrup, and Olonkin to crew Maud on its voyage back toward the Siberian Arctic. Much ice was encountered in Bering Strait, and it was only with the greatest difficulty and at the cost of a broken propeller that Maud got through to Cape Serdste-Kamen’ on 1 September. Fortunately, good relations were soon established with the local Chukchi, and six volunteered the following spring to help take Maud south to Seattle, the nearest place where its propeller could be repaired. Amundsen went on ahead. He needed to raise more money, and from Seattle returned to Norway. A grant of 500,000 kroner from the Norwegian government was a considerable help, but by itself it was not enough. Ever since his return from Antarctica, he had recognized that the future of polar exploration lay with airplanes. He now acquired a Junkers J13 monoplane in New York, together with a Curtis Oriole for use on shorter flights. Both were carried on board Maud when it sailed from Seattle on 3 June 1922, laden with provisions for seven years. Amundsen’s plan was for pilot Lieutenant Oskar Omdahl and himself to be landed at Point Barrow, Alaska, while Maud made a fourth attempt to enter the polar pack north of Siberia under Wisting’s command. On reaching Alaska, Amundsen learned that a trading schooner was on its way to Point Barrow, while Maud had been transferred to the other, enabling them to fly on to Alaska. It was, his results were limited to the continental shelf, which other vessels had visited previously.

**Stranded in the Arctic Ocean, 1925**

The Maud expedition was undertaken largely out of obligation to Nansen. Had circumstances been otherwise, there is no doubt that Amundsen would have pursued his interest in applying airplanes and airships to exploration much earlier. On his return from Antarctica, he had learned to fly and in 1912 had been awarded the first pilot’s license in Norway. By 1922, having made three fruitless attempts to follow Fram into the polar pack, he felt justified in leaving the final attempt to Wisting while seeking new land himself by flying across the Arctic Ocean. Airplane technology, however, had yet to catch up with Amundsen’s ambitions, and his first experiences were deeply disappointing. The schooner proved unable to reach Point Barrow, so Amundsen and Omdahl disembarked instead at Wainwright. The trial flight ended disastrously next spring with the ski-underscarriage buckling under the plane on landing. Omdahl was sent to Seattle for new landing gear, while Amundsen remained at Wainwright. Foolishly, he had given power of attorney to a Danish shipbroker, who was to organize a new expedition on his behalf. All sorts of expensive undertakings were cheerfully entered into, including the purchase of three airplanes. Since Amundsen had no means of paying, he was forced to declare himself bankrupt. Writing and lecturing provided some income, but by no means enough to pay off the enormous debts. At this darkest moment in his life, he met Lincoln Ellsworth. The son of a wealthy industrialist, Ellsworth offered to fund a new expedition if Amundsen could persuade his father to release the money. That he duly did, and Ellsworth senior stumped up $85,000, allowing Amundsen to purchase two Dornier-Wal seaplanes.

At this date, 1 million square miles of the Arctic Ocean remained unexplored, and there seemed every prospect of finding land, possibly even an unknown continent. This certainly was Amundsen’s dream. Since the planes were to be obtained in Europe, Spitsbergen to the north of Norway was the most convenient departure point for his Arctic flight, which was publicly described as merely an exploratory journey toward the Pole. He had in fact privately agreed with Ellsworth that if all went well, they would land at the Pole, where one plane would be abandoned and its fuel and crew transferred to the other, enabling them to fly on to Alaska. It was between the Pole and Alaska that Amundsen had the highest hopes of discovering new land.

The planes, unimaginatively named N24 and N25, were to be piloted by two experienced Norwegian naval aviators, Leif Dietrichson and Hjalmar Riiser-Larsen. Ellsworth and Amundsen would act as navigators, with mechanics Omdahl and Karl Feucht completing the two teams.

Riiser-Larsen and Dietrichson took off from King’s Bay,
Spitsbergen, on 21 May 1925. For the first three hours they flew through fog, but when it cleared, Amundsen ordered the planes up to 3,000 meters, from where they could see up to 100 miles. No land was visible, but they enjoyed spectacular views of the pack's shining ice plain stretching to the horizon. Descending to a more comfortable cruising altitude, they continued on. After eight hours, Amundsen was informed that half the fuel had been used. According to his calculations, they were now north of 88°N and nearing the Pole. It seemed a good time to look for somewhere to land. Riiser-Larsen led the way down in N25, seeking open water or at least a level floe. Suddenly the rear engine failed, and he was forced to land where he could along a recently frozen lead. Dietrichson was able to pick his spot with more care, landing in open water. Despite its heavier loading, N25 was undamaged, but N24 was a wreck. Sun shots showed them to be at 87°44'N, 10°30'W, a record farthest north by plane but still 136 nautical miles short of the Pole.

Although the planes were less than 1 mile apart, the two crews were unable to reach each other over the ice and had to communicate with flags. Once it was clear that only N25 was capable of further flight, Amundsen instructed Ellsworth, Dietrichson, and Omdahl to join him, but they were unable to do so, despite several attempts through thick soft snow and treacherously thin ice. Not until 25 May were the two parties reunited and only then after Ellsworth's quick thinking had saved both his colleagues when they simultaneously fell through the ice. With all six men available to help, it was at last possible to free N25 from its dangerous position in the lead and move it to a safer location.

On 30 May 1925, Dietrichson and Omdahl managed to bring back a tank from N24 containing 55 gallons of petrol. N25 could take off from open water or 500 meters of hard, smooth ice. While work continued on leveling a runway, several unsuccessful attempts were made to take off from recently frozen leads, fortunately without damage to the plane. Four attempts were made on 14 June alone, but the plane was unable to reach the takeoff speed of 62 miles per hour. By now, Amundsen calculated that his exhausted, half-famished party had shifted 500 tons of snow and ice. He had earlier determined that if they were unable to take off by 15 June, they must abandon the plane and seek to sledge over the ice to Cape Adventurer. There they were met by a surprised fisherman, who agreed to tow them back to King's Bay, where their colleagues had long given them up for dead.

The return of Amundsen and Ellsworth after twenty-six days on the ice attracted headlines around the world. True, they had not reached the Pole, nor had they discovered new land, but they had achieved a new record farthest north and, with visibility up to 100 miles on either sight of the flight path, had overflown 120,000 square miles of previously unexplored territory. A further indication that land was unlikely to be discovered in this region was provided by two soundings taken during their time on the ice, one giving 3,750 meters, which indicated a deep ocean basin.

**The Arctic Ocean Crossed by Airship, 1926**

What he had been unable to achieve in airplanes, Amundsen now determined to try again by airship. Airships offered a number of advantages: their range was greater, they were more stable and therefore easier to make navigational observations from, and—not least significant—they were safer in that repairs could be made while they were still airborne. The chief disadvantage was their cost, but with Ellsworth having now come into his inheritance and with Amundsen's own reputation restored in Norway, he no longer found it to be an insuperable difficulty. Ellsworth put up $100,000, and the Aero Club of Norway undertook to raise the balance. The most suitable airships appeared to be those designed by Colonel Umberto Nobile for the Italian Air Force. Although they were much smaller than other airships, their range was almost as great, and they were cheaper. Amundsen now approached the Italian government, which was prepared to negotiate favorable terms on certain conditions: Nobile must participate as commander of the airship, and five of the crew had to be Italian.

As Amundsen waited at King's Bay for *Norge* and Nobile to arrive from Rome, on 29 April a complication was introduced by the arrival of an American expedition led by Richard Byrd. Byrd's aim was to make the first flight to the North Pole and although Amundsen's goals were broader, he was not altogether happy to have a competitor for priority at the Pole. *Norge* finally landed on 7 May, by which time Byrd's preparations were nearly complete. Two days later he took off, returning after sixteen hours and stating that he had reached the Pole. *Norge*'s own flight began at 9:55 A.M. on 11 May. On board were sixteen men: eight Norwegians, six Italians, an American, and the Swedish meteorologist Finn Malmgren, in a crew that included Riiser-Larsen (navigator) and Omdahl (mechanic) from the 1925 expedition.

The airship met Amundsen's expectations: they made a relatively uneventful flight to the Pole, which they reached at 1:30 A.M. on 12 May. *Norge* hovered at 200 meters to drop the Norwegian, American, and Italian flags. This was a special moment for two on board, in particular—Amundsen and Oscar Wisting—who now became the first men to see both Poles. So far they had enjoyed excellent visibility much of the way, and it continued 300 nautical miles beyond the Pole. No trace of land could be seen. Fog was encountered at 85°N, and thereafter the airship became increasingly encrusted with ice, adding to its
weight and causing concern for the hydrogen gas chambers deep within the envelope as shards of ice shot off the propellers and sliced through the fragile fabric. At 6:45 A.M. on 13 May, the Alaskan coast was within view, the first land they had seen since Spitsbergen. One hour later, they were over Wainwright and at last sure of where they were.

The final hours of the flight were trying, as they came under the influence of a deep depression in Bering Strait. Searching for better weather, Norge followed a course inland over high mountains masked by low cloud. Assuming that the maps were correct and that these did not exceed 1,000 meters, Norge’s maximum altitude of 1,100 meters was just sufficient, but it came as a considerable relief when they were able to look down through a clearing in the fog to see sea ice again. Now off the Alaskan coast, Nobile decided to climb back through the cloud to check his exact position. Once exposed to the sun’s warmth, the hydrogen expanded too rapidly to be controlled by the valves and suddenly Norge was out of control, still rising and with its nose pointing upward. Only when two of the crew climbed out onto the catwalk to reach the bows was Nobile able to regain control and descend toward land. Riiser-Larsen piloted the last stages along the Alaskan coast, where Norge finally landed at the small village of Teller at 7:30 A.M. on 14 May, after a flight lasting seventy hours, thirty-five minutes.

Norge’s crossing of the Arctic Ocean marked the culmination of Amundsen’s career but it was to be soured by acrimony between Nobile and himself. In truth, during the flight Amundsen had had little to do other than look for nonexistent land, but the expedition was his in conception and organization. Nobile had been paid handsomely to act as pilot, but whether out of personal vanity or nationalist pride (most probably both), he was most assertive in claiming as much credit as he could, relegating Amundsen and Ellsworth to the role of passengers. What Amundsen thought of this behavior can be read at length in his bitter autobiography (Amundsen 1927).

Amundsen was attending a reception in honor of the polar explorer Sir Hubert Wilkins when news came through that contact had been lost with Nobile’s airship Italia, which appeared to have crashed while returning from the North Pole. Despite his intense dislike of Nobile, Amundsen was a big enough man to set personal antipathy aside and offer to assist in the search for him. Although passed over as leader of the official Norwegian search effort, he was eventually provided with a plane, pilot, and crew by the French government. Piloted by Captain René Guilbaud, the Latham 47 flying boat took off from Oslo on 18 June 1928. By that time, radio contact had been established with Nobile, and a race had begun to see who could reach him first. Despite unfavorable weather, Amundsen refused to delay at Tromsø before attempting the difficult crossing of the Barents Sea. His last radio message was sent from the vicinity of Bear Island. The search for Nobile was now expanded to search also for Amundsen, but nothing more was found until 31 August, when a float and petrol tank were recovered by a fishing vessel. A great Norwegian was no more.

See also: Airplanes; Airships; Arctic Ocean; Bear Islands; Byrd, Richard (1926); Cook, Frederick (1907–1909); Ellsworth, Lincoln; Franklin, John (1845–1848); Gerlache, Adrien de; Hall, Charles Francis; Magnetic Poles; Nansen, Fridtjof; Nobile, Umberto; Nordenskiöld, Adolf Erik (1879–1881); North Pole; Northeast Passage; Northwest Passage; Peary, Robert (1908–1909); Riiser-Larsen, Hjalmar; Ross Ice Shelf; Ross, John (1829–1833); Scott, Robert Falcon (1910–1912); Shackleton, Ernest (1907–1909); South Pole; Sverdrup, Otto (1913–1921); Transantarctic Mountains; Vil’kitskiy, Boris (1914–1915)

References and further reading:

Amundsen Sea (Antarctica)
This marginal sea off the coast of Marie Byrd Land, Antarctica, between Cape Dart, Siple Island, in the west and Cape Flying Fish, Thurston Island, in the east was named for the Norwegian explorer Roald Amundsen by Captain Nils Larsen, whose ship Norvegia explored its margins in February 1929. Generally densely packed with ice, the sea is exceedingly difficult to penetrate, and the adjacent coastline as a result was virtually unknown until air reconnaissance flights were made from USS Bear during the U.S. Antarctic Service Expedition in February 1940 (see Byrd, Richard 1939–1941) and subsequently from the Eastern Group during Operation Highjump. Instructed to make as close an approach as possible to Mount Siple at 73°15’S, 126°06’W, even the two icebreakers forming Task Force 39 on Operation Windmill were unable to penetrate far.

See also: Amundsen, Roald; Byrd, Richard (1939–1941); Christensen, Lars (1928–1929); Operation Highjump; Operation Windmill

Anderson, William
(1921–)
Operation Sunshine was one element in the U.S. response to the Sputnik crisis of the late 1950s. The launch of the first unmanned space vehicle by the Soviet Union on 4 October 1957 led to widespread concern that the United States might have lost its technological lead, not just in space but generally. The voyage of the nuclear submarine USS Nautilus across the Arctic Ocean and under the North Pole was designed to demonstrate that at least as far as submarines were concerned, that was certainly not the case.
The First Submarine under the North Pole, 1958

In 1931, Sir Hubert Wilkins had made an ambitious but abortive attempt to reach the North Pole in a decommissioned World War I submarine named Nautilus in homage to Jules Verne’s prophetic novel Twenty Thousand Leagues under the Sea. The world’s first nuclear-powered submarine shared the same name but otherwise had little in common with Wilkins’s prototype. Since its launch in 1955, it had demonstrated an effortless superiority over conventional diesel-electric submarines, being appreciably faster and capable of remaining submerged for much longer. Weighing 3,150 tons and 100 meters long, the Nautilus was crewed by 116. Power was provided by a nuclear reactor containing a small core of fissionable uranium weighing less than 4.5 kilograms. Commander William R. Anderson was second captain.

Although it took the Sputnik crisis to ensure the active interest and full support of President Dwight D. Eisenhower, Nautilus had in fact visited the Arctic the previous year, making three attempts to approach the Pole from the North Atlantic, on one of which it got within 180 miles before being forced to withdraw when a blown fuse shut down its gyrocompasses. Following Sputnik, just reaching the Pole was no longer sufficient. Instead, Nautilus was to cross the Arctic Ocean by way of the Pole from Bering Strait to the Atlantic. The Atlantic approaches were by now relatively well known, but much less so were the shallow waters of the Chukchi Sea to the north of Bering Strait. There, if anywhere, difficulties might be anticipated, and it was clearly better to face them at the start of the voyage, when it would still be relatively easy to turn back. The mission was classified as top secret, and no announcements were to be made concerning it unless it was successful. Dr. Waldo K. Lyon, the leading U.S. authority on underwater ice navigation, participated in the cruise, and Nautilus was fitted with an inertial navigator to supplement its existing battery of navigational aids, consisting of two magnetic compasses and two gyrocompasses. Six echo sounders, built to Lyon’s design, were carried topside to indicate distance from the ice, and ice formations could also be scanned visually with a television camera.

Departing on 25 April 1958 from New London, Connecticut, en route to the Pacific through the Panama Canal, it was soon evident to Anderson that not all was right with his ship. There was a persistent saltwater leak in one of the steam condensers, which, although tiny, could lead potentially to a breakdown of the propulsion machinery. Serious in any circumstances, if it was to occur under the ice, the consequences would be dire. Not long after this leak was detected, a major fire broke out in the engine room, where the insulation went through the ports of the high-pressure turbine. Enormous damage had been done to the condenser system. By June, Nautilus was through Bering Strait and ready to submerge beneath the pack in the Chukchi Sea. Fifteen meters high from the bottom of its keel to the top of its sail, Nautilus ideally needed at least 100 meters of water to dive in. The Chukchi, however, averages only 40 meters. When deeper water was at last located, Nautilus submerged but almost immediately found itself among ice keels reaching some 25 meters beneath the surface and narrowly avoided colliding with one of them, despite cruising only 6 meters above the sea floor. Turning back was the only option.

On 22 July Nautilus began its third Arctic voyage from Pearl Harbor, Hawaii, having received encouraging reports from Alaska as to the state of the ice. Seven days later, it was through Bering Strait and across the Arctic Circle. Where its path had been blocked by the pack earlier in the year, now only scattered lumps of ice could be seen, but even farther north, the Chukchi Sea was still too shallow to risk submerging. Reluctantly, Anderson decided to head west close to the Alaskan shore—thus risking detection—toward Point Barrow, north of which he knew lay the Barrow Submarine Canyon, a trough nearly 2,000 meters deep leading northward into the western Arctic Basin. On 1 August, Nautilus was at last able to submerge and begin the ocean crossing. With a cruising speed of 20 knots, its course due north took it across 1 degree of latitude every three hours. The first excitement came the next day at 76°22′N, when soundings showed a sudden shallowing from 4,000 to less than 1,000 meters. The submarine was passing over a previously undiscovered mountain range 3,000 meters high and continuing for 70 miles—the Northwind Ridge. The next day similar recordings were observed as Nautilus crossed the Lomonosov Ridge. On 3 August, the submarine was beneath the Pole—the first ship of any kind to reach it—and two days later emerged at 5:39 a.m. on 5 August in the open waters of the North Atlantic, between Greenland and Svalbard. The crossing had taken just four days, during which the ship had traveled 1,839 nautical miles.

The voyage of USS Nautilus, while fulfilling the immediate need for an effective demonstration of U.S. submarine and polar expertise, had even greater long-term significance. During the crossing, 11,000 soundings were made, as well as numerous measurements of salinity, temperatures, and ice thickness. Similar observations were to be obtained on the hundreds of voyages made subsequently by U.S., British, and Soviet nuclear submarines. After Nautilus, no one could doubt that were war to break out with the Soviet Union, the Arctic Ocean would be a critically important theater of operations and that in it, nuclear submarines would play the chief role.

See also: Arctic Ocean; North Pole; Submarines; Wilkins, George Hubert (1931)

References and further reading:
Andersson, Gunnar
(1874–1960)

This noted Swedish geologist established his reputation on two expeditions to the Arctic but is best known as second-in-command of Otto Nordenskjöld's Swedish Antarctic Expedition, during which he endured an exceptionally grueling winter at Hope Bay before leading his colleagues to safety and a surprise meeting with Nordenskjöld at the aptly named Cape Well-Met.

Bear Island, 1899

Johan Gunnar Andersson's first experience of the polar regions was as an undergraduate on Alfred Nathorst's 1898 expedition to the high Arctic archipelago of Svalbard. The following year, at Nathorst's suggestion he led a small expedition to Bear Island to conduct further investigations of its interesting geology, accompanied by a meteorologist, a zoologist, and two field assistants. Staying on the island from 23 June through 19 August, Andersson was responsible for the first comprehensive geological study of Bear Island.

A Harsh Winter at Hope Bay, 1902–1903

Appointed second-in-command, assistant geologist, and hydrographer on the Swedish Antarctic Expedition led by Dr. Otto Nordenskjöld, Andersson was closely involved in planning the trip but could not sail with the rest of the expedition in Antarctic because he had to defend his doctoral thesis. Instead, he left Gothenburg, Sweden, in January 1902, bound for the Falklands, where Antarctic was to pick him up. On the way, he stopped in Edinburgh, Scotland, to meet William Speirs Bruce to coordinate plans between the Swedish and British expeditions.

After reaching the Falkland Islands in February, Andersson spent a month studying the virtually unknown geology of these islands before joining Antarctic on 27 March. Assuming command of the expedition as arranged, on 11 April Andersson sailed for South Georgia, where in addition to sealing, scientific studies were conducted and good charts of Cumberland Sound compiled between 23 April and 15 June. Antarctic then returned to the Falklands to seal for the remainder of the winter before setting out for Tierra del Fuego on 6 September. Reaching the Beagle Channel on 15 September, Andersson traveled inland to Lake Fagnano, guided by a party of Ona Indians and accompanied only by the young seaman Ole Wennersgaard.

 Having taken on coal generously provided by the Argentine government and with the season now apparently well advanced, on 5 November 1902 Antarctic sailed south to find the icepack unexpectedly far north at 59°30'S, 66°W, a warning of what was to come. After they reached the South Shetland Islands with some difficulty on 22 November, ice prevented their intended landings on Deception and Greenwich Islands. Andersson sailed across Bransfield Strait to the Antarctic Peninsula, where a detailed survey confirmed Nordenskjöld's earlier suspicion that so far from forming a strait cutting the Antarctic Peninsula in two, as suggested by Jules Dumont d'Urville, the Orléans Channel merely represented a northern extension of Gerlache Strait, separating Trinity Island from the peninsula. Lieutenant Samuel A. Duse's chart, which provided the first accurate depiction of this coast, was later described by Nordenskjöld as the most important geographical result of his expedition, but here he was perhaps overly generous, being himself responsible for at least equally significant discoveries off the east coast of the peninsula.

On 5 December 1902, Andersson headed north and east to relieve Nordenskjöld at Snow Hill Island but found Antarctic Sound blocked. Many days were spent in fruitless attempts to pilot Antarctic through the ice, in the course of which a channel was discovered dividing Joinville Island in two, the westernmost part being named D'Urville Island for the French explorer whose reported discoveries had been significantly redrawn both there and farther south. The channel was named Larsen Channel for Antarctic’s captain, Carl Anton Larsen.

Finally giving up hope of getting through Antarctic Sound, on 29 December Andersson landed with Lieutenant Samuel A. Duse and seaman Toralf Grunden at Hope Bay. The plan was for Larsen to attempt to reach Snow Hill by sailing round the northern part of Joinville Island, while Andersson attempted to reach Snow Hill overland across the peninsula. Assuming Andersson succeeded, he was to wait for Antarctic until 25 January 1903. If the ship had not arrived by then, he was to return with Nordenskjöld to be picked up at Hope Bay. Unfortunately, having sledged south to Vega Island, Andersson's party found open water in Herbert Sound and was forced to return, reaching Hope Bay on 13 January 1903. There they awaited the return of Antarctic, little knowing that it had been nipped by heavy ice in the Weddell Sea and abandoned on 12 February. Andersson was able to employ his time usefully, finding fossils in a boulder whose source he traced to high on the slopes of adjacent Mount Flora. From this fossil-rich layer of black schist, he retrieved fossils from which sixty-one species (including twenty previously unknown) were later identified from the mid-Jurassic period.

As time passed, the three men became increasingly aware that they would probably have to winter where they were, an eventuality for which they were quite unprepared. A crude stone hut was built from loose boulders and roofed over by their sledge, with planks and old tarpaulin filling the cracks. Inside the hut, they erected their tent and covered the floor with penguin skins. One of the hardest of all Antarctic winters was now endured, with 700 penguins providing the bulk of their food and fuel, varied only by an occasional seal and a rarer fish. In the most difficult circumstances imaginable, mutual civility and morale were admirably maintained until three blubber-stained, heavily bearded figures abandoned their tiny shelter on 29 September 1903 to make a second attempt to reach Snow Hill.
After an arduous journey, Vega Island was reached on 9 October, where Duse carried out a survey proving it indeed to be an island separate from James Ross Island. Heading south along the shore, on 12 October they saw two moving black objects offshore. At first they thought the specks were seals but soon realized that they were men, Nordenskjöld himself and Ole Jonassen. Because they were Swedish, the meeting was formal. An outstretched hand was extended to Nordenskjöld with the greeting “How do you do?” to which Nordenskjöld replied, “Thanks, how are you?” He could not think who they were, not recognizing anyone from his expedition, so blackened in every aspect were they by blubber. Finally, Duse and Andersson had to say who they were. Reunited, the five returned to Snow Hill, which they reached on 16 October. For an account of what had happened meanwhile to Larsen, see the entry under his name. For the concluding episodes of the expedition, see under Nordenskjöld, Otto.

Andreé, Salomon  
(1854–1897)

On 5 August 1930 the Norwegian sealer Bratvaag landed on White Island, one of the most remote islands in the Svalbard archipelago. The next day a seaman went ashore to look for drinking water and stumbled across the ruins of a camp. Two skeletons were discovered along with a boat lashed to a sledge, miscellaneous equipment, a camera, and a diary that showed them to be the long-lost remains of the 1897 balloon expedition of Salomon August Andreé.

Andreé was a much respected Swedish scientist, a professor at the University of Stockholm, and chief engineer at the
Swedish Patent Office. He was also founder of the Society of Swedish Inventors. He had first encountered hydrogen balloons in 1876 at the World’s Exposition in Philadelphia, taking the opportunity during his stay to learn all he could about them and not being put off when, on his first attempted flight, the balloon burst before leaving the ground. In 1882–1883, he participated in the Swedish International Polar Year (IPY) expedition to Spitsbergen, conducting research into atmospheric electricity under the leadership of Dr. Nils Ekholm. From 1893 to 1895, his name became well-known to the Swedish public through a series of pioneering balloon flights across the Baltic Sea, during which he hit upon the idea that drag lines could be used for steering and not just for controlling the altitude of the balloon.

_Toward the North Pole in a Balloon, 1897_

Combining his two interests in balloons and the Arctic, by 1895 Andrée was ready to announce his plans for a flight to the North Pole. Slogging on foot across the ice was a futile endeavor, now that it was possible for balloons to be designed meeting three crucial conditions: that they were (1) sufficiently large to carry three men with supplies for four months, (2) sufficiently tight in terms of gas to stay in the air for thirty days, and (3) steerable. Andrée proposed two flights: to the Pole and back in forty-three hours and across the Arctic Ocean in six days. Perhaps because of his prestigious position in Swedish science, Andrée’s proposals were surprisingly well-received, and having obtained the support of the Swedish Academy of Sciences, he soon had sufficient funding to commission construction of a balloon to the highest specifications in Paris. Characteristic of Andrée’s interest in the latest inventions were the numerous gadgets with which his balloon was fitted. They included a cooker suspended 8 meters below the basket that could be lit by means of a long string, with a mirror to allow the crew to see how the cooking was proceeding. There was also a compartment immediately below the basket that doubled as sleeping quarters and darkroom, Andrée having plans to develop photographs on board and post them south by carrier pigeon.

In June 1896, Andrée set out for Spitsbergen in the steamship _Virgo_, accompanied by his former IPY colleague Ekholm (a meteorologist) and Nils Strindberg (a physicist). Following a brief reconnaissance, on 21 June Danes Island was selected as the site for the 18.3-meter-high shed, which was to house the balloon _Örnen_ (Eagle) as it was inflated with 4,760 cubic meters of hydrogen released from vats filled with iron...

Salomon Andrée’s balloon takes off from Danes Island, 11 July 1897. (Lachambre, H., 1898. _Andrée and his balloon_. Westminster: Archibald Constable & Co., p. 297)
Andrée, Salomon

filings and sulfuric acid. Not until early August were preparations complete. Now all that was needed was a southerly wind. Andrée waited in vain for the next two weeks, finally abandoning hope for an attempt this year on 15 August before departing from Danes Island in Virgo five days later.

The next year, Andrée returned, this time accompanied by Strindberg and the young army officer Lieutenant Knut Frænkel, Ekholm having concluded that the balloon leaked considerably more than Andrée’s calculations indicated. Arriving at Danes Island in mid-June, they found the balloon house still in good order and, after some minor repairs, began to inflate Örnen. By 1 July 1897, all was ready, and ten days later the wind finally came from the south. Having waited so long, Andrée was strangely reluctant to begin the flight, only agreeing to do so when his colleagues expressed their continued eagerness to go. The front of the balloon house was torn down and after a rousing “Hurrah for Old Sweden,” the ropes were cut and Örnen was in the air. It was 1:45 P.M. on 11 July.

The first few minutes were disastrous. Rather than ascending, the balloon was struck by a downdraught and forced into the sea before rising again, as Andrée and his companions hurriedly threw out valuable ballast to lighten it. It then veered suddenly upward, and as the hydrogen expanded, a valve opened, releasing substantial quantities of gas. As if this was not bad enough, down on the beach lay the lower sections of all three guidelines, which had become unscrewed. Without them, Andrée had no means of steering Örnen, which must now drift where the wind took it; to the Pole, or, much more likely, not.

After drifting north-northeast for five hours, Andrée released the first four carrier pigeons, only two of which were ever seen again. That evening a buoy was dropped, possibly one of two recovered subsequently. Some hours later, Örnen became becalmed in low cloud with its drag lines dangling in the water. With the hydrogen contracting without heat to warm it, they were bumped along the ice in fog, first drifting east and then west until 10:00 P.M. on 12 July 1897, when they came to a halt with one of the drag lines trapped under a block of ice. A brief appearance of the sun released them, as its warmth caused the hydrogen to expand, lifting them to 30 meters, sufficiently high for the oven to be lowered and a steak cooked. Soon, however, the fog returned, and they were back bumping along the ice and now almost without ballast to throw out. Once again, they managed to get airborne but only by jettisoning whatever seemed nonessential, including food. Early in the morning of 14 July, Örnen landed for the last time. Long after most would have considered going on futile, Andrée at last concluded that the balloon should be abandoned and that they must make their way back to safety on foot. After a flight lasting sixty-five hours, thirty-three minutes, they were at 82°56’N, 29°52’E, 376 miles northeast of Danes Island and 480 miles from the Pole.

One of the few precautions Andrée had taken with regard to the possibility of being forced down on the ice was to arrange for a food cache to be laid on the Seven Islands, north of North East Land. He also knew that food and shelter could be found in Franz Josef Land at Cape Flora, where Frederick Jackson had left a well-established base on Northbrook Island. After delaying a week to prepare for their journey, on 22 July the three men set out for Cape Flora. After four days, they had traveled less than 2 miles and thereafter continued to make slow progress, despite abandoning much of their equipment and food. Realizing that the westward drift of the ice meant that they would never reach Franz Josef Land, on 3 August they decided instead to make for the Seven Islands, which Andrée believed could be reached in six to seven weeks. By this stage they were living primarily off polar bear meat, which they found delicious, though it did have the disadvantage of being too tough for the experimental aluminum cutlery. Having tried various ways of cooking it, they tried eating it raw and discovered that it tasted like oysters. Throughout their journey, despite the intense physical effort, they continued to make scientific observations, and Andrée kept his fertile mind busy with innovative speculations. Increasingly reconciled to waiting for the ice, they had erected an igloo named “Home” when land was seen on 16 September. It was White Island. Almost entirely covered by an ice cap, it did not look inviting, and they were happy to remain where they were. The drift, however, took them closer and on 1 October the large, apparently stable floe on which they were based broke up.

Two of Andrée’s diaries were found on White Island, along with an almanac with inscriptions by Strindberg. Andrée’s first diary provides a full account of the flight and journey over the ice, but from then on the little we know derives from his badly damaged and almost indecipherable second diary, a few comments in Strindberg’s almanac, and the evidence provided by the campsite itself. Thus we are told nothing of what must have been a harrowing journey through broken ice and water to White Island, where Andrée and his companions arrived on 5 October 1897. Archaeological evidence shows that once ashore, they established their camp in the lee of a hill and began to collect driftwood. Strindberg was clearly the first to die since his body was discovered buried under a pile of stones. Andrée and Frænkel almost certainly died soon afterward, but of what cause? They had sufficient food, and although their clothes were certainly inadequate to survive an Arctic winter, records show this fall not to have been particularly cold. For many years, the cause was believed to be trichinosis, a disease caused by parasitic worms common in polar bear meat, which are killed only by thorough cooking. Recently, however, Dr. Mark Personne, director of the Swedish Poisons Information Center, has suggested botulism as more likely (2000).

It might have been assumed that Andrée’s would be the first and last attempt to reach the North Pole in a balloon. Just three years after his expedition, Count Ferdinand von Zeppelin made the first flight in an airship. Unlike balloons, airships
were both powered and steerable and thus not completely at the mercy of the winds. Their advantages for polar exploration were obvious and were first appreciated by the American journalist explorer Walter Wellman. Not until 2000 was another attempt made in a balloon, for an account of which see the entry for David Hempleman-Adams.

See also: Airships; Balloons; Danes Island; Franz Josef Land; Hempleman-Adams, David; International Polar Years; Jackson, Frederick (1894–1897); North Pole; Seven Islands; Wellman, Walter (1906, 1907, 1909); White Island

References and further reading:

Anjou, Peter
(1796–1869)

The greatest discovery of the Russian naval officer Peter Anjou was probably his repeated encounter with open water at a time of year when it was generally believed that the Arctic Ocean was entirely covered by ice. Although it prevented him from traveling far across the sea ice in his search for a reported but mythical Arctic land, the existence of a polynya off the northeast coast of Russia provided the first proof that some regions of this ocean remain unfrozen even during the coldest times of the year.

Searching for “Sannikov Land,” 1820–1824

Peter Anjou might seem an unlikely name for a Russian explorer. Descended from Lutherans who had migrated from France some generations previously, Anjou—also known as Petr Fedorovich Anzhu—was one of many nonethnic Russians who made an important contribution to the exploration of northern Russia in the eighteenth and nineteenth centuries. Among others, they included the Dane Vitus Bering, the Swede Mathias von Hedenström, and the Baltic-German Ferdinand von Wrangel. Serving as leader of a detachment nominally under Wrangel’s command, Anjou had the task of completing work begun by Hedenström, which itself built upon surveys initiated during Bering’s Great Northern Expedition.

From 1808 to 1811, Hedenström had investigated land discovered or reported off the coast of northeastern Siberia. He had demonstrated that the land found to the northeast of the Lena Delta, which was previously thought to form part of a large peninsula extending north into the Arctic Ocean from North America, actually formed a discrete archipelago, which he named the New Siberian Islands, although he had been unable to confirm or disprove reports of land farther east. Hedenström’s expedition had been privately sponsored, but following the conclusion of the Napoleonic Wars in 1815, the Russian Admiralty determined that remaining uncertainties about the geography of this region, which were not without strategic significance, should be settled once and for all by a well-equipped, state-funded expedition led by naval officers.

The expedition consisted of two detachments: one led by Lieutenant Wrangel based on the Kolyma River and the other led by Lieutenant Anjou based at Ust'-Yansk on the Yana River. The two detachments were to travel out together to Yakutsk and the Lena River with Wrangel in overall command, but since opportunities for communication between the two would be very limited in the field, for most of the time Anjou would operate essentially independently. Anjou owed his appointment to his friendship with Wrangel, with whom he had studied at the St. Petersburg Naval Cadet Corps school. While Wrangel was to search for land north of the Chukotka Peninsula, Anjou’s task was to improve upon Hedenström’s survey of the New Siberian Islands and to investigate this explorer’s sighting of “Sannikov Land.”

Having set out from St. Petersburg on 23 May 1820 in company with Wrangel, the two detachments traveled together via Moscow and Irkutsk to Yakutsk and the Lena. Anjou then made his separate way to Ust'-Yansk, which he reached in October, and spent the winter there. By March 1821 temperatures had warmed sufficiently for Anjou to start work. He led his dogsled and reindeer teams across the sea ice to Stolbovoy Island, where he began his survey of the New Siberian Islands, and then went on to Kettle Island, where he sent navigational assistant Il’ya Avtonomovich Bereznykh to map the sea and east coasts while Anjou surveyed the west and north coasts himself. From the north coast, Anjou made the first of three attempts to travel far out across the sea ice in search of “Sannikov Land.” On this occasion, he had gone just 50 miles before being halted by open water. To find unfrozen water at this time of year was something of a surprise, and Anjou was soon able to confirm that this water extended over a considerable extent because his second and third attempts from Faddeyda and New Siberian Islands some way farther east were terminated in a similar fashion. Anjou was encountering the southern margins of a great polynya, an extensive area off northeastern Siberia where the Arctic Ocean never freezes. Wrangel too was repeatedly turned back by the same polynya, which was to be one of the most important discoveries of the joint expeditions. This proof that at least some areas of the Arctic Ocean remained unfrozen throughout the year exerted a significant influence on later views as to how this ocean should best be explored. With the sea ice softening as temperatures warmed, Anjou returned to Ust'-Yansk in May to make a survey of the coast between the Yana and Indigirka Rivers during the summer.
Anjou had been given responsibility for compiling charts of the Siberian coast from the Olenek River, just west of the Lena Delta, west to the Indigirka River. Since the survey of the New Siberian Islands was far from complete, in spring 1822 he divided his men into two parties, one under his leadership to continue this survey, and another group under navigational assistant Petr Ivanovich Il’in to chart the coast west from the Yana River. Maps for this region had been compiled by Dmitriy Laptev during the Great Northern Expedition of Vitus Bering (1733–1743), but Laptev had been assigned a vast extent of coast, and not surprisingly, his work was not accurate in detail. While Il’in explored west to the Olenek, Anjou began by surveying the two Lyakhovskiy Islands, before moving on to Faddeya and New Siberian Islands. From Faddeya he made another attempt to search for “Sannikov Land,” only to reach thin ice after just 12 miles. Thin ice also stopped him traveling far from the New Siberian Islands.

Anjou was now convinced that only an expedition equipped with boats could hope to reach “Sannikov Land,” assuming that it existed, which he doubted. With limited time left to complete his survey of the New Siberian Islands, on 23 February 1823 he set out from Ust’-Yansk, intent on visiting three of the smaller islands: Vasi’levskiy, Semenovskiy, and Bel’kovskiy. Having successfully linked his mapping of them with Kettle Island and thus with the rest of the archipelago, by 23 March Anjou was back at Ust’-Yansk. The early summer was spent surveying the Yana River, after which he led his men back to Yakutsk to meet up again with Wrangel. The two parties traveled back together to St. Petersburg, where they arrived in August 1824.

Anjou was unsuccessful in persuading the governor of Siberia to organize a boat expedition to search for “Sannikov Land,” a nonexistent land that many later expeditions were also to seek in vain. Today, Anjou’s name is almost entirely unknown even among those well-read in Arctic exploration literature. A contributory factor was the destruction of his diaries unknown even among those well-read in Arctic exploration literature. A contributory factor was the destruction of his diaries and seals declined. It was during this year that the first landing on the Antarctic Peninsula—probably the preferred name of Graham Land, originally given by John Biscoe in 1832 for Sir James R. G. Graham, first lord of the Admiralty (1792–1861); the southern portion being known by the U.S.-preferred name of Palmer Land, for the sealer Nathaniel Palmer (1799–1877). The dividing line runs at 69°15’S from Cape Jeremy to Cape Agassiz. To Argentines, the peninsula is known as Tierra San Martin; to Chileans, as Tierra O’Higgins. Early sealers referred to it by a variety of names, one of which was probably “New South Greenland,” a name that has since led to considerable confusion (see Morrell, Benjamin).

The discovery of the peninsula was formerly regarded as controversial but should no longer be so, since Edward Bransfield’s sighting of 30 January 1820 predates by many months Nathaniel Palmer’s sighting of 16 November 1820. Bransfield’s chart survives, as do the logs of two of his midshipmen. His chart is the first depicting any portion of the Antarctic mainland. Signed “E. Bransfield,” it labels the peninsula as “Trinity Land partly covered with snow.” Bransfield was clearly unlucky with the weather, for much of the coastline was obscured by fog at the time of his voyage and marked as such in its approximate position. The chart extends west to Livingston Island and north to Elephant Island and Clarence Island, on the latter of which Bransfield landed. Bransfield’s name “Trinity Land” is preserved in the name Trinity Peninsula, given to the northernmost part of the Antarctic Peninsula. Bransfield’s continental sighting was preceded by that of Fabian von Bellingshausen, who just three days before saw an ice shelf off Princess Martha Coast, Queen Maud Land. The honor of being first to see Antarctica thus goes to the Russian Bellingshausen rather than to the British Bransfield.

Although he cannot now to be credited with having been first to see the peninsula, on his voyage later the same year, Palmer did reach farther south than Bransfield, and the ice-clogged strait he reports was the first sighting of what in 1838 Jules Dumont d’Urville was to name Orléans Channel, a seasonally navigable waterway between Trinity Island and the Antarctic mainland. Only five entries record Palmer’s next exploratory voyage in January 1821. It is not known exactly where he went, though there is some evidence suggesting that he may have reached a high southern latitude, possibly even 66° or even 68°S in the vicinity of Marguerite Bay.

Although Palmer’s were the most notable among exploratory voyages carried out by sealers from the South Shetland Islands during the 1820–1821 season, many more such voyages were undertaken the next year, as vessels proliferated and sealers declined. It was during this year that the first landing on the Antarctic Peninsula—and thus on continental Antarctica—probably took place. The log of the American sealer John Davis records his voyage across Bransfield Strait to the peninsula, where a landing was made on 6 February 1821 in the vicinity of what was later named Hughes Bay. The log entry is brief but certainly appears to confirm landing on
the mainland rather than on an offshore island. The Davis Coast, between Cape Kjellman and Cape Herschel, is named in his honor.

There are no reports of fur seals ever having been found by sealers on the Antarctic Peninsula. Occasional exploratory sealing voyages did continue, however, through the remainder of the nineteenth century. In December 1824 James Hoseason, mate of the British sealer Sprightly, charted Hughes Bay, which he named for his ship’s master Edward Hughes. John Biscoe was first to approach the peninsula from the south, as he neared completion of his circumnavigation of the continent in 1832. On 15 February, he was within sight of Adelaide Island, landing on Pitt Island in the Biscoe Islands on 19 February and two days later on Anvers Island, which Biscoe presumed to be part of the mainland. It was there that he laid claim to Graham Land on behalf of Great Britain. In February 1838, the French explorer Dumont d’Urville made a brief visit, discovering the Joinville Group to the north of the peninsula, mistakenly viewing the Orléans Channel as cutting the peninsula in two, and naming the presumed island to its north “Louis Philippe Land” for the French king. In January 1874, the German Eduard Dallmann reached 64°45’S, where he was the first to document discoveries in the Bismarck Strait area, a region previously visited by Biscoe.

All the explorations discussed above relate to the Antarctic Peninsula’s much more accessible west coast. Although it is possible that the east coast was seen as early as March 1823 by the American sealer Benjamin Morrell, this sighting is controversial and by no means accepted by all. In January 1843, James Clark Ross was first to discover and chart several islands in Erebus and Terror Gulf south to Snow Hill Island. The subsequent history of exploration of the peninsula’s east coast is brought together in outline in the next entry. Because that of the west coast was considerably more complicated, it is treated in most seasons south to Marguerite Bay at 68°30’S. On the east coast, however, ships seldom reach farther south than 65°00’S. The disparity is explained by its location adjacent to the ice-clogged Weddell Sea, the east coast being much colder than its near neighbor west of the peninsula, whose mountains obstruct the prevailing easterly winds and deflect cold air flowing off the polar plateau north along it rather than its milder western counterpart.

First to come within sight of it was arguably the American sealer Benjamin Morrell, who reported seeing land on 15 March 1823. He referred to it as “New South Greenland,” a name he attributed to Robert Johnson, his captain during the previous year. Few episodes are more controversial in the history of polar exploration, and well into the twentieth century, expeditions continued to search without success for what was presumed to be an island in the Weddell Sea, which is where Morrell’s longitude indicated it to be. However, as explained in the entry for Morrell, there is good reason for believing “New South Greenland” to have been simply an early name for the Antarctic Peninsula adopted by Johnson, Morrell, and other sealers, with Morrell’s use of it implying no more than his recognition that he was seeing the east coast of land he had seen the previous year with Johnson. Morrell’s longitudes and latitudes are generally unreliable, but he reports sighting a land extending over 400 miles from north to south with its north cape located at 62°41’S, and these details are plausible. The Weddell Sea was certainly unprecedentedly open in 1823, when the British sealer James Weddell achieved his record farthest south just one month before Morrell’s reported voyage in a season, which for lack of ice remained probably unmatched until 1967.

In January 1843, James Clark Ross was first to chart the more northerly islands off the east coast in the vicinity of Erebus and Terror Gulf and south to Snow Hill Island, though he depicted several of them erroneously as forming part of Edward Bransfield’s Trinity Land rather than as separate islands.

The coast was not visited again until 1892–1893, when two expeditions investigated reports of right whales in the Weddell Sea. No significant exploration was undertaken by the Dundee Whaling Expedition, but Carl Anton Larsen made the first landing on Seymour Island and sailed south to 64°40’S, 56°30’W, where he saw “an appearance of land” to the west. Returning the next year, Larsen was able to confirm that what he had seen was indeed the east coast of the Antarctic Peninsula. In another open year, he managed to reach 68°50’S, 59°59’W, in the process discovering the Oscar II and Foyn Coasts. As captain of Antarctic during Otto Nordenskjöld’s Swedish Antarctic Expedition, Larsen made one further visit to the east coast. Although he himself had little opportunity for new discoveries, his leader Nordenskjöld led a sledding party to the Borchgrevink Nunatak (65°57’S, 62°17’W), where on 18 October 1902 he and his companions effected the first landing on the peninsula from the east, reaching it across the Larsen Ice Shelf, which extends along much of the peninsula’s

### Antarctic Peninsula, East Coast

The west coast of the Antarctic Peninsula is accessible to ships in most seasons south to Marguerite Bay at 68°30’S. On the east coast, however, ships seldom reach farther south than 65°00’S. The disparity is explained by its location adjacent to the ice-clogged Weddell Sea, the east coast being much colder than its near neighbor west of the peninsula, whose mountains obstruct the prevailing easterly winds and deflect cold air flowing off the polar plateau north along it rather than its milder western counterpart.
length from the vicinity of Cape Longing (64°33’S) south to Cape Mackintosh (75°50’S).

Although several expeditions planned to extend Norden-
skjöld’s survey south to fill in the gap between the Borch-
grevink and Moltke Nunataks, the latter being the westernmost point reached by Wilhelm Filchner on the south coast of the Weddell Sea in 1912, this task was not completed until the 1940s. The first major contribution was made by Sir Hubert Wilkins, who on his epoch-making first long-distance Antarc-
tic flight of 20 December 1928 discovered the Bowman and Wilkins Coasts, lying immediately to the south of Larsen’s Foyin Coast. Wilkins’s discoveries were subsequently extended by flights made from Stonington Island in Marguerite Bay: first by Richard Black on 30 December 1940, when the Black and Lassiter Coasts were discovered; and then by Finn Ronne on 21 November 1947, when the Orville Coast was seen for the first time.

Although these inaccessible coasts were discovered and photographed from the air, for mapping purposes, the work of ground survey parties was equally essential. Significant con-
tributions were made by parties traveling out of the Argentine stations Esperanza (see Hope Bay), General San Martín (see Marguerite Bay), and Teniente Benjamín Matienzo, but the majority of the surveying was conducted by British parties from Hope Bay and Base E, Stonington Island, and by U.S. par-
ties from Stonington. One particular journey deserves special mention. Starting out on 17 October 1947, a four-man British party consisting of Frank Elliott, Lieutenant John Francis, Lieu-
tenant M. A. Choyce, and Ray Adie made a seventy-one-day transit along the entire length of the east coast to Three Slice Nunatak (68°02’S, 64°8’W), where they met up with a joint British-U.S. team, who then led them across the mountains to Stonington Island on the west coast. In the process, they had succeeded in surveying over 200 miles of new coastline.

Nordenskjöld’s station on Snow Hill Island was the first occupied in this region, between 12 February 1902 and 11 November 1903. Subsequent stations have also tended to be located on offshore islands—such as Vicecommodoro Marambio on Seymour Island—or with access to the east coast but not actually on it—such as the Argentine, British, and Uruguayan stations at Hope Bay, and the U.S., Argentine, and British stations in Marguerite Bay. The sole exception is the Argentine station Teniente Benjamín Matienzo (64°58’S, 60°02’W), which was opened in 1961 on the Seal Nunataks. Since 1976, it has operated intermittently as a summer station only.
See also: Argentina; Black, Richard; Dundee Antarctic Whaling Expedition; Hope Bay; Larsen, Carl Anton (1892–1893, 1893–1894); Marguerite Bay; Morrell, Benjamin; Nordenskjöld, Otto; Ronne, Finn; Ross, James Clark (1839–1843); Seymour Island; Snow Hill Island; Uruguay; Weddell Sea; Wilkins, George Hubert (1928–1929)

Antarctic Peninsula, West Coast
For the exploration of this region, see the following entries: Adelaide Island; Alexander Island; Argentine Islands; Biscoe Islands; Booth Island; Charcot Island; Danco Coast; Gerlache Strait; Lemaire Channel; Marguerite Bay; Neumayer Channel; Palmer Archipelago; Petermann Island; and Trinity Peninsula

Antarctic Sound (Antarctic Peninsula)
This navigable but frequently ice-clogged channel lies north of the Trinity Peninsula, separating this northernmost tip of the Antarctic Continent from the Joinville Group (D’Urville Island, Joinville Island, and Dundee Island). Thirty miles long and varying in width from 7 to 12 miles, it was first navigated by the Swedish Antarctic Expedition of Otto Nordenskjöld in January 1902 and named for the expedition’s ship Antarctic.

On several occasions, the course of expeditions has been significantly altered when vessels anticipating a straightforward passage through the sound found it impassable, blocked by large tabular icebergs broken off the Larsen Ice Shelf farther south on the east coast of the Antarctic Peninsula. The most famous occasion was when Antarctic sought to repeat its 1902 voyage a year later, with the aim of reaching Nordenskjöld’s base on Snow Hill Island. For accounts of what happened, see under his name and those of his deputy leader Gunnar Andersson and Carl Anton Larsen, Antarctic’s captain. In 1920, John Cope was similarly prevented from getting to Snow Hill Island and was unable even to reach Hope Bay, where Andersson’s party had been landed on the Swedish Antarctic Expedition. Finally, the wartime British expedition Operation Tabarin was prevented by ice in Antarctic Sound in 1944 from establishing a base in the preferred location at Hope Bay, and—like Cope—had to settle instead for an alternative and less suitable location on the Antarctic Peninsula’s west coast.

See also: Andersson, Johan Gunnar; Antarctic Peninsula; Dundee Island; D’Urville Island; Hope Bay; Joinville Island; Larsen, Carl Anton (1902–1903); Nordenskjöld, Otto; Operation Tabarin; Trinity Peninsula

Antarctica
At 5,460,000 square miles it is only the fifth-largest continent, but in other respects Antarctica is a continent of superlatives: highest, coldest, windiest, most isolated, and the last to be explored. It was not discovered until 1820, when it was seen first by the Russian navigator Fabian von Bellingshausen and three days later by the British explorer Edward Bransfield; the last sections of Antarctica’s coastline were not mapped before the 1940s; and its highest mountain—Vinson Massif—remained unseen until January 1958 (see Table 2).

Different parts of Antarctica vary greatly in accessibility. Most accessible is the Antarctic Peninsula, at least its west coast and northern section. Next so is the Ross Sea, where open water is found most summers once through the encircling pack ice. In contrast, the compacted ice of the Weddell Sea is a notorious graveyard for ships. The first areas to be explored were thus the west coast of the Antarctic Peninsula with its offlying islands, and the shores of the Ross Sea, especially Victoria Land, the Ross Ice Shelf, and Ross Island. The presence of suitable anchorages was also a significant factor. Apart from Victoria Land, there are few good harbors in East Antarctica, whereas on the west coast of the Antarctic Peninsula, these are more common. From the Larsen Ice Shelf on the east coast of the Antarctic Peninsula all the way around to Oates Land, the coast is—with very few exceptions—lined by ice shelves and ice cliffs, presenting few areas of exposed rock and very few natural harbors. It is therefore something of a paradox that Princess Martha Coast, whose coast is entirely lined by ice, was the first part of Antarctica to be discovered by Bellingshausen on 27 January 1820. In this case, however, the exception proves the rule, since this coast was not seen again until 1930 and was not explored until the 1950s. Most inaccessible of all is the world’s largest ice sheet, which occupies 97.6 percent of the total area, with an average thickness of 2,160 meters and a greatest measured depth of 4,750 meters. Beneath the ice lie mountains and lakes, new worlds that scientists are just beginning to explore.

Table 2 Continental Firsts
<table>
<thead>
<tr>
<th>Date</th>
<th>Expedition</th>
<th>Achievement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1820</td>
<td>Bellingshausen</td>
<td>First sighting of the continent</td>
</tr>
<tr>
<td>1820</td>
<td>Bransfield</td>
<td>First sighting of the Antarctic Peninsula</td>
</tr>
<tr>
<td>1901–1904</td>
<td>Scott</td>
<td>First exploration of the interior</td>
</tr>
<tr>
<td>1911</td>
<td>Amundsen</td>
<td>First to the South Pole</td>
</tr>
<tr>
<td>1955–1958</td>
<td>Fuchs</td>
<td>First across the continent</td>
</tr>
<tr>
<td>1989–1990</td>
<td>Steger</td>
<td>First crossing by the longest axis</td>
</tr>
<tr>
<td>1996–1997</td>
<td>Ousland</td>
<td>First solo crossing</td>
</tr>
</tbody>
</table>

Everywhere in Antarctica, seasonality is crucial. Depending on latitude, the Antarctic spring begins in late September or October, but extensive sea ice cover generally persists until very much later in the year. Thus, navigators seeking to enter the Ross or Weddell Seas generally did not attempt to do so before January. Most record farthest souths were achieved in late January or February, when the pack was most reduced. Land activities were similarly dictated by the seasons. Few traveled far from their huts during the period of winter darkness: Edward Wilson’s “worst journey in the world” is the one great
exception. The return of the sun provided opportunity for laying depots, but those planning long journeys did well to resist the urge to start too early. Roald Amundsen’s attempt on the South Pole nearly ended in disaster when he set out too soon on 8 September, only to be driven back ignominiously by temperatures descending to \(-56^\circ\text{C} \left(\text{\textdegree-69\textdegree F}\right)\) and below. Amundsen set out again on 16 October and Robert Falcon Scott on 24 October, in each case probably earlier than they would have wished, had they not been effectively engaged in a race, though an early departure was also essential to travel the 1,500 miles plus to the Pole and back and return in time to catch the ship leaving Antarctica before the sea froze over with the onset of winter. For expeditions arriving in Antarctica, fall was the time to prepare for the long journeys of the coming spring and summer. For those leaving, this was also the time to do so.

Within the patterns imposed by geography and season, attempts have been made to identify historical periods during which particular types of exploratory activity predominated. The most influential of these is that put forward by R. K. Headland (1989, pp. 26–27), who distinguishes six periods: Terra Australis (until ca. 1780), the sealing period (1780–1892), continental exploration (1893–1918), the whaling period (1919–1942), permanent stations (1943–1958), and the treaty period (1959–). This schema has the advantage of emphasizing the roles played by economics—sealing and whaling—and politics, the two later periods being when states staked their claims to particular areas by building stations before reaching agreement in 1959 to suspend all such claims under the Antarctic Treaty.

See also: Amundsen, Roald (1910–1912); Bellingshausen, Fabian von; Bransfield, Edward; Farthest South; Fuchs, Vivian; Ousland, Børge; Scott, Robert Falcon; Sealing and Antarctic Exploration; South Pole; Steger, Will (1989–1990); Whaling and Antarctic Exploration; Wilson, Edward

References and further reading:

Anvers Island (Palmer Archipelago, Antarctic Peninsula)

Located at 64°33’S, 63°35’W, Anvers Island is the largest island in Palmer Archipelago, at 38 miles long. It was discovered by John Biscoe, who made the first landing at Biscoe Bay on 21 February 1832 and, believing himself to be on the mainland rather than on an island, claimed “Graham Land” for Great Britain. In January 1874, the south and west coasts were roughly charted by Eduard Dallmann. Insularity was proved by Adrien de Gerlache, who charted the east coast between 1 and 9 February 1898 and named the island after the Belgian province Anvers (Antwerp), for its generous support of his expedition. Although undoubtedly sighted by both Biscoe and Gerlache, Mount Français—at 2,825 meters the highest point on the island—was named by Jean-Baptiste Charcot for his expedition ship. There is some uncertainty about which mountain Biscoe originally named “Mount William,” for King William IV of England. Since Gerlache, that name has been attached to the highest mountain visible from Biscoe Bay, but it would seem more likely that Biscoe intended the much higher Mount Français, which dominates the island’s panorama to the south and west, from where Biscoe made his approach.

Reports of the discovery of a nodule containing 47 percent copper below Copper Peak on Anvers Island’s southeast coast led to the establishment of the British Base N at Arthur Bay. This base was occupied from 27 February 1955 through 10 November 1958. A thorough geological survey of Anvers and adjacent islands was carried out, though it proved very difficult to get near Copper Peak. No copper was found, but a first ascent of Mount Français was achieved on 7 December 1955.

Palmer, an all-year station operated by the United States, opened in February 1965 at Arthur Harbor (64°46’S, 64°03’W), close to the site of the former British base, and was named for the American sealer Nathaniel Palmer. In 1981–1982, a Chilean expedition conducted a glaciological and trigonometric survey of the island, during which an ascent was made of Mount Français. Antarctica’s worst environmental disaster occurred off Palmer, when the Argentine supply vessel Bahía Paraiso ran onto a submerged rock on 28 January 1989. The resulting oil spill of 645,000 liters covered 17 square miles.

See also: Biscoe, John; British Antarctic Survey; Charcot, Jean-Baptiste (1903–1905); Chile; Dallmann, Eduard; Gerlache, Adrien de; Palmer, Nathaniel
Arctic Ocean

Encircled for the most part by land, the Arctic Ocean is the world’s smallest ocean, with an area of 4,732,000 square miles. Some oceanographers prefer to regard it as an arm of the Atlantic Ocean, with which it is connected through Fram Strait. It is also joined to the Pacific through the much narrower Bering Strait. Marginal seas occupy the extensive continental shelf north of Eurasia: the Barents, Kara, Laptev, East Siberian, and Chukchi Seas. All of these have separate entries in this book, as does the Beaufort Sea off North America.

The polar pack occupies the central body of the Arctic Ocean throughout the year, contracting somewhat during the summer, when it is especially broken up toward the edges into ice floes separated by leads. Winds, currents, and tides cause these floes to collide, forcing up pressure ridges sometimes 15 meters high, with underwater keels down to 50 meters. Ice forms during winter in considerable quantities in the Central Arctic, especially in the marginal seas. Since more forms than can melt in the summer, the balance is only maintained by the export of ice through the East Greenland Current and, to a lesser extent, west of Greenland through the Lincoln Sea and Nares Strait into Baffin Bay. The major outflow of water also occurs through the 200-mile-wide Fram Strait into the Greenland Sea. It is balanced by an inflow of water from the major Siberian and North American rivers together with the Gulf Stream, which divides into two off the north coast of Norway, with one branch following the coast east toward Murmansk, Russia, and the other heading north to reach the west coast of Spitsbergen. Warmer water also enters from the Pacific Ocean through Bering Strait. These basic oceanographic facts should be borne in mind when considering how the ocean was explored.

Surface Explorations

Had early navigators known the true nature of the Arctic Ocean, they would undoubtedly have chosen other regions to explore. Until Fridtjof Nansen’s voyage in Fram in 1893–1896, all attempts to reach high latitudes by sea were motivated by the belief that once through a belt of encircling ice, open water would be found. Their reasons for believing this are given in the entry “Open Polar Sea.” In contrast, having failed to find any evidence of open water in 1875–1876, George Nares instead proposed the term “Paleocrystic Sea,” by which he meant that the central Arctic was essentially ice-covered, as indeed it is.

Professor Henrik Mohn of the Norwegian Meteorological Institute was the first to note the significance of relics from George De Long’s expedition vessel Jeannette, which were found off southwestern Greenland. His suggestion that the vessel’s location indicated a transpolar current was triumphantly confirmed by Nansen’s drift in Fram (see Table 3). Less familiar is the evidence concerning currents provided by expeditions sledging across the sea ice. Thus, Edward Parry found his progress substantially reduced by a strong south-flowing current off Spitsbergen in 1827, and Robert Peary drifted east of his proposed course in 1906 when heading north from Ellesmere Island. The course taken by Georgiy Brusilov’s St. Anna in 1912–1913 showed the presence of a strong northerly current in the Kara Sea, and Bob Bartlett’s drift in Karluk one year later demonstrated an equally strong westward current in the Beaufort and Chukchi Seas. Between 1937 and 1940, the Soviet icebreaker Sedov followed a course similar to Fram’s, confirming that the Transpolar Current was a permanent feature (see Badygin, Konstantin). Detailed knowledge of the ocean’s currents followed with the establishment of ice stations by the Soviet Union (from 1937) and the United States (from 1951).

Many high latitude voyages were motivated by the search for land, and it was only once the first long-distance flights were made in the 1920s that it became certain that the North Pole lay in the middle of an ocean with no land nearby.

Exploring the Depths

Much was discovered during Fram’s voyage concerning the surface of the ocean, and much was also learned about what lay beneath. Nansen found three distinct layers of water: comparatively fresh “north polar” water at the surface related to the presence of ice, with a temperature below 0°C (32°F); a more saline North Atlantic layer below, with a temperature above 0°C; and the coldest and most saline water at the bottom. These findings were confirmed and extended by later expeditions. Nansen’s greatest discovery, however, was the existence of the deep polar basin. Fram was not equipped to take soundings deeper than 1,900 meters because Nansen had assumed that he would be crossing shallow seas. Not long into the drift, he had to construct a much longer sounding line out of one of Fram’s thick steel wire cables, which had first to be separated into individual strands, twisted into short lengths, and then soldered together. The eleven soundings made indicated depths ranging between 3,400 and 4,000 meters.

Table 3  Arctic Ocean, First Crossings

<table>
<thead>
<tr>
<th>Date</th>
<th>Expedition</th>
<th>Achievement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1893–1896</td>
<td>Nansen</td>
<td>First ship</td>
</tr>
<tr>
<td>1926</td>
<td>Amundsen, Ellsworth, Nobile</td>
<td>First airship</td>
</tr>
<tr>
<td>1928</td>
<td>Wilkins</td>
<td>First airplane</td>
</tr>
<tr>
<td>1958</td>
<td>Anderson</td>
<td>First submarine</td>
</tr>
<tr>
<td>1968–1969</td>
<td>Herbert</td>
<td>First surface crossing</td>
</tr>
<tr>
<td>1988</td>
<td>Shparo</td>
<td>First from Eurasia to North America</td>
</tr>
<tr>
<td>2001</td>
<td>Ousland</td>
<td>First solo</td>
</tr>
</tbody>
</table>
What we know today of the physiography of the Arctic Basin is based on data obtained by high-latitude air expeditions, ice stations, submarines, and icebreakers. Prior to the discovery of the Lomonosov Ridge in 1948, the Arctic Ocean was believed to consist of a single large basin. In fact, there are four basins separated by three transoceanic submarine ridges. The Lomonosov Ridge divides the Amersasia from the Eurasia basins. The former consists of the large Canada Basin, which is separated from the narrow Makarov Basin by the Alpha-Mendeleyev Ridge. North of the extensive continental shelf, the Eurasia Basin consists of the long and narrow Nansen and Amundsen Basins separated by the actively spreading Nansen-Gakkel Ridge. The North Pole lies above the abyssal plain of the Amundsen Basin, not far from the Lomonosov Ridge. The 1,200-mile Lomonosov Ridge was discovered by scientists participating in a Soviet high-latitude air expedition, while the first evidence of the Alpha-Mendeleyev Ridge was reported from the Soviet ice station NP-4 in 1955. U.S. submarine data demonstrating the existence of the Nansen-Gakkel Ridge was not released until 1969. The double names of the Alpha-Mendeleyev and Nansen-Gakkel ridges reflect their independent discovery by U.S. and Soviet scientists.

During the Cold War, the Arctic Ocean's location gave it critical significance, particularly from the late 1950s, when it was first entered by nuclear submarines. Detailed knowledge of bottom topography became crucial, especially in the marginal seas. The famous first crossing of the ocean by USS Nautilus in 1958 was only made possible by the earlier discovery in the Beaufort Sea of the deep Barrow Submarine Canyon by soundings from the icebreaker USS Burton Island in 1950. In comparison with Fram's eleven soundings in three years, Nautilus made more than 11,000 in four days. Numerous measurements were also obtained of salinity, temperature, and ice thickness. Vast quantities of previously classified data gathered by submarines and ice stations were made available to scientists for the first time in 1997, adding considerably to knowledge of the ocean.

See also: Amundsen, Roald (1926); Anderson, William; Badigin, Konstantin; Barents Sea; Bartlett, Bob (1913–1914); Beaufort Sea; Bering Strait; Brusilov, Georgiy; Chukchi Sea; De Long, George; Drifting Ice Stations; East Siberian Sea; Herbert, Wally; Kara Sea; Laptev Sea; Nansen, Fridtjof (1893–1896); Nares, George (1873–1876); North Pole; Northeast Passage; Northwest Passage; Open Polar Sea; Ross, James (1839–1843); Ross Sea; Ross Island; Ross Ice Shelf; Ross Ice Rise; Ross Sea; Rothera, P. (1983); Shipton, Dmitry; Submarines; Wilkins, George Hubert (1928).

References and further reading:

Argentina

By reason of geographical proximity, and more recently of political interest, Argentina's connection with Antarctica and with the Antarctica Peninsula region in particular is longstanding. Because Argentina is adjacent to the peninsula, historic voyages to this region—both exploratory and commercial—most frequently landed at Argentine ports before sailing south across the Drake Passage. From 1904 on, Argentina has operated the longest continuously running station in the Antarctic in the South Orkney Islands and since 1947 has conducted a significant national program of Antarctic science and exploration.

Immediately following news of the discovery of the South Shetland Islands by the British trader William Smith, vessels were fitted out for sealing at Buenos Aires, and at least one—Espírito Santo—reached these islands before the end of 1819. It may be seen as the first Argentine Antarctic voyage, though it was just possibly preceded by San Juan Nepomuceno, another ship returning to Buenos Aires early in 1820 after obtaining a full cargo of seal skins from an unknown destination, which, from the quantity of skins—14,600—may have been the South Shetland Islands.

Several exploring expeditions received significant assistance from the Argentine government in the first decade of the twentieth century. Landing at Buenos Aires in December 1901, Otto Nordenskjöld reached an agreement whereby, in return for generous Argentine support, he agreed to take naval sub-lieutenant José Maria Sobral with him as a member of his wintering party. When Nordenskjöld later ran into difficulties, Argentina was the first country to organize a relief expedition, dispatching the corvette Uruguay under Captain Julian Irizar to retrieve him and the other members of his much-dispersed expedition. The French explorer Jean-Baptiste Charcot also received considerable assistance from Argentina. In return, he named the Argentine Islands for the republic and was happy to sell his ship Français to Argentina for use on Antarctic supply voyages. These last were now necessary because Argentina had come to an understanding with the Scottish explorer William Speirs Bruce in 1904 to take over operation of the meteorological station established by Bruce on Laurie Island in the South Orkneys. As part of this understanding, Bruce took on board three Argentines—Lucian Valette, Hugo Acuña, and Edgar Szmulawho were then left on Laurie Island to winter under the leadership of Bruce's meteorologist Robert Cockburn Mossman. This party was relieved by Uruguay on 31 December 1904, in the first of what became annual Argentine supply and relief expeditions to the South Orkneys. Uruguay next sailed south for the South Shetland Islands, where Deception Island was examined, and Gerlache Strait, as far as Wiencke Island, before returning to Buenos Aires on 8 February 1905. Following this voyage, Argentina laid plans to establish another meteorological station on Booth Island, where Jean-Baptiste Charcot had wintered during his first expedition. Unfortunately Austral—formerly Charcot's Français—was wrecked on a sandbank in the river Plate on its departure from Buenos Aires. Orcadas, the Argentine station
on Laurie Island, is the oldest continuously operating station in the Antarctic.

Argentina's Antarctic territorial claims are treated in the entry on the Argentine Antarctic Territory. On occasion, these claims, which overlap with those of Great Britain and Chile, have given rise to considerable tension. Following the establishment of a network of British stations during and immediately after World War II (see Operation Tabarin), Argentina set up stations on the Melchior Islands in 1947 and on Deception Island in 1948. They were soon followed by many others, some of which have been operated over extended periods of time. The dates given below refer to their operation as all-year stations, though a number were and indeed still are maintained as summer stations only. Argentina has operated the following stations in the South Shetland Islands: Primero de Mayo (1948–1969) on Deception, Teniente Jubany (1982–) on King George Island, and Teniente Camára (1953–1959) on Half Moon Island. On or near the west coast of the Antarctic Peninsula, in addition to Melchior (1947–1969), Argentina established Almirante Brown (1951–1984) and Primavera (1978–1981) on the Danco Coast and General San Martín (1951–1960, 1977–) farther south in Marguerite Bay. On or near the peninsula’s east coast, Argentina has operated Teniente Benjamín Matienzo (1961–1976) at Seal Nunataks and Vicecomodoro Marambio (1969–) on Seymour Island. Along with Esperanza (1952–), which is located at the tip of the peninsula at Hope Bay, Vicecomodoro Marambio is the largest facility operated currently. Across Antarctic Sound from Esperanza, Petrel (1967–1977) was maintained for a decade on Dundee Island. Somewhat separate from this cluster of stations are General Belgrano (1955–1980), General Belgrano II (1979–), and General Belgrano III (1980–1984) at varying locations on the Filchner Ice Shelf; Corbeta Uruguay (1977–1982) on Thule Island in the South Sandwich Islands; and the long-established station Orcadas (1904–) on Laurie Island in the South Orkneys. In addition to these stations, from the late 1940s until the signing of the Antarctic Treaty in 1959, Argentina pursued a policy of constructing refuge huts across the sector to which it laid claim. Although on occasion proving useful to traveling field parties, these huts essentially were little more than territorial markers, a role that they fulfilled at a fraction of the expense involved in the establishment and maintenance of a fully manned station.

Significant science and exploration has been conducted from many stations. The most notable exploratory feats include a journey by dog team along the length of the Antarctic Peninsula from Esperanza to Marguerite Bay in 1962 and the traverse by a ten-man party led by Jorge Edgard Léal from General Belgrano to the South Pole in 1965. The first Argentine flight to the South Pole was made in 1963. It is probable that both the Theron and Shackleton Ranges were first seen by Argentine flights from General Belgrano in 1955. However, these sightings were not followed up, and their naming and initial ground survey was left instead to the Commonwealth Trans-Antarctic Expedition of Vivian Fuchs.

As a claimant state, Argentina was naturally one of the twelve original signatories to the Antarctic Treaty, which has proved remarkably successful in its primary aim of defusing tensions between countries with overlapping claims, particularly between Argentina, Chile, and Great Britain. Argentine Antarctic activities are coordinated by Dirección Nacional del Antártico, with most scientific research carried out by Instituto Antártico Argentino (established in 1951).

See also: Antarctic Peninsula; Antarctic Peninsula, East Coast; Argentine Antarctic Territory; Booth Island; Bruce, William Speirs (1902–1904); Charcot, Jean-Baptiste; Danco Coast; Deception Island; Dundee Island; Filchner-Ronne Ice Shelf; Fuchs, Vivian; Hope Bay; Irizar, Julian; King George Island; Laurie Island; Marguerite Bay; Nordenskjöld, Otto; Seymour Island; South Orkney Islands; South Sandwich Islands; South Shetland Islands; Thule Island

References and further reading:

Argentine Antarctic Territory

Officially known as Antártida Argentina, this is the sector of the Antarctic continent and offshore islands, lying between 25° and 74°W and south of 60°S, that is claimed by the Argentine Republic. This claim overlaps with those of Great Britain (between 20° and 80°W) and Chile (between 53° and 90°W), and together with those claims is suspended but not abrogated under the terms of the Antarctic Treaty.

Because it is not based primarily on priority of exploration, the Argentine claim cannot be treated in detail here. For a full study, the reader is referred to references given in the bibliography below. In brief, Argentina—like Chile—insists on its inheritance of the Spanish claim going back to the Treaty of Tordesillas, wherein Pope Alexander VI awarded rights over all undiscovered lands west of approximately 43°W to Spain and east of this meridian to Portugal. Argentina’s claim also derives from geographical proximity, administration of a meteorological station on Laurie Island in the South Orkney Islands since 1904, and application of the sector theory. This last was first applied in 1867 in the Arctic, when a line was drawn between Canada and Alaska stretching north to the North Pole, with all territory to the west assigned to the United States, and all to the east to the British Empire. The principle has always been controversial but was subsequently referred to in the British Letters Patent of 1908, which established the Falkland Islands Dependencies. Argentina has applied this principle to claim a sector south to the South Pole corresponding to its claimed territorial extent in South America and east to the South Sandwich Islands.

The Argentine claim has developed over time. In 1925, the South Orkney Islands alone were claimed on the basis of
operation of the Laurie Island meteorological station, which Argentina had taken over from the Scottish National Antarctic Expedition of William Speirs Bruce. Between 1939 and 1946, Argentina made formal claim to the sector between 25°W and 68°34′W, south of latitude 60°S. On 23 March 1946, an Argentine government decree extended this claim westward, from 68°34′ to 74°W.

See also: Bruce, William Speirs (1902–1904); Chile; Great Britain; Laurie Island; South Georgia; South Orkney Islands; South Sandwich Islands; South Shetland Islands

References and further reading:

**Argentine Islands (Antarctic Peninsula)**

Located at 65°15′S, 64°16′W, this group of five low-lying islands, off the west coast of the Antarctic Peninsula just south of Lemaire Channel, was named for the Argentine Republic by Jean-Baptiste Charcot, in honor of all the help he received from that country. Winter Island is so named because of the decision of the British Graham Land Expedition (BGLE) to winter there in 1935. In February 1942, the former BGLE base was one of several sites visited by the Argentine ship _Primero de Mayo_, which left cylinders stating Argentina's claim to the Antarctic sector lying between longitudes 23°W and 68°34′W, south of 60°S. In 1946–1947, the Falkland Islands Dependencies Survey set up Base F, initially on Winter Island, but in 1954 moved it to Marina Point on Galindez Island. Base F was an important center for upper atmospheric and ionospheric studies; in addition, a program of radiosonde observations began there in 1956, and ionospheric studies were added in 1962 after the closure of Port Lockroy, where they had formerly been conducted. It was on the basis of ozone observations made since 1957 at this station and at Halley Bay on the Caird Coast that British scientists were able to demonstrate the existence of the Antarctic “ozone hole” in 1985. In the 1977 season, Base F was renamed Faraday. Since February 1996, it has been operated by Ukraine under the name Akademicheskii Vernadskiy.

See also: Argentina; British Antarctic Survey; Caird Coast; Charcot, Jean-Baptiste; Rymill, John (1934–1937); Ukraine

**Armitage, Albert**

(1864–1943)

Albert Borlase Armitage was second-in-command of two major British expeditions: Frederick Jackson's expedition to Franz Josef Land (1894–1897) and Robert Falcon Scott's British National Antarctic Expedition (1901–1904). His greatest achievement on the latter was to lead the first party to reach the polar plateau.

Armitage had been an employee of the Peninsula and Oriental Steam Navigation Company for eight years, when he was nominated by the company's directors as “observer” on the Jackson-Harmsworth North Polar Expedition. Initially given responsibility for maintaining astronomical, meteorological, and magnetic records, before the expedition departed he was appointed second-in-command by the expedition's sponsor, the newspaper magnate Alfred Harmsworth. Of the eight initial members, only Jackson had any Arctic experience, and great responsibilities fell on Armitage, especially when Jackson proved inept at managing the party, preferring to announce his decisions by posting written notices and never relating to his colleagues except by the most formal means. Armitage accompanied Jackson on all his significant sledging journeys, and Armitage's knowledge of small boats proved invaluable when six members of the party survived twenty-four hours in an open boat when they were caught in a violent Arctic storm. The most noteworthy event occurred on 17 June 1896, when Armitage saw a figure walking on the sea ice off Cape Flora, Northbrook Island. It proved to be Fridtjof Nansen, who, with Hjalmar Johansen, had reached Franz Josef Land ten months previously over the sea ice, having left his ship _Fram_ in an attempt to reach the North Pole. Before entering Jackson's hut, Armitage insisted on rating Nansen's chronometer, which had stopped briefly when he had fallen into the water. It was thanks to this quick thinking that Nansen was subsequently able to correct his position measurements to compile an accurate chart of his journey.

Armitage's great contribution to the Jackson-Harmsworth expedition was recognized by the award of the Royal Geographical Society's Murchison Grant, and he was one of many consulted by the society's president, Sir Clements Markham, with regard to a proposed national Antarctic expedition, which Lieutenant Robert Falcon Scott had been appointed to command. Armitage's response was to send Markham an outline of a sledging plan based on his Arctic experiences. For Scott, its arrival was most timely. He had much else to organize and, unlike Armitage, had no practical experience of sledging. Armitage indeed had much to offer the British National Antarctic Expedition, having relevant experience not only of polar conditions but also of sailing ships. Neither expertise was widely available at the time, and despite the preference of Markham and Scott for officers of the Royal Navy, Armitage was appointed second-in-command.

**First Ascent to the Polar Plateau, 1902–1903**

Having successfully conned _Discovery_ through the pack ice into the Ross Sea to find safe anchorage in Discovery Inlet off Hut Point, Armitage found himself one of only three with previous polar experience, the other two being the physician Dr. Reginald Koettlitz, who had also been with Jackson on Franz Josef Land, and Louis Bernacchi, who had been with Carsten Borchgrevink's Antarctic expedition of 1889–1900. In addition to giving Armitage the responsibility for setting up the
magnetic observatory, Scott looked to him for advice on organization of his sledging parties. Armitage had limited experience with dogs and no expertise in their management. His strong preference was for ponies, and as a result the expedition had come equipped with both. Just how dangerous Antarctic travel could be was demonstrated on the first major sledging journey, when seaman George Vince slipped to his death over an ice cliff.

Through the first winter, Armitage’s advice continued to be influential in Scott’s planning for the next sledging season, in which he was assigned to lead the Western Party with the goal of searching out a route through the mountains of Victoria Land toward the South Magnetic Pole. Setting out on 29 November 1902, Armitage’s large party consisted of twenty-one men, of whom twelve formed the main party and nine a support party led by Koettlitz. On a reconnaissance journey in September with the geologist Hartley Ferrar, Armitage had discovered the Ferrar Glacier, offering an apparently promising route up to the polar plateau. On this occasion, he had been prevented from reaching the glacier itself by a mass of confused ice in front of it. Now, he decided to approach it by climbing up the smaller adjacent Blue Glacier toward what he had identified as a possible pass down onto its surface. This pass—Descent Glacier—proved so intimidatingly steep that, rather than attempting to climb down, Armitage initially opted to go on up into the mountains to look for an alternative route onto the plateau. After five days of fruitless endeavor, the party returned to the top of Descent Glacier, where Armitage was now persuaded that an attempt should be made to climb down. The descent was every bit as difficult as it looked, with pitches of up to 45° on the uppermost slopes, down which the heavy sledges were man-handled after being strapped together in pairs. It took them a day and a half to get safely down onto the Ferrar Glacier. Having wasted so much time in the mountains, they now had no hope of reaching the South Magnetic Pole, but at least they could investigate whether this glacier provided a practical route to the plateau. They traveled up through a spectacular canyon, with ice dominating the horizon ahead and almost all the mountains behind them, and by the end of the year found that it did indeed lead to the plateau.

On 2 January 1903, William Macfarlane collapsed with a heart attack. Leaving him behind with the rest of the team led by...
David Allan, Armitage initially continued on. He had provisions for two and a half more days and wished to determine whether Victoria Land formed a narrow mountain ridge from which the land fell away on both sides, or whether it abutted a continental ice sheet. As it turned out, it was to be left to Scott the following season to resolve this issue. Armitage decided that at most he could attempt a brief ski excursion before taking Macfarlane back to safety, but not before making a hair-raising climb up Descent Glacier, which Macfarlane amazingly managed to walk up unaided.

Returning to Discovery on 19 January 1903, Armitage was shocked when Scott invited him to return to England with the relief ship Morning. Most other merchant seamen were leaving, including the reluctant Ernest Shackleton, and it appeared to Armitage that Scott was intent on realizing his ambition for an exclusively Royal Naval expedition for the following year. Armitage was not prepared to leave, but for the remainder of the expedition he was effectively sidelined, remaining in charge at the ship during the field season, when he had expected to lead one of the sledging parties.

Not unnaturally, Armitage was unhappy with this treatment, a discontent that he expressed later in his autobiography (1925). He wrote that he had been initially reluctant to join the expedition and accepted an appointment only on the condition that he would be independent of Scott, although under his command, and was to be landed if possible with a separate party to conduct his own shore activities. That such conditions were granted shows just how eager Markham and Scott were to appoint him. In any event, when it became clear that the entire expedition would winter in Antarctica, Scott persuaded Armitage to remain with him. In return, Armitage expected to lead sledging parties each season. Scott’s decision to leave him at the ship the second year undoubtedly resulted in several days being wasted on an impossible route. Skelton also regarded him as unresponsive to suggestions from others. In Armitage’s defense, it should be said that he had little experience with mountains; but, more generally, it is probably true to say that his 300 miles of sledding on a not particularly well conducted Arctic expedition were insufficient to qualify him as the great expert on polar travel Markham and Scott somewhat naively believed him to be.

See also: Franz Josef Land; Jackson, Frederick (1894–1897); Magnetic Poles; Markham, Clements; Nansen, Fridtjof (1893–1896); Peary, Robert (1898–1902); Scott, Robert Falcon (1901–1904); Victoria Land

References and further reading:
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Atkinson, Edward
(1882–1929)
In their hut at Cape Evans, Ross Island, Edward Atkinson and his companions waited with mounting concern for the return of Captain Robert Falcon Scott’s five-man Polar Party. They had last been seen making confident progress toward the South Pole, from which they were only 148 miles distant. As time passed, it became increasingly clear that they were not coming back (see Scott, Robert Falcon).

The Final Winter of Scott’s Last Expedition, 1912–1913
When Lieutenant Teddy Evans, second-in-command of Scott’s second Antarctic expedition, sailed on 4 March 1912 from McMurdo Sound in Terra Nova, he departed in the belief that the thirteen men left behind at Cape Evans, Ross Island, would soon be rejoined by Scott’s five-man Polar Party, which, as a member of the second return party, he had been among the last to see. Evans himself had nearly died from scurvy on the journey back to Hut Point, and he owed his life to the supreme exertions of petty officers William Lashly and Tom Crean, the latter making a solo trek of 35 miles in eighteen hours in order to summon help.

Left in charge at Cape Evans was surgeon Edward Leicest er Atkinson, one of the expedition’s two physicians and the only naval officer remaining at the base. It had been Atkinson who, with the Russian dog handler Dmitriy Girev, had brought Evans and Lashly to safety on 22 February.

On 26 February 1912, Atkinson sent Apsley Cherry-Garrard with Girev to resupply One Ton Depot, 130 miles from Hut Point. Although Scott had not anticipated needing assistance on the way back, having seen the state to which Evans had been reduced, Atkinson was naturally concerned to offer whatever help he could. On 3 March, Cherry-Garrard reached One Ton, remaining there six days. With no sign of Scott, he was uncertain whether or not to go farther south. Had he done so, there was a real chance that he and the Polar Party would have passed each other without noticing it. He had also to consider whether some dogs should be sacrificed to feed the others, which was the only option available to him if he was to proceed, given that no dog food was depoted at One Ton. Scott, however, had given clear instructions that the dogs should be preserved for the next sledding season. This order and Girev’s
worrying state of health led Cherry-Garrard to turn back on 10 March. On that day, Scott was just 60 miles farther south.

Cherry-Garrard's return to Hut Point on 16 March with no news of the Polar Party did not initially arouse concern. On the basis of times made by other parties on their return journeys, Atkinson had calculated that Scott might arrive back in early March, but Scott himself had predicted anytime from mid-March through early April. In many ways, a greater worry was the situation of the Northern Party, a group of six led by Lieutenant Victor Campbell (see entry), who had been left at Terra Nova Bay on the coast of Victoria Land. Unfortunately, despite repeated attempts, it had proved impossible for Terra Nova to pick them up again. Unless they could make their way back unaided, they would have to winter where they were, provisioned with only six weeks' sledging rations.

Concern for both parties mounted as time passed. With the dogs done in after Cherry-Garrard's journey, on 27 March Atkinson and Petty Officer Patrick Keohane man-hauled as far as they could reach, 8 miles beyond Corner Camp, where they left one week's provisions. No sign of Scott could be seen. It was on this journey that Atkinson himself became convinced that the Polar Party would not be coming back. By 17 April, the probability of its nonreturn was becoming a near-certainty. Atkinson could do nothing for Scott, but there was something he could do for Campbell. Setting out with Charles Wright, Keohane, and Thomas Williamson, he made a risky crossing of the sea ice to reach Butter Point, where additional supplies were deposited and the depot more clearly marked to make certain that Campbell would find it, should his party come this way. At this time of year, the sea ice might be broken up and swept out to sea in any blizzard. Atkinson's party was lucky to make it back to Hut Point six days later without serious incident.

By 1 May, all thirteen of the wintering party were back at Cape Evans. Every effort was made to maintain a normal routine in the face of knowledge that the Polar Party was certainly lost and the Northern Party at best enduring the winter in exceptionally arduous circumstances. Campbell's men, being near the coast, had access to penguins and seals for food and fuel. In the barren interior, no one could survive. With only eleven men fit for sledging, Atkinson now had to consider how to marshal his resources for the coming season. Should he go to the assistance of those who might still be alive, or should he seek to establish the fate of those certainly dead? After general discussion, the decision was made. The priority must be to discover what had happened to Scott. They could only hope that Campbell would be able to make his way back to Cape Evans, or, alternatively, that this time Terra Nova would be able to pick up the Northern Party when it returned from New Zealand.

After making two preliminary journeys to restock Corner Camp, on 29 October Atkinson led ten men south, assisted by two dog teams and seven mules, the latter brought from India on the suggestion of Captain Lawrence Oates, one of the Polar Party. Only Frank Debenham and W. W. Archer were left behind at Cape Evans. On 11 November, One Ton was reached. The next day, Wright noticed something suspicious a little off their path. Telling the others to go on, he went to investigate and found the top few centimeters of a tent exposed above the snow. Digging down, they looked inside to see the bodies of Dr. Edward Wilson and Lieutenant Henry Bowers with Scott lying between them, his arm thrown protectively across Wilson. They left the bodies where they were and, in a spirit of great reverence, collected together records and scientific specimens, including 15.9 kilograms of geological specimens. Meanwhile, Atkinson read through the pages of Scott's diary to find out what had happened. Deciding that no tomb could be more appropriate, they left the three men where they lay, took down the tent poles, and heaped snow back over them to form a high cairn. Next, they headed 18 miles farther south to where Atkinson estimated Oates had walked out into the blizzard to his death. No sign could be found of Oates except his sleeping bag, poignantly slit at the bottom so that he could lie with his frostbitten, gangrenous leg outside the bag, thus allowing it to remain frozen rather than having to endure the daily agony of its thawing.

Judging that there was little chance of finding the body of Edgar Evans, several days' march farther south, Atkinson decided to head back to Cape Evans. There, at last, there was good news. Against considerable odds, Campbell's Northern Party had survived a winter of extreme cold and deprivation in an ice cave and had made their way back across the ice of McMurdo Sound.

Preparations were now made for Terra Nova's return and the expedition's departure. With time for one last venture, in December Raymond Priestley led a party of six to the summit of Mount Erebus, the second ascent of this 3,795-meter volcano. On 18 January 1913, Terra Nova returned, commanded again by Teddy Evans, recovered and newly promoted to commander. "Is everybody well?" he shouted as the ship approached Cape Evans, to be greeted with the reply that the Polar Party had reached the Pole but had been lost on the return journey. The next day Terra Nova sailed with all on board, making first for Hut Point, where a memorial cross was erected to the five men. At Cherry-Garrard's suggestion, upon it was inscribed the last line of Alfred Lord Tennyson's poem "Ulysses": "To strive, to seek, to find, and not to yield."

It was on 10 February that a mysterious ship, which would not give its name, anchored off the little New Zealand port of Oamaru. A boat party came ashore and insisted on sending telegrams to England but gave no further information. The relatives of those who had died had to be informed first. Two days later, Terra Nova sailed into Lyttleton, New Zealand, its flags at half-mast. The loss of the Polar Party made headlines all around the world, provoking an international wave of sorrow.

See also: Campbell, Victor; Ross Island; Scott, Robert Falcon (1910–1912); Wilson, Edward
Auckland Islands

References and further reading:

Auckland Islands (Sub-Antarctic)

Located at 50°35'S, 166°00'E, the Auckland Islands were discovered on 18 August 1806 by Abraham Bristow when sailing from Van Diemen's Land (Tasmania) back to England. He named his discovery for Lord Auckland, a friend of his father. There are two main islands—Auckland and Adams—separated from each other by Carnley Harbor. Auckland Island is 25 miles long and 17 miles at its broadest, with an area of 196 square miles. Adams Island has an area of 39 square miles and is 15 miles long and 2 miles wide on average. At the time of his discovery, Bristow was engaged on a trading voyage for Messrs. Enderby of London in the 401-ton Ocean, and although he noted large numbers of seals, he had neither time nor a suitable vessel to investigate further. In the following year he returned in Sarah, a sealing vessel also owned by Messrs. Enderby, landing and taking possession of the islands for Great Britain on 20 October 1807. Many other sealing visits followed, but by the time Benjamin Morrell visited in December 1829, there were no fur seals to be found.

A number of exploring expeditions returning from Antarctica to New Zealand found the Auckland Islands conveniently placed for taking on water, making repairs, and obtaining fresh meat from the pigs and other species introduced by the sealers. The U.S. Exploring Expedition of Charles Wilkes was here from 7 to 10 March 1840. The French expedition of Jules Dumont d'Urville arrived the day after Wilkes left, remaining until 20 March. Both anchored at the northern end of Auckland Island in Sarah's Bosom—now known as Port Ross—which Dumont d'Urville described as one of the finest harbors in the world. The following year, the British expedition of James Clark Ross also recuperated here from 20 November to 12 December, making the first scientific studies of the islands. On 28 November 1840 they observed an international term day, for which Ross set up temporary laboratories to record variations in magnetism and gravity as part of a coordinated campaign involving all British and European stations. Meanwhile, natural history specimens were collected by his surgeons. Assistant surgeon Joseph Hooker made a particularly thorough study of the island's botany, finding many species in common with other isolated southern lands and raising the question as to how closely related species could be found so far apart. It was a subject to which he and Charles Darwin were subsequently to devote much attention. Given the special interest of the plants, it was highly unfortunate that during Ross's stay, some of the bush was destroyed by a fire lit by sailors seeking to clear a way through the thick vegetation.

Shortly after these visits, probably in the summer of 1842–1843, a group of Maori and Moriori from the Chatham Islands attempted to escape from the turmoil of those islands by colonizing the Aucklands. They found the climate too cold to grow potatoes and had a very hard time of it. Their settlement was followed soon afterward by a British whaling station. Like Dumont d’Urville, Ross had been impressed by Port Ross's natural harbor, and he suggested that it would make an excellent location for a whaling station. This suggestion was taken up by Charles Enderby of Enderby Brothers, a company that had played a leading role for some generations in the Southern Ocean whaling and sealing industries. By the 1840s, the British whaling industry was in a bad way, and Enderby believed that in Ross's suggestion lay a possible future for his industry. In 1846 he published a pamphlet advocating its revival through establishment of a whaling colony on the Auckland Islands. In the following year, he obtained a thirty-year lease from the British government, which he then sublet to the newly chartered British Southern Whale Fishery Company, which was to operate the station with Enderby himself as lieutenant governor of the new colony. The station was not a commercial success. Only a few whales were caught, and the anticipated trade in ship repair failed to materialize. In August 1852 the colony was evacuated after just over two years' occupation. By 1856 the Maori and Moriori settlement had also been abandoned.

Numerous ships have been wrecked here, especially on the precipitous west coast, a dangerous lee shore onto which many vessels have been driven by the prevailing westerly winds. Among the many men shipwrecked here was Captain Thomas Musgrave, whose ship Graffion was wrecked in Carnley Harbor in January 1864. Together with four of his crew, he built a hut and remained through two winters, until he managed to build a boat sufficiently large to accommodate three men. Musgrave's heroic five-day voyage to Stewart Island, during which he was unable to eat even once and had to spend the entire time standing with one hand working the pump and the other holding a rope, may be compared only to Sir Ernest Shackleton's epic crossing from Elephant Island to South Georgia in 1916. Like Shackleton, Musgrave had then to overcome further obstacles before managing to rescue the two men remaining on the Auckland Islands at his second attempt. Other notable wrecks have included Invercauld (1864), General Grant (1866), Derry Castle (1887), Compadre (1891), Anjou (1905), and Dundonald (1907).

During the latter part of the nineteenth and early twentieth centuries, the Auckland Islands continued to receive occasional visits by Antarctic exploring expeditions. A German expedition came here to observe the transit of Venus across the sun on 9 December 1874. Poor weather prevented them from seeing it, but some scientific work was undertaken, and reports...
were published later on the botany, geology, and meteorology of the islands. On an expedition led by Henrik Bull, *Antarctic* came here intending to seal until its crew was informed that it was illegal; instead, they spent the remainder of their eight-day stay examining the island's bays and harbors. Carsten Borchgrevink stayed between 21 and 27 March 1900, after spending the first winter on Antarctica. The islands were the chosen rendezvous of Robert Falcon Scott, who made arrangements for *Discovery* to meet up here with the two relief ships *Morning* and *Terra Nova* in March 1904, each making their separate passage through the pack ice surrounding the Ross Sea. Between 22 June and 6 July 1912, Douglas Mawson sent his expedition ship *Aurora* to take soundings and make a survey of the coast. Unfortunately, consistently poor weather meant that little could be achieved. From 1882 until 1920, the Aucklands were also visited annually by ships chartered by the New Zealand government to search for castaways and to check the relief depots on these and other islands, where shipwrecks were common. These voyages provided an opportunity for occasional visits by naturalists, the most significant of them being an expedition organized by the Philosophical Institute of Canterbury. On 15 November 1907 a party of twelve scientists was landed from *Hinemoa*, remaining on the island eleven days to make geophysical, geological, botanical, and zoological studies.

At the outset of World War II in 1939, the German steamer *Erlangen* found temporary shelter here and made use of local firewood to save on coal. Such use by enemy ships was unwelcome to the New Zealand government, who feared that the island’s excellent harbors might also be exploited by German raiding vessels. In response, the Cape Expedition was organized, with the purpose of establishing manned stations here and on Campbell Island to monitor shipping activity. Two stations were opened in 1941, one at Port Ross (occupied until June 1945) and the other at Carnley Harbor (occupied until 1944), at the north and south ends of the islands, respectively. In addition to their coastal watching duties, the occupants of these stations conducted significant scientific studies, which were later published in a series of twenty-seven reports. By January 1944, the threat had largely disappeared, and surveyors were landed to make a survey of the island, which was completed the following year.

Since 1945, several scientific expeditions have been made to the Aucklands, mainly small-scale affairs, with the exception of that led by B. D. Bell in 1972–1973. In the light of growing interest in the islands and its surrounding waters by the tourism, fisheries, and mining industries, scientists on this expedition conducted baseline studies into the general ecology of the islands and the status and distribution of the species found there as a guide to future research and management. The Auckland Islands Nature Reserve is today administered by the New Zealand Department of Conservation. Landing is by permit only.

The Auckland Islands Nature Reserve is today administered by the New Zealand Department of Conservation. Landing is by permit only.

See also: Borchgrevink, Carsten; Bull, Henrik; Dumont d’Urville, Jules; Enderby Brothers; Indigenous Peoples; Mawson, Douglas (1911–1914); Morrell, Benjamin; New Zealand; Ross, James Clark (1839–1843); Sealing and Antarctic Exploration; Shackleton, Ernest (1914–1916); Sub-Antarctic islands; Whaling and Antarctic Exploration; Wilkes, Charles

References and further reading:

**Austin, Horatio**

(1801–1865)

The British naval officer Horatio Austin commanded one of many expeditions organized to search the Canadian Arctic for Sir John Franklin, when nothing was heard of the latter many years after he had been sent to discover the Northwest Passage. Austin found Franklin’s first winter quarters on Beechey Island. His expedition was also distinguished by the adoption of novel techniques for the conduct of man-hauled sledding journeys, which were to set the pattern for British naval expeditions long afterward.

Horatio Thomas Austin joined the Royal Navy in 1813 as a second-class volunteer. During the War of 1812 between Great Britain and the United States, he served in HMS *Ramillies*. He gained his first experience of the polar regions as lieutenant in HMS *Fury* on Edward Parry’s expedition to Prince Regent Inlet (1824–1825) and then as second-in-command of HMS *Chanticleer* on Henry Foster’s voyage to the South Atlantic and Deception Island (1829–1831). When Foster was drowned in February 1831, Austin took over as acting commander. At least equally significant for his subsequent appointment to lead the 1850–1851 Franklin search expedition was his familiarity with steam vessels, with which he had worked since 1837. The use of steam in ice navigation was still at an experimental stage, and it made sense to have in command someone who was fully aware of its strengths and weaknesses.

**Looking for Franklin in Barrow Strait, 1850–1851**

When Sir James Clark Ross returned to London in 1849, having found no sign of Franklin, considerable concern was expressed, not least by Sir John’s wife, Jane. With popular opinion insistent that the Admiralty organize another search, Austin was chosen to take command of four vessels: two sailing ships of 410 tons, HMS *Resolute* and HMS *Assistance*, and two 400-ton screw steamers, HMS *Pioneer* and HMS *Intrepid*, which were to be commanded by Austin, Captain Erasmus
Ommanney, and lieutenants John Bertie Cator and Sherard Osborn, respectively. Other officers included lieutenants Leopold McClintock, Frederick Mecham, and Robert Aldrich, all of whom would soon establish reputations as fine sledgers, a subject to which McClintock in particular had devoted much thought since his first experiences of man-hauling with Ross. The expedition was provisioned for three years.

Departing from London on 3 May 1850, Austin’s passage through Baffin Bay was greatly assisted by sailing in company with HMS *Lady Franklin* and HMS *Sophia*, which was commanded by the veteran whaler William Penny. Austin was also accompanied by Sir John Ross in *Felix* and Charles Forsyth in *Prince Albert*, whose voyages had been organized privately by Lady Franklin. On reaching Lancaster Sound in mid-August, *Resolute, Pioneer, Prince Albert*, and *Felix* searched the southern shore, while Ommanney was sent to explore the northern shore with *Assistance* and *Intrepid*. Soon afterward, two more vessels joined the search effort: the U.S. brigs *Advance* and *Rescue* under the command of Lieutenant Edwin De Haven. Such an armada must surely find something, and first to do so on 23 August was Ommanney at Cape Riley, Devon Island, and adjacent Beechey Island. The cairn attracting Ommanney’s attention contained no message, but nearby were found broken bottles, rags, and detritus indicating a European expedition, which could only be Franklin’s. A second cairn was seen on Beechey Island, close by an abandoned campsite. Ommanney’s vessels were soon joined by others, and an exhaustive search was made of the neighborhood, during which Penny found unmistakable evidence that it was where Franklin had spent his first winter. Most disappointingly, no written records were discovered. Sledge tracks were seen extending some distance across Devon Island, but otherwise there was no indication of Franklin’s next destination. At least, Austin had proved that he had indeed reached Lancaster Sound, which some had begun to question.

Once sure that nothing more was to be discovered on Beechey Island, Austin sought to get farther west but could reach no farther than Griffiths Island off Cornwallis Island before becoming beset on 11 September. Here, he established winter quarters in Barrow Strait, while Penny and Ross managed to make their way into the more sheltered anchorage of Assistance Bay. The Americans were not equipped to winter and turned back, only to be caught up in ice drifting north through Wellington Channel, and were not released until far south in Baffin Bay, having endured a most uncomfortable winter.
Austin's men were more fortunate in their reinforced and heated ships. During the fall, depots were laid on Cornwallis and Somerville Islands in preparation for several long sledging journeys planned for the coming spring. It was one of a number of innovations introduced by McClintock during the expedition, which provided him with his first opportunity to try out ideas on how man-hauling journeys might be conducted to greater effect. Each sledge had its own name, flag, and motto and was to be pulled by a team of six or seven men led by an officer. Lengthy journeys would be undertaken by two sledging parties, an "extended" team, which would complete the entire distance, and a "limited" team, which would supply food until turning back and then lay depots to assist the return of the extended team. Once introduced, these arrangements were adopted for almost all subsequent sledging journeys during the Franklin search, the few exceptions being those made with the aid of dogs by Penny, William Kennedy, Bedford Pim, and others with Henry Kellett in 1852–1854 and by McClintock himself in 1857–1859.

First to set out was Robert D.Aldrich, first lieutenant of Resolute, on 14 April 1851. Traveling along the south coast of Bathurst Island, he explored the west coast of this island and the smaller islands to its northwest as far as Cape Aldrich at about 76°11'N. The next day, McClintock departed from Assistance. After charting the entrance to McDougall Sound between Cornwallis and Bathurst Islands, he caught up with Aldrich, whom he accompanied as far as the southwestern tip of Bathurst, before crossing the sea ice to survey the south coasts of Byam Martin and Melville Islands as far west as Cape Dundas. On the same day, Ommanney led seven sledges south across Barrow Strait. His first objective was Cape Walker on Russell Island. Since this location had been specifically named in Franklin's instructions, there was every expectation of finding a message here. Again, however, nothing was found, and from Russell Island, Ommanney carried on to explore the west coast of Prince of Wales Island, charting Ommanney Bay before he turned back. Osborn continued on to survey the west coast as far south as 72°20'N. Lieutenant William Browne's party had separated after Cape Walker, going on to investigate the east coast of Prince of Wales Island to Pandora Island.

During journeys totaling some 5,000 miles, Austin's sledging parties found no further evidence of Franklin but did succeed in charting the southern coasts of Cornwallis, Bathurst, and Melville Islands, as well as the entire coastline of Byam Martin and the northern part of Prince of Wales Island. The vessels were released from the ice on 8 August, and three days later Penny came aboard Resolute to discuss plans for further exploration with Austin. What exactly happened is unclear, but on his return to London, Penny claimed that Austin had refused him use of a steamer to explore Wellington Channel, through which he was convinced Franklin had sailed after leaving Beechey Island. Austin asserted that, on the contrary, Penny and he had agreed that a further search of Wellington Channel was not worthwhile. Probably, the cause was a misunderstanding between two hot-tempered and incompatible men, Penny's desire being not to explore Wellington Sound itself but the region beyond it. In any case, the result was that following their argument, neither considered anything to be gained by remaining another year in the Arctic, and both returned to Great Britain, much to the disappointment of the public at large, Lady Franklin, and the Admiralty. A naval inquiry predictably closed ranks in support of Austin and placed the bulk of the blame for the dispute on Penny. Neither Austin nor Penny was invited to participate in later expeditions in search of Franklin, the next major naval expedition being led by Sir Edward Belcher.

See also: Barrow Strait; Bathurst Island; Beechey Island; Belcher, Edward; Byam Martin Island; Cornwallis Island; Devon Island; Foster, Henry; Franklin, Jane; Franklin, John (1845–1848); Franklin Search Expeditions; Man-Hauling; McClintock, Leopold; Melville Island; Northwest Passage; Prince of Wales Island; Ross, James Clark (1848–1849); Ross, John (1850–1851)

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Australia

Australia's special relationship with Antarctica goes back a long way. For centuries they were bracketed together as Terra Australis Incognita and only slowly disentangled by cartographers as separate land masses. In addition, Australia was almost the last land to divide from Antarctica in the breakup of the Gondwana supercontinent. Although significantly more distant from Antarctica across the Southern Ocean than the tip of South America is across the Drake Passage, Australia's southern ports are nevertheless among those most conveniently placed for Antarctic exploration and as such have frequently welcomed exploring expeditions from other countries as well as sending out their own.

During the early nineteenth century, sealing and trading vessels from Sydney discovered several sub-Antarctic islands, both it and Hobart being also visited by a number of Antarctic exploring expeditions. It was at Hobart that the British sealer John Biscoe sought relief in 1831 after a nightmare voyage from Antarctica following his discovery of Enderby Land. It was also from Hobart that Jules Dumont d'Urville in 1839 and James Clark Ross in 1840 sailed south to discover Adélie and Victoria Lands, respectively. It is probable that before setting out, Ross heard dockside rumors of high latitudes achieved by Samuel...
Harvey in 1831 and, possibly, by John Biscoe in 1838–1839, information that would have assisted his decision to follow a more easterly course than originally planned.

The potential of Australia as a base for Antarctic exploration was first perceived by two nonnationals, Matthew Fontaine Maury, superintendent of the U.S. Hydrographic Office, and Georg Balthasar von Neumayer. In 1861 Maury wrote to the British Admiralty, advocating the need for an international Antarctic expedition to conduct meteorological and oceanographic research. Since Australian ports were only one week’s sailing distance from Antarctica, he proposed that a steamer be sent out from Australia to choose a suitable site, which would then be equipped and manned by subsequent voyages from Melbourne. The German Neumayer was based in Australia for much of the period between 1852 and 1864. In addition to establishing a magnetic observatory in Melbourne and conducting pioneering magnetic and meteorological work in Victoria, Neumayer was a persuasive advocate of Antarctic exploration and did much to raise public interest.

Partly as a result of Neumayer’s advocacy, during the latter half of the nineteenth century, when elsewhere there was little interest in Antarctica, in Australia several attempts were made to organize an expedition, generally in concert with Great Britain or another country since Australian resources at this time were limited. In 1869 John E. Davis, a former member of James Clark Ross’s expedition of 1839–1843, proposed an expedition to Victoria Land to coincide with the transit of the planet Venus across the face of the sun in either 1873 or 1881. Despite enthusiastic backing from the British Astronomer Royal, the necessary funding could not be raised. In 1886, the Royal Society of Victoria and the Royal Geographical Society of Australasia (Victorian Branch) combined to set up the Australian Antarctic Exploration Committee. Its first act was to compile and publish **Memorandum of the Objects to Be Served by Antarctic Research** (Pasco 1886), in which Ross’s observations of right whales in the Ross Sea were noted and attention was drawn to the potential of these waters for an extension of the whaling industry. Ultimately abortive attempts followed to assist the organization of expeditions by Sir Allen Young and Baron Adolf Erik Nordenskiöld. British Treasury skepticism of its small scale and mixed commercial and scientific objectives led to the failure of Young’s proposed expedition. Negotiations with Nordenskiöld were to continue into the 1890s, when Swedish support was withdrawn, probably because of Nordenskiöld’s concern that the expedition would be too small to achieve results commensurate with his reputation. Although not organized by the committee, Henrik Bull’s expedition of 1893–1895 resulted directly from its work, when the Norwegian whaling entrepreneur Sven Foy. decided that it was worth funding Bull to investigate the numbers of whales south of Australia. In the event, very few right whales were seen, though sailing south from Melbourne, Bull did achieve what was widely publicized by the expedition member Carsten Borchgrevink as “the first landing on the Antarctic continent” (1896).

Largely on the back of this claim, Borchgrevink, a Norwegian migrant to Australia, organized what may be regarded as the first Australian expedition to Antarctica. Given that the funding was almost exclusively British and the participants largely Norwegian, however, these countries too might lay claim to it. Borchgrevink set out from Hobart in 1898, but his experience of an exceptionally slow passage through the pack ice led him to recommend choice of a course east of 170°E to subsequent expeditions, which as a result generally chose New Zealand rather than Australia as their point of departure. It is for this reason that the “Heroic Era” expeditions of Robert Falcon Scott and Ernest Shackleton stopped at Australia for fund-raising and reprovisioning purposes but sailed south instead from Lyttleton, New Zealand.

That Australia today lays claim to 42 percent of the Antarctic continent, a claim suspended but not abrogated under the Antarctic Treaty, is almost entirely the result of the lifework of Sir Douglas Mawson. Although himself a distinguished scientist who ensured that significant science was conducted during his two expeditions, Mawson never lost sight of the goal of securing for Australia those regions of Antarctica lying to its south. In 1933, claims put forward by Mawson, together with those of earlier British explorers, were consolidated into the Australian Antarctic Territory. Certain aspects of these claims were controversial, and although they were recognized within the British Empire as well as by France and Norway, the United States in particular was unhappy with the extent of land claimed and mounted counter claims to the “American Highland” in interior Princess Elizabeth Land. The race to establish the western boundary between Australian and Norwegian claims is described in the account of Mawson’s second expedition (1929–1931) in his entry.

Having laid claim to so much of Antarctica, the Australian government took steps following the conclusion of World War II to secure this territory through establishment of the Australian Antarctic Division and creation of Australian National Antarctic Research Expeditions (ANARE) in 1947. Led through much of its earlier years by Phillip Law, ANARE has since mounted annual expeditions, establishing stations first on Heard and Macquarie Islands in 1948 and then on the coast of Mac. Robertson Land in 1954. Suitably named Mawson, it was the first permanent station to be occupied in East Antarctica. ANARE now operates three all-year stations on the continent—Mawson, Davis (1957–), and Casey (1969–)—together with an all-year station on Macquarie and a summer station on Heard. As a claimant state, Australia was one of the twelve original signatories to the Antarctic Treaty in 1959. Its research program remains one of the largest on the continent.

**See also:** Australian Antarctic Territory; Biscoe, John; Borchgrevink, Carsten; Bull, Henrik; Dumont d’Urville, Jules; Heard Island; Mac. Robertson Land; Macquarie Island; Mawson, Douglas; Nordenskiöld,
Longitude. “From west to east, the major areas included are 160th degree of East Longitude and the 45th degree of East of the 60th degree South Latitude and lying between the islands and territories other than Adélie Land situated south coastline. The territory was officially established by the entire continent and extending through 6,600 miles of sectors claimed by any one country, constituting 42 percent of pended under the Antarctic Treaty, this is the largest of all Corresponding to the Australian territorial claim now sus-

Australasian Antarctic Expedition of 1911–1914 carried out the first land explorations of George V Land, Adélie Land, and Queen Mary Land, and whose British, Australian and New Zealand Antarctic Research Expedition of 1929–1931 discov-
ered Mac. Robertson Land, Princess Elizabeth Land, and the Banzare Coast of Wilkes Land.

See also: Australia; Balleny, John; Biscoe, John; Enderby Land; George V Land; Kemp Land; Kemp, Peter; Mac. Robertson Land; Mawson, Douglas; Oates Land; Princess Elizabeth Land; Queen Mary Land; Wilhelm II Land; Wild, Frank (1911–1913); Wilkes, Charles; Wilkes Land

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Austria
This entry covers both the present state of Austria and its much larger predecessor, the Austro-Hungarian Empire, which was dissolved into separate countries following defeat in World War I.

Although one of the largest European states, the Austro-Hungarian Empire possessed limited access to the sea and only a small navy, based at Trieste. Its imperial ambitions were chiefly concerned with continental Europe, and little attempt was made at overseas expansion, let alone in the polar regions. Austro-Hungarian involvement in polar exploration resulted from individual rather than state initiative, when Julius Payer, Karl Weyprecht, and Count von Johann Nepomuk Wilczek organized two expeditions to the Barents Sea in 1871 and 1872, which resulted in the discovery of Franz Josef Land. Austro-Hungary never mounted a formal claim to this archipelago, which remained Terra nullius (no-man’s land) until 1926, when it was included within the sector claimed by the Soviet Union. Weyprecht spent the last years of his life advocating the organization of an International Polar Year (IPY), during which stations would be established by many countries in different parts of the Arctic and Antarctic, enabling coordinated observations to be made of meteorology, geomagnetism, aurora, and other phenomena. Austro-Hungary’s own contribution to the first IPY in 1882–1883 was underwritten by Wilczek, and Emil von Wohlgemuth was placed in command of a station on Jan Mayen, an isolated volcanic island to the north of Iceland. Austrian scientists returned to Jan Mayen during the second IPY (1932–1933), when a party led by Dr. Hanns Töllner erected a station close to the site occupied in 1882–1883 and conducted a scientific program organized by the Central Institute for Meteorology and Geodynamics.

Although Austria ratified the Antarctic Treaty on 25 August 1987, no national research program has been organized and no attempt made to seek consultative status. Historically, however, at least one specifically Austrian expedition to Antarctica was planned. Felix König had been a member of Wilhelm Filchner’s 1911–1912 expedition. After acquiring Filchner’s ship Deutschland and renaming it Österreich, König planned to continue Filchner’s program of exploring the region lying...
between the Weddell and Ross Seas. His intention was to set up his base in or near Vaehsel Bay, from where he would penetrate inland to the Queen Maud Mountains discovered by Roald Amundsen on his way to the South Pole. With Sir Ernest Shackleton also planning to explore this area on his transcontinental journey, a dispute arose between the two, with König claiming that his participation in Filchner’s expedition gave him priority in this region and that having another expedition in the same area, even one with very different objectives, would lead to confusion of depots and possible exhaustion of seal stocks. In the event, while Shackleton’s expedition was famously told to “proceed” regardless of the outbreak of World War I, König’s expedition was aborted. Since then, although private mountaineering expeditions have been organized and individual Austrian scientists have participated in the Antarctic programs of other nations, there has been no national Austrian Antarctic expedition.

One of the first expeditions to visit Franz Josef Land after the Soviet Union’s dissolution in 1991, when the archipelago was reopened to foreign access, was organized in 1992 by the Austrian television company ORF. The original purpose was to make a film of Payer and Weyprecht’s great expedition, but out of this arose the suggestion that an Austrian station be established on the archipelago at a cost estimated at 70 million Austrian schillings. As with so many other private Austrian initiatives, government backing was not forthcoming. See also: Filchner, Wilhelm; Franz Josef Land; International Polar Years; Jan Mayen; Payer, Julius; Shackleton, Ernest (1914–1916)

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Axel Heiberg Island (Canada)
Located between 78° and 81°N and 96° and 85°W, Axel Heiberg Island is the largest of the Sverdrup Islands, about 220 miles long and 20 to 100 miles wide and covering an area of 16,671 square miles. It is separated from Ellesmere Island to its east by Eureka and Nansen Sounds and from Meighen, Amund Ringnes, and Cornwall Islands to its southwest by the Sverdrup and Peary Channels and Massey Sound. The island was first seen in late April 1899 by Otto Sverdrup and later named for Consul Axel Heiberg, one of his expedition’s three main sponsors. Sverdrup’s first landing was made at Cape Southwest on 11 April 1900. Following the west coast in an attempt to demonstrate that it was an island, he got as far as 80°55′N without reaching the northernmost point. He made another attempt the next year along the east coast through Eureka and Nansen Sounds, reaching 80°30′N off the Schei Peninsula. Insularity was only finally proved in 1902, when he was able to travel the length of these sounds to 81°40′N, without finding any land connection with Ellesmere Island.

Axel Heiberg was next reached by Robert Peary, who landed on 26 June 1906 at Cape Thomas Hubbard, from where he believed he could see “Crocker Land” far to the northwest. Cape Thomas Hubbard and Cape Stallworthy are not infrequently confused. Lying on either side of a bay at the northern tip of the island, the latter on the eastern side reaches slightly farther north and was first named Svarteveg (Black Wall) by Sverdrup for its striking cliffs. Peary’s cabin was built on the more westerly peninsula. Frederick Cook began his claimed journey to the North Pole on 18 March 1908 from Cape Stallworthy, and Donald MacMillan set out across the sea ice in his search for nonexistent Crocker Land in April 1914 from Cape Thomas Hubbard. It was in Peary’s cabin on the latter that Stallworthy found the record from Hans Krüger in 1932 (see below).

MacMillan sought to establish a base on the island in 1926, supplied by air from Etah, northwest Greenland. His plans were abandoned when aircrew led by Richard Byrd failed to locate anywhere safe to lay an intermediate fuel depot. MacMillan had hoped to make use of the base to mount an extended search for land in the Arctic Ocean. These intentions aroused considerable concern in Canada, which, as a direct result, organized the long-distance Royal Canadian Mounted Police (RCMP) patrols led by A. H. Joy in 1926 and 1929, the first visits by a Canadian.

A third RCMP patrol led by Corporal Harry Stallworthy searched the island in 1932 for signs of the missing explorers Hans Krüger, Åge Rose Bjare, and their Inuk assistant Akqioq, who had not been seen for two years. During a 1,400-mile journey lasting sixty-five days, Stallworthy set out with three Inuit and forty-nine dogs from Bache Peninsula, sledged across Ellesmere Island, and then circumnavigated Axel Heiberg. The only indication of Krüger’s whereabouts was the message found at Cape Thomas Hubbard. Dated 30 April 1930, it stated that Krüger had visited northern Ellesmere Island and was planning to continue to Meighen Island farther west. Stallworthy was deterred from attempting to follow him by the state of the ice in Sverdrup Channel and therefore continued down the west coast checking all cairns to see whether they contained notes recording Krüger’s return to land. The south coast was also searched by his colleague, Constable R. W. Hamilton, as well as being later visited by David Haig-Thomas in 1938 and by geologist Johannes Troelsen in 1940.

Systematic investigation of the interior began in 1955, with the Geological Survey of Canada’s Operation Franklin. From 1959 to 1962, a field station was maintained by McGill University in Expedition Fiord on the west coast at 79°26′N, 90°46′W. Equipped with a small airstrip, it continues to be used by summer parties.

Axel Heiberg has two major ice caps (Müller and Steacie), and its mountains rise to 2,000 meters in the Princess Margaret Range. The first significant mountaineering expedition was organized in 1972 by the British Army. Led by Major A. J. Muston, the party climbed forty-eight peaks in the area east
of Middle Fiord. The expedition also conducted botanical and zoological studies.

**See also:** Byrd, Richard; Cook, Frederick (1907–1909); MacMillan, Donald (1914–1917, 1925); Peary, Robert (1905–1906); Queen Elizabeth Islands; Sverdrup Islands; Sverdrup, Otto (1898–1902)

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Back, George  
(1796–1878)

The British naval officer George Back participated in five expeditions to the Arctic, two of which he led. His name is preserved by the Back River, which, rising northeast of Great Slave Lake, flows through the Canadian Barrens to the Arctic Ocean. An accomplished artist, Back’s diaries and books are prized for their many beautiful illustrations of northern Canada and its peoples, which he was among the first to depict.

Just twelve years old and a first-class volunteer on HMS Arethusa, in 1809 Back was captured and spent the next five years as a French prisoner of war, a time he put to good use by honing his artistic skills. Midshipmen capable of accurate depiction of new land and significant incidents were a great asset to exploring expeditions, prior to the development of photography, and Back’s talent assisted his appointment to HMS Trent on David Buchan’s expedition of 1818, where his skills attracted the notice of Trent’s commander, Lieutenant John Franklin. When Franklin was charged with making a survey of the Arctic coast of North America, Back was one of those selected to join him. During Franklin’s expedition of 1819–1822, Back proved himself the hardiest of travelers. Indeed, that Franklin and eight others survived a nightmare journey across the Canadian Barrens, during which twelve men died, was ultimately thanks to Back’s resilience in leading an advance party to seek help from local Indians. Despite this sterling contribution, when Franklin made preparations for his next expedition, Back was not one of those initially selected and was only included when Franklin’s first choice died (see Franklin, John [1825–1827], for more information on this expedition). Scattered comments throughout his life make clear that Back’s personality was not such as to endear him to all, and the puritanical Franklin may have been particularly offended by Back’s competition with his fellow midshipman Robert Hood for sexual favors from the young Indian girl, Greenstockings. Indeed, Franklin felt obliged to send Back to Fort Chipewyan to ensure the forwarding of promised supplies, after a duel between the two was only narrowly averted. The second expedition was much more successful than the first, with Back accompanying Franklin down the Mackenzie River and along the Arctic coast to Return Reef, near Prudhoe Bay.

Down the Great Fish River to the Arctic Coast, 1833–1835

In 1829, John Ross had set out for the Canadian Arctic in the experimental paddle steamer Victory. When nothing was heard of him for three years, his brother George, father of James Clark Ross, Victory’s second-in-command, began a campaign for a relief expedition to be sent. He eventually persuaded an initially reluctant Admiralty to appoint Back to lead an undertaking formally organized by the Hudson’s Bay Company (HBC), with the assistance of funds raised through public subscription. Back’s plans were derived from those previously proposed by Dr. John Richardson, his colleague on Franklin’s two overland expeditions. Believing that Ross was beset in Prince Regent Inlet, Back would travel overland to the Arctic coast down the “Great Fish River.” No European had ever seen this river known to the Indians as Thlew-ee-choh-dzezeth, but according to report, it flowed northwest to the Arctic Ocean from near Great Slave Lake. From there Back would make for Fury Beach, Somerset Island, where it was believed that Ross would most likely be found subsisting off the extensive provisions abandoned when HMS Fury was wrecked in 1825, during an expedition led by Edward Parry.

Accompanied by three sailors and a surgeon, Dr. Richard King, Back sailed for New York in February 1833, from there following fur-trading routes familiar to him from Franklin’s second expedition north to Fort Resolution, Great Slave Lake. Reaching this trading post on 8 August, he set about locating the Great Fish River with the aid of an Indian guide. He found it with some difficulty on 29 August and made a preliminary inspection of the difficulties likely to be involved in its descent. Back returned to Great Slave Lake, where his winter quarters, Fort Reliance, was under construction. Among the Indians there were two well-known to him from Franklin’s first expedition: the Copper Indian chief Akaitcho and Greenstockings, the latter now an old woman according to her own description but still the beauty of the tribe to Back, who gallantly insisted on drawing her. Caribou were scarce that year, and Akaitcho was no longer the hunter he once was, and although the expedition itself was well-supplied, many among the Indians suffered severe deprivation.

While Back was making preparations for his rescue mission, on 30 April 1834 news reached him reporting John Ross’s safe return. He was now free to concentrate on exploration, his objective being to complete the survey of the Arctic coast from Point Turnagain, Franklin’s farthest east, to Boothia Peninsula, recently explored by John and James Clark Ross. If the Indians were correct, the Great Fish River entered the Arctic Ocean near the center of this previously uncharted coast. On 7 June, Back set out from Fort Reliance with eleven men and a boat built the previous year. On 28 June, the river was reached via Artillery, Clinton-Colden, and Aylmer Lakes. It took twenty-five days to complete its very difficult descent, the 530-mile course being interrupted by no less than eighty-three rapids and falls. Having reached the coast, Back’s hopes of traveling east to Point Turnagain proved unrealizable because of heavy ice.
Rather than adopting King's suggestion to sail north or east, where there appeared to be open water, Back spent the next two weeks in futile delay waiting for the ice to clear, with little accomplished beyond preliminary investigation of Chantrey Inlet. Knowing from personal experience during Franklin's first expedition what might happen to an expedition delaying too long in the field, on 16 August Back began the return journey. It involved hauling their heavy, water-logged boat up the Great Fish River before they finally arrived at Fort Reliance on 27 September.

Next spring, Back set out for New York and Great Britain on 21 March 1835 ahead of the rest of his expedition, which, led by King, was to follow some weeks later via York Factory in the HBC supply ship Prince Rupert. Back received a warm welcome and the now customary shower of awards, including promotion to post captain. His well-written account was a deserved popular success, and the only blot on his triumph was King's rival publication, which subjected his leadership to a range of acerbic criticisms, both justified and otherwise.

Of the three major North American rivers now known to debouch into the Arctic Ocean—Mackenzie, Coppermine, and Back, as the Great Fish River gradually came to be known—the difficult course of the last offered the least encouragement to explorers. As a result it was little visited, though King did offer to lead an expedition down it when Franklin's third expedition went missing in 1845, a suggestion unfortunately not taken up until 1855, by James Anderson and James Green Stewart. An expedition mounted eight years earlier might have saved at least some from this doomed expedition. As late as 1948, the only maps of this river were those compiled by Back.

Frozen Out from Foxe Channel, 1836–1837

With the survey of the Arctic coast of North America still incomplete, the Royal Geographical Society proposed to the British government that an expedition be sent through Hudson Strait to Repulse or Wager Bays, from where boats would be hauled across Melville Peninsula to chart its west coast south from Fury and Hecla Strait and then west along the mainland to Point Turnagain. This plan finding favor with the Admiralty, Back was given command of the 325-ton bomb vessel HMS Terror. His task was similar to that attempted by George Lyon in his disastrous voyage of 1824.

Back was to enjoy no better fortune. Departing with sixty men from London on 14 June 1836, he was aware that Lyon had been severely criticized for seeking to reach Repulse Bay by sailing south of Southampton Island, in consequence narrowly avoiding shipwreck in Roes Welcome Sound. Instead, Back
opted to follow Parry’s course north into Foxe Channel. Ice conditions were much worse than those encountered by Parry in 1821, and by September Terror was firmly beset off the inaptly named Cape Comfort, as it made its way toward Frozen Strait. For ten months, the ship was borne slowly southeast as northerly storms threatened destruction against Southampton’s iron-hard coast, shattering the forefoot and splintering the keel and sternpost. Not until July 1837 was Terror finally released from the encompassing ice floe, close to the western entrance of Hudson Strait. As the ship broke free, ice clinging to the keel pivoted upward, all but capsizing it. With scurry rife among the crew and the ship in parlous condition, there could be no thought of resuming exploration. Instead, Back had to accept the ignominy of an early return. First, his unseaworthy vessel had to be patched up for the Atlantic crossing and wrapped round with chain cable to keep it from breaking apart. Despite this, Terror came close to foundering in a gale before finally limping into Lough Swilly Harbor, Ireland, on 3 September. Miraculously, this same wreck—repaired and strengthened—shortly afterward sailed to Antarctica with James Clark Ross and later to the Canadian Arctic with Sir John Franklin. Bomb vessels were tough.

Back’s recovery was to be more protracted than that of his ship. Indeed, despite being only forty, he never did recover fully, undertaking no further voyages and spending his time in sociable retirement. Awarded a knighthood in 1839, as a member of the Arctic Council he advised the Admiralty on the search for Franklin’s last expedition and busied himself with the affairs of the Royal Geographical Society, of which he was vice president for seven years. One of his last acts was to chair a meeting convened to welcome back the expedition of George Nares from Arctic Canada in 1876.

See also: Buchan, David; Franklin, John; Hudson’s Bay Company; Lyon, George; Nares, George (1835–1876); Indigenous Peoples; Parry, Edward (1824–1825); Ross, James Clark (1839–1843); Ross, John (1829–1833)

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Badigin, Konstantin
(1910–1984)

Between 1937 and 1940, a Soviet icebreaker was unintentionally compelled to repeat Fridtjof Nansen’s epic voyage in Fram, but at generally higher latitudes. It was commanded by Lieutenant Konstantin Badigin.

The Drift of Georgiy Sedov, 1937–1940

Georgiy Sedov was one of the Soviet Union’s less powerful icebreakers, at 3,056 tons and 2,400 horsepower. During the summer of 1937, its crew had been carrying out routine duties in the Laptev Sea, resupplying polar stations and conducting scientific observations, when instructions were received that they should assist ships attempting to reach Vil’kitskiy Strait, south of Severnaya Zemlya. Ice conditions were bad, and Sedov itself was soon beset after damaging its propeller. Sadko, another icebreaker, was sent to assist Sedov, and shortly afterward they were joined by a third icebreaker, Malyygin, bringing supplies of coal. By that time it was mid-October, and the ice was thickening. By 23 October it had become clear that they would have to winter in the pack north of the New Siberian Islands. On board the three ships were 217 men and women: crew, scientists, polyarniks from the polar stations, construction workers, and a party of students from Leningrad Hydrographic Institute. The most senior figure was Rudolph Samoylovich, director of the Arctic Institute, who was reluctantly forced to assume command, which he thought would have been more properly vested in the ships’ captains. The boilers were kept going until 7 November, the anniversary of the 1917 revolution, but thereafter temperatures plummeted, with only stoves to provide heat.

As the weeks passed, it became clear that the three icebreakers were drifting north along the course followed by Fram forty-four years earlier. A regular routine of soundings and meteorological observations was maintained by the scientists, together with measurements of drift, gravity, and terrestrial magnetism. Every 30 miles, a hydrological station was established, where water samples and marine organisms were obtained from different depths, as well as deposits from the sea floor. Others were kept occupied by attending lectures—scientific and political—and by hunting arctic foxes, which rapidly became the most popular occupation, until the foxes learned to give the ships a wide berth.

No attempt at rescue could be made before the return of daylight. How this was to be done was unclear since there were very few ice floes sufficiently flat and large for a plane to land on them. Eventually, three suitable floes were located not too far from the ships, and by dint of extreme labor they were converted to landing strips, but then ice pressure cracked two apart. On 3 April 1938, three ANT-6 long-range bombers landed to evacuate the women and the sick—twenty-two in all. By the time the next flight was made, a fourth and better landing strip had been leveled, enabling the two planes to take off with full loads of eighty-three passengers, with seventy-nine more being flown out eight days later. Thirty-three men remained behind to crew the ships.

Konstantin Sergeyevich Badigin, first officer of Sadko, was
placed in command of Sedov, whose master was elderly and not in the best of health. Badigin had led the program of political lectures and had distinguished himself by coordinating the campaign to level the landing strips. The icebreakers were now beyond 80°N, but in the hope that they might be able to force their way south, the engines were overhauled, and Sedov's rudder repaired so that it was capable of turning 10° to either side but no more. It had been broken in two and the stern post snapped by intense ice pressure during the winter. With the ice visibly thinning, news came that the powerful icebreaker Yermak, 8,250 tons and 9,500 horsepower, was making good progress toward them, finally reaching them on 27 August at 83°04'N, 138°22'E. Sadko and Malygin were capable of following in Yermak's wake, but the crippled Sedov had to be taken in tow. Even for Yermak, it was a tremendous strain, and after a series of tow lines broke and one of the propellers was lost, Sedov was cut loose. The ship's crew was increased from eleven to fifteen, and it was left to continue the drift north.

Badigin began his preparations for the second winter by laying up Sedov in an apparently safe place, within rather than between floes. Because the ship had been between heavy floes last winter, it had suffered much greater damage than the other two vessels. In mid-September, he learned that another attempt was to be made to reach Sedov. The pride of the icebreaker fleet, Iosifa Stalin (10,000 tons and 10,000 horsepower) was to make the attempt on its maiden voyage, accompanied by Litke (3,028 tons and 7,900 horsepower). Ice conditions around Sedov looked promising, and Stalin succeeded in passing 83°N to get within 60 miles before being forced to abandon the attempt when also in some danger of becoming beset.

On 10 October, when Sedov was north of 84°C, the sun was seen for the last time that year. For the next four and a half months, crew members were in darkness, except for periods of moonlight. Viktor Buyintsiky, the only scientist on board, instructed the crew in how to make meteorological observations, measure ice thickness, and take soundings. Although restricted by lack of trained personnel and instruments, the results obtained were likely to be of inestimable importance, since apart from data obtained at one station by Sadko at 82°41'N, 87°04'E (see Ushakov, Georgiy), the only information available for the Arctic Basin had been collected decades previously during Fram's voyage.

With fewer now to feed, supplies were plentiful, and the cabins at least could be kept warm. Through the polar station at Cape Chelyuskin, regular radio contact was maintained with the authorities in Moscow, who as ever sought to exploit to the full the propaganda value of Sedov's singular situation, which increasingly came to be portrayed as another Soviet Arctic triumph. When the possibility was raised in January 1939 of a replacement crew being flown in, Badigin took it upon himself to consult each of his men as to whether they were prepared to stay on regardless. They were. They fully appreciated that their drift was historic, and they desired to act the part of Bolshevik heroes. Their decision made front-page news in Pravda.

As with Fram, the speed of Sedov's drift increased as it moved farther west to come increasingly under the influence of the Transpolar Current. Already Badigin was thinking about their eventual release. By then, Sedov's rudder must be fully operational. During the summer, it was raised out of the water and cut in half so that at least the top part could swing freely from side to side. The lower part was too bent to be repaired. By August, they were north of Franz Josef Land, where Sedov reached its highest latitude of 86°39'N at 48°22'E, a record for any vessel before 1957, when the nuclear submarine USS Nautilus attained 87°N. Fram's farthest north, in comparison, had been 85°55'N at 66°31'E.

As Sedov entered its third winter in the Arctic, attention focused increasingly on the conditions likely to be experienced in the Greenland Sea. There, giant floes jostled against each other as they were borne at speed through the 200-mile-wide Fram Strait. Although buttressed within by struts of stout timber, Sedov, unlike Fram, was not designed to rise above ice pressure and stood a real risk of being crushed before it could reach the open water of the North Atlantic. Badigin heard that Stalin was again being sent to help them, and by 24 December, it was just 84 miles away but unable to make further progress in very heavy ice. Sedov, however, continued to drift south. On 3 January 1940 the two ships were within 25 miles of each other, and Badigin could see Stalin's searchlight projecting onto the clouds. Stalin was still unable to get farther north, and it took ten days before the two ships were united.

Sedov's 3,800-mile drift had taken 812 days, appreciably quicker than Fram's, which suggested some climatic warming in the intervening period, a possibility supported by the air temperature measurements, which were generally higher than those observed forty-four years before. The soundings were also of particular interest, establishing the existence of depths down to 5,180 meters. Other scientific findings were deemed of strategic significance and not released. As had been the case with Chelyuskin (see the entry for Otto Schmidt), life aboard Sedov was depicted as a model Soviet community. Badigin's dispatches, which described his crew dutifully observing state holidays and huddling round the radio whenever speeches by Joseph Stalin or other Soviet leaders were broadcast, were regularly reproduced in full in Pravda. On his return to Moscow, Badigin was awarded the Order of Lenin and the title Hero of the Soviet Union, the highest of accolades. See also: Arctic Ocean; Nansen, Fridtjof (1893–1896); Samoylovich, Rudolf; Schmidt, Otto (1933–1934); Ushakov, Georgiy (1935)

References and further reading:
Baffin Bay

The northern part of a major inlet of the North Atlantic extending between Baffin Island and Greenland, Baffin Bay lies northwest of Davis Strait and south of Nares Strait. It is approximately 900 miles long and 70 to 400 miles wide and has an area of 266,000 square miles. Throughout much of the year, the bay is filled by pack ice brought south from the Arctic Ocean through Nares Strait, with smaller quantities brought in through Jones and Lancaster Sounds. Icebergs are common even in August, and most calve in Melville Bay, where the Greenland ice sheet flows directly into the sea.

Baffin Bay was discovered in 1616 by William Baffin and Robert Bylot. In the most extraordinary case of historical amnesia in the annals of polar exploration, 200 years later the bay came to possess a semilegendary status because Baffin's excellent map had unfortunately been omitted from publication on grounds of expense (see the entry for William Baffin). Prior to organizing John Ross's expedition of 1818, John Barrow had adduced numerous arguments for "Baffin's Sea" being connected by several straits with the Arctic Ocean, thus contradicting Baffin's reports of continuous coast. Ross, however, confirmed the overall correctness of Baffin's survey, and although Lancaster, Smith, and Jones Sounds were later proved to connect with the Arctic Ocean, Baffin was undoubtedly right in asserting that what lay between Baffin Island and Greenland was essentially an enclosed bay.

Ross was not the first to enter Baffin Bay since Baffin; in 1817 two Scottish whaling vessels—Larkins of Leith and Elizabeth of Aberdeen—penetrated possibly as far as 77°N. They reported seeing numerous whales in a large ice-free area in northern Baffin Bay. Later known as the North Water, this was the first polynya to be discovered. Regular whaling voyages occurred from 1819, and no less than ten ships were reported as lost that year in the northern part of the bay. Conditions indeed could be treacherous, particularly in Melville Bay. The year 1830 was particularly disastrous: nineteen vessels sank, and twelve more were seriously damaged. Six more vessels were lost in 1835, when eleven more were forced to winter. The whalers were not equipped for the conditions, and out of 600 men, possibly as many as 135 died from scurvy and the effects of frostbite. James Clark Ross was sent to relieve them in HMS Cove, his first command, but there was little that he could do.

It was not just the whalers who got caught in the ice.

A “nip” in Melville Bay, off Devil’s Thumb (Illustrated London News, 22 May 1875, extra supplement)
Edward Parry was lucky to make it across Baffin Bay in 1824. Following his success in crossing the Middle Passage in 1819, he tried again five years later. Rather than following the Greenland coast past Melville Bay and around the northern margin of the bay, he chose to take the Middle Passage, which was direct but risked besetment in the massed pack and icebergs drifting south. It took Parry eight weeks to get through. James Saunders took even longer in 1848, when he was beset for sixty-two days. Edwin De Haven, originally caught up by ice in Barrow Strait in 1850, was not released until June 1851, by which time he was in Davis Strait off West Greenland. Six years later, Leopold McClintock regretted attempting the Middle Passage between Upernavik and Lancaster Sound. In a bad ice year, he was forced to turn back and follow the coastal route, only then to become beset in Melville Bay and drift south through the winter for the next eight months. Not surprisingly, the whalers generally kept close to the Greenland coast on their way north. At the end of the season, they took the South Passage, east of Baffin Island, which was normally navigable from mid-August to early October.

Although many explorers had cause to curse the quantity of ice generally occupying the bay, twenty members of Charles Francis Hall's expedition of 1871–1873 owed their lives to it, when they found themselves marooned on an ice floe. For the next nine months, they were carried 1,300 miles south, until they were forced to take to their one boat off Labrador.

See also: Baffin Island; Baffin, William; Barrow, John; Davis Strait; Greenland, West; Hall, Charles Francis (1871–1873); Jones Sound; Lancaster Sound; McClintock, Leopold; Nares Strait; Parry, Edward (1824–1825); Ross, James Clark; Ross, John (1818); Whaling and Arctic Exploration

Baffin Island (Canada)

Located between 62° and 74°N and 62° and 90°W, Baffin is the largest island in the Canadian Arctic and the fifth-largest in the world. It is 950 miles long and has an area of 195,928 square miles. It is separated from Greenland to the east by Davis Strait and Baffin Bay, from Devon Island to its north by Lancaster Sound, and from Somerset Island and Boothia Peninsula to its west by Prince Regent Inlet and the Gulf of Boothia. Foxe Basin and Hudson Strait lie between its south coast and the Canadian mainland. Much of the east coast and eastern interior are rugged, with mountains rising to 2,050 meters in the Cumberland Peninsula and with two ice caps—Penny and Barnes. In contrast, the west coast is low-lying, with much of the southwestern interior occupied by Nettilling and Amadjuak Lakes.

Only Greenland can compare in terms of the extraordinary duration of this island’s exploration. Long inhabited by the Inuit and visited by the Norse in the eleventh century and by English expeditions from the sixteenth century, Baffin Island—or at least its coastline—was not fully known until the early 1940s. For much of this period, it was not even identified as a single landmass, as late as the 1860s being depicted as consisting of several islands of unknown extent. At this time, Admiralty charts showed “Cockburn” and “Cumberland” Islands separated by a strait meeting the east coast in the vicinity of Home Bay, and farther north a greatly expanded Eclipse Sound west of Pond Inlet divided “Cockburn Island” from three smaller islands lying between it and Lancaster Sound. Bearing in mind also that it was not until the mid-nineteenth century that Frobisher Strait was shown in its correct location in southeast Baffin, rather than on the southeast coast of Greenland, ignorance of Baffin Island was maintained until an extraordinarily late date. Reflecting this confusion, the name “Baffin Island” only came into use in the 1870s, given most appropriately for the great navigator William Baffin, who charted its south coast in 1615 and sailed off much of its east coast in 1616.

Why the island should have been bypassed by explorers for so long may be explained partly by the difficult ice conditions off the east coast and partly by the discovery of routes west through Hudson Strait and Lancaster Sound. Expeditions seeking the Northwest Passage south and north of the island had little interest in what lay immediately west of Davis Strait and Baffin Bay. In spring and early summer, the east coast is rendered virtually inaccessible by ice moving south with the cold offshore current. Ships at this time of year head north through the more open water off Greenland. Only in late summer and fall is the east coast of Baffin clear.

Leif Eriksson’s landfall in 1001 was the first by any European in the North American Arctic. Martin Frobisher’s visit of 1576 inaugurated the long period during which Baffin Island was sporadically visited by exploring expeditions. Much of the south coast was mapped as early as 1615 by William Baffin under Robert Bylot’s captaincy. In 1616, Baffin and Bylot reached the head of Baffin Bay, returning south along the east coast, but they were kept sufficiently distant from it by ice to have no suspicion that the land seen occasionally to their west formed part of the same island that they had charted the year before.

Cumberland Sound and the South

Given the island’s size and complicated history, the story of its exploration is best treated regionally. South of Cape Dyer lies a deeply indented coastline incorporating Frobisher Bay and Cumberland Sound, identified as possible entrances to the Northwest Passage by Martin Frobisher in 1576 and John Davis in 1585, respectively. Although Frobisher conducted only limited exploration of “Frobisher’s Strait,” Davis charted the coast south from Cape Dyer, also discovering Exeter Sound. In 1587, he returned to prove that Cumberland Sound was a bay.

John Ross was instructed to explore Cumberland Sound in 1818 but failed to do so for lack of time. Much of this coastline was rediscovered by whalers: William Penny found Exeter Sound in 1833 and Cumberland Sound in 1840. Both redis-
coveries followed Inuit reports of large bays where whales abounded, at a time when whale stocks elsewhere were generally in decline due to overhunting. From 1851 whalers began to overwinter, continuing to hunt within the bays until they froze over and spending the rest of the winter and spring rendering down the blubber at shore stations. Charles Francis Hall was brought to Cyrus Field Bay on a whaling ship in 1860, remaining there through the next two winters and charting 1,000 miles of coastline. His greatest achievements were to prove that “Frobisher’s Strait” was indeed the region visited long before by Frobisher and that it was actually a bay.

Once rediscovered, Cumberland Sound was visited by a number of exploring expeditions. In 1877–1878, George Tyson wintered at Annanatook Harbor with members of Henry Howgate’s Preliminary Arctic Expedition. Backed by the U.S. Congress, Howgate intended to establish a colony on Ellesmere Island, and Tyson’s instructions were to recruit Inuit assistants and collect equipment for the main venture. During the First International Polar Year (1882–1883), Germany maintained a station at Kingua Fiord at the head of the sound. Brought to Baffin on the IPY relief vessel, the German anthropologist Dr. Franz Boas based himself at Kekerten whaling station between 1883 and 1884. In addition to his highly influential ethnographic studies, Boas traveled widely using Inuit methods and became the first European to visit Nettilling Lake. William Wakeham’s expedition in 1897 was prompted by concern that the presence of American whaling stations might establish a U.S. claim to an island over which Canada claimed sovereignty. Wakeham inspected several stations and informed the whalers that their activities were subject to Canadian regulations.

Pond Inlet and the North

Baffin would have seen parts of north Baffin Island in 1616 but did not land here. The first to chart in outline the coast south from Lancaster Sound to Cape Dyer was John Ross in September 1818. He gave several place-names, including Pond Inlet—for the astronomer royal John Pond (1767–1836)—and landed near Clyde Inlet. Edward Parry discovered Navy Board Inlet in 1819, afterward following along the north coast and south through Prince Regent Inlet to come within sight of Cape Kater on the west coast. On his return voyage in 1820, he discovered Admiralty Inlet and charted the east coast to 68°N. In 1824–1825, Parry returned to winter in Prince Regent Inlet at Port Bowen, from where sledding parties surveyed the coast between Fitzgerald Bay and beyond Cape York.

Pond Inlet was found to be a major whaling ground in 1819, and many of the place-names of this region were given for whalers and their ships: Eclipse Sound (discovered by John Gray in 1854), Dexterity Harbour and Fiord, Adams Sound, Arctic Bay (named for the ship Arctic, captained by William Adams, who first visited the bay in 1872), Erik Harbour, and Milne Inlet. During the Franklin search, Sir James Clark Ross in 1848 and Sir Edward Belcher in 1854 visited Pond Inlet to quiz the Inuit and whalers for news of Sir John. In 1852, Edward Inglefield searched the east coast as far south as Cumberland Sound for signs of the missing expedition.

Much remained to be discovered concerning northern Baffin, even after 1872, when the whaler William Adams passed information to the Admiralty enabling it at last to compile charts depicting the northern coasts with some degree of accuracy. Significant further surveys were conducted during two expeditions led by Joseph-Elzéar Bernier. From winter quarters at Albert Harbour, Pond Inlet, sledding parties visited Milne Inlet, Erik Harbour, and Navy Board Inlet in 1906–1907. Four years later, Bernier wintered in Admiralty Inlet at Arctic Bay. From there, geologist J. T. E. Lavoie made two extended sledding journeys, during which he explored the southern end of Admiralty Inlet and the west coast of the Brodeur Peninsula. From Pond Inlet, Lavoie employed a launch to chart the southern shores of Pond Inlet and Eclipse Sound before Bernier
sailed west to Prince Regent Inlet to complete the survey of the Brodeur Peninsula. In 1912–1913, Alfred Tremblay traveled overland from Pond Inlet to Igloolik via Gifford River and back via Murray Maxwell Bay and Milne Inlet, remapping about 3,000 miles of coastline on the way. Knowledge of this region was further extended by Peter Freuchen and Therkel Mathiasen in 1922 and 1923 during the fifth Thule Expedition of Knud Rasmussen.

**Foxe Basin Coast**
The inaccessibility of the east coast of Baffin is as nothing compared to the west coast abutting Foxe Basin. Luke Foe was the first to explore this region in 1631, when he reached the northwestern tip of Foxe Peninsula off Cape Dorchester. On the basis of Inuit reports, Parry discovered Fury and Hecla Strait in 1822 and charted the coast between Aturidge and Murray Maxwell Bays.

By 1822, the eastern and western extremities of the Foxe Basin coast were thus known, but nothing in between had been explored. Boas hoped to investigate this coast in 1884 but was prevented from doing so by an outbreak of disease among the dogs. The first crossing of Baffin Island was accomplished by Bernhard Adolf Hantzsch in 1910, from Cumberland Sound to Koukdjuak River via Nettilling Lake. He then wintered on the west coast 100 miles farther north before continuing on to 68°45'N the following year. He died on the return journey in early June 1911, probably from trichinosis, and was buried by his Inuit companions near the mouth of Hantzsch River.

In 1921–1922, Donald MacMillan wintered in Schooner Harbour on Foxe Peninsula, but lack of snow prevented his exploring its interior. The peninsula's north coast was charted by George Putnam in 1927. Meanwhile, from 1924 to 1929, Joseph Dewey Soper of the National Museum of Canada explored the interior before extending Putnam's survey north to Hantzsch River, as he searched for the elusive breeding grounds of the blue goose (Chen caerulescens). The region between Hantzsch River and Steensby Inlet was mapped by Thomas and Ella Manning from 1937 to 1941.

**The Interior**
Apart from the journeys of Boas and Hantzsch inland from Cumberland Bay and those of Tremblay, Freuchen, and Mathiassen in the north, much of the interior remained unvisited until 1923–1924, when Lachlan Burwash explored the region between Cumberland Sound southwest to Hudson Strait via Nettilling and Amadjuak lakes. Further investigations were conducted by Royal Canadian Mounted Police patrols from Pangnirtung, following establishment of the post there in 1923. The longest was undertaken by Corporal Friel and Constable Tredgold in 1927 and involved a circular journey beginning and ending in Pangnirtung and taking in Frobisher Bay, Hudson Strait, and Amadjuak and Nettilling Lakes. Pat Baird first visited the island in 1934 with James Wordie's Cambridge University expedition. He later crossed between Igloolik and Pond Inlet in 1939 and led major expeditions in 1950 and 1953 to Barnes and Penny ice caps, respectively, to conduct the first glaciological investigations in the Canadian Arctic.

From 1961 to 1965, the Geographical Branch of the Canadian Department of Mines and Technical Surveys carried out a large-scale study of landscape development for a cross-section of the island centered on the Barnes Ice Cap. At the same time, outline geological mapping was completed by the Geological Survey of Canada.

Baffin is famous among mountaineers for the spectacular rock walls that line many of the fiords along the east coast. Among the biggest such walls in the world, many remain unclimbed.

**References and further reading:**

**Baffin, William**
(1584?–1622)
The great achievements of the English seaman William Baffin were made not as ship’s captain but as pilot, particularly in 1616, when Baffin Bay was discovered on a voyage not to be repeated for 200 years. It is probable that Baffin came from a humble background and was largely self-educated since he is referred to by the chronicler Samuel Purchas as “that learned-unlearned mariner and mathematician” (Markham 1881, xxiii). By the time of his first recorded voyage to the Arctic—with James Hall in 1612—Baffin was sufficiently literate to write the official account, which he did for all but one of the expeditions in which he participated, and he was already an expert navigator and astronomer. Thus, his 1612 journal includes not just many measurements for latitude and compass variation but also an extended calculation in which the longitude of West Greenland is derived from observation of the moon’s zenith. In 1615 he made the first documented longitude observation taken at sea, a formidable difficult task.

On his return from Greenland, Baffin acted as chief pilot in 1613 and 1614 during two expeditions to Spitsbergen north of Norway organized by the Muscovy Company. On the second of
these, sailing in *Thomasine*, he assisted Robert Fotherby in exploring Spitsbergen’s north coast as far as Wijde Bay.

**The Discovery of Baffin Bay, 1616**

At the conclusion of his journal for Robert Bylot’s expedition of 1615, Baffin forcefully expressed his opinion that the Northwest Passage should be looked for no further in Hudson Bay but instead should be sought through Davis Strait. Since the pioneering voyages of John Davis in the 1580s, no attempt had been made at systematic exploration of this region, despite Davis’s confident assertion that a navigable seaway was likely to be found there. George Weymouth had made a brief incursion in 1602 before being forced back by a mutiny, and two Danish expeditions had visited the west coast of Greenland in 1605 and 1606. The most recent expedition had been that of Hall in 1612, in which Baffin had participated. Speculative optimism that the fortune of English merchants and courtiers would soon be made by the imminent discovery of the Northwest Passage was beginning to wane with the repeated failure of expeditions to find the route reportedly discovered through Hudson Strait by Henry Hudson in 1610–1611. Baffin’s investigations of Davis Strait with Bylot in 1616 represented the last attempt of the North West Company to discover the passage. They sailed in the 70-ton *Discovery* on its sixth and final voyage of exploration.

On 26 March 1616, *Discovery* sailed from Gravesend, England, with seventeen men on board. They enjoyed favorable conditions across the Atlantic Ocean and up Davis Strait but saw no land until 14 May, off Sukkertoppen on the west coast of Greenland at 65°20'N. Eager to get farther north as quickly as possible, they chose not to anchor there, despite Baffin’s familiarity with the region, which he had visited with Hall. Indeed, not until they had reached 70°20'N six days later did they anchor, at the northern point of Disko Island. There they remained for two days to take on fresh water and meat. By 30 May, they were past “Sanderson’s Hope,” the farthest point reached by John Davis in 1587. Only the Inuit and Norse had been farther north. Contact was at last made with the Inuit on the Women’s Islands near present-day Upernavik, where friendly relations were established as a result of their kind treatment of women abandoned there by their community. More Inuit were met on 12 June at 73°45'N, and there Baffin and Bylot remained six days in the expectation that, with the ice visibly diminishing, delay would ease their passage north. Indeed, Melville Bay, notorious for being generally infested by ice, was now crossed in almost open water between 1 and 3 July. Two days later, they discovered the first of three major channels leading out of Baffin Bay: “Sir Thomas Smith’s Sound,” at 78°N the expedition’s farthest north. Continuing on round Baffin Bay, they found “Alderman Jones Sound” on 10 July and made a landing, the first since leaving their anchorage to the south of Melville Bay on 18 June. Two days later, they were at 74°20'N off “Sir James Lancaster’s Sound.” Two hundred years later, John Barrow organized expeditions to explore these three channels, believing them to offer the most likely entrances to the Northwest Passage. That Lancaster Sound was indeed the main entrance to this passage was proved by Edward Parry in 1819, but unfortunately its promise was hidden from Baffin and Bylot, who continued south in diminishing hope of finding the passage. Quantities of ice off the east coast of Baffin Island forced them far from land until they were near Cumberland Sound, an area already explored by Davis. With several crew showing signs of scurvy, the decision was made to abandon further exploration, which at that point was unlikely to lead to new discoveries, and instead make for Sukkertoppen on the west coast of Greenland, where Baffin knew scurvy grass could be obtained. Boiled in beer, it proved an effective antiscorbutic, and by 6 August 1616, all were sufficiently recovered to set sail for England, where Dover was reached on 30 August.

The failure of Baffin and Bylot to find the Northwest Passage through Davis Strait led to the collapse of the North West Company. Although far from the last English expedition to search for the passage, theirs did bring to an end the period of intense speculation stimulated by exaggerated reports of Hudson’s discoveries. Given that throughout the voyage Baffin had scrupulously maintained a journal and compiled a detailed map and sets of navigational tables, it is one of the greater curiosities of Arctic exploration that the results of this voyage and indeed the very existence of Baffin Bay came to be doubted until the same area was explored again 200 years later. The explanation for this amnesia is simple. Baffin’s materials were passed to the Reverend Samuel Purchas for publication. Although Purchas printed the journal, he omitted the map and tables on the grounds that they “were somewhat troublesome and too costly to insert” (Markham 1881, xxxii). Only after John Ross returned in 1818 confirming all of Baffin’s discoveries was his bay reinstated on world maps.

**See also:** Baffin Bay; Barrow, John; Bylot, Robert; Davis, John (ca. 1550–1605); Greenland; Hall, James; Hudson, Henry (1610–1611); Hudson Bay; Muscovy Company; North East Land; Northwest Passage; Parry, Edward (1819–1820); Ross, John (1818); Spitsbergen; Weymouth, George

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**Baldwin, Evelyn** (1862–1933)

Despite being one of the best funded of all polar expeditions, the Baldwin-Ziegler Expedition of 1901–1902 produced negligible results. The objective was to reach the North Pole from Franz Josef Land, but the American explorer Evelyn Baldwin so alienated his party that none were prepared to stay on through a second winter to make the attempt on the Pole.
Ziegler’s Fortune Squandered in Franz Josef Land, 1901–1902

As an observer for the U.S. Weather Bureau, Evelyn Briggs Baldwin had visited the Arctic on several occasions between 1892 and 1900, as meteorologist with Robert Peary in Greenland in 1893, to Spitsbergen on a voyage in 1897, and as meteorologist and second-in-command on Walter Wellman’s expedition to Franz Josef Land in 1897–1898, during which he discovered Graham Bell Island, the third-largest island in this archipelago.

Baldwin’s greatest success, however, was undoubtedly his discovery of William Ziegler (1843–1905), a sponsor of unparalleled munificence. Robert Peary must have split nails when he learned that Ziegler was prepared to back his former meteorologist to the extent of $250,000, allowing him to purchase not just one but three ships and to fit out his expedition on a scale of which others could only dream. Ziegler, founder and owner of the Royal Chemical Company in New York, had made his fortune manufacturing baking powder. Anthony Fiala was later to report that his crowning desire was “to link his name with some scientific achievement which would be considered great when compared with others of the twentieth century, and he thought there was no mystery, the solution of which would be so heartily welcomed by the world at large as the exact location of the North Pole and accurate information as to the conditions existing there” (Fiala 1907, ix). If Baldwin was unable to reach the Pole, then at least he should better 86°34’N, Umberto Cagni’s farthest north in 1900 on the Italian expedition led by the Duke of the Abruzzi. National as well as personal pride was at stake.

On 1 July 1901, the 466-ton converted Scottish steam-whaler America sailed from Tromsø, Norway, in company with the supply ship Frithjof. A third ship, Belgica, the former expedition vessel of Adrien de Gerlache, was sent to East Greenland where depots were established on Bass Rock off the expedition vessel of Adrien de Gerlache, was sent to East Greenland where depots were established on Bass Rock off the Pendulum Islands, in the expectation that Baldwin’s route across the Pole would lead him to pass close by. In addition to the Norwegian crew, the forty-two men on board America included Major Anthony Fiala (photographer and second-in-command), Ernest Leffingwell (geologist), Russell Williams Porter (cartographer and artist), and Ejnar Mikkelsen (assistant cartographer). Fiala, Leffingwell, and Mikkelsen would later lead their own expeditions to the Arctic, and Porter—best-known for his role in the development of the Mount Palomar, California, reflecting telescope, for many years the world’s largest—was to participate in no less than ten expeditions. Four hundred and twenty dogs and fifteen ponies, along with seven Russians to look after them, were taken on at Archangel.

Reaching Franz Josef Land on 27 July, they transferred three years’ supply of food from Frithjof to America off Cape Flora, Northbrook Island, with Frithjof then continuing on to land dogs and stores on Wilczek Land before heading back to Norway on 24 August. Meanwhile, America made several attempts to get as far north as possible, preferably to Rudolf Island where the Duke of the Abruzzi had wintered in 1899–1900, but with all channels choked by ice, Baldwin was forced eventually to make do with establishing Camp Ziegler on Alger Island, not far north of where Wellman had wintered on Hall Island during his abortive attempt to reach the North Pole in 1898–1899. America anchored 100 meters offshore.

With Wellman’s example before him, Baldwin was aware just how unfavorably placed he was to reach the Pole. Beginning in January 1902, all the energies of his expedition were devoted toward establishing depots in support of the Polar Party. By the end of May, three well-supplied depots had been laid, the most northerly being on Rudolf Island. The polar journey itself, however, never took place.

On early sledging journeys across Alger Island, Baldwin had refused to allow his men sleeping bags or tents, insisting that the weight saved would enable them to transport extra supplies. Not surprisingly, several suffered frostbite when they got lost and had to spend a night in the open. Doubts were raised about Baldwin’s leadership, which was worryingly reminiscent of his behavior on Wellman’s expedition. Baldwin had then been charged with establishing a forward base where two men were to look after dogs and supplies through the winter. So concerned was he to ensure the maximum quantity of provisions for the Polar Party the following spring that he left the winterers with altogether inadequate supplies. Wellman himself was horrified when he saw the conditions that the one survivor had endured. Rumors of this incident would have done little to increase confidence in Baldwin, and it may well have been to prevent other criticisms being preserved and circulated that he made the unpopular decision to allow no diaries to be kept. He further antagonized his scientists by insisting that they too help with laying depots, which left them very little time for research.

With the depots established, all was in place for the attempt on the Pole. Indeed, with signs of the ice breaking up early, Baldwin still nursed hopes that America might be able to reach Rudolf Island this year. By now, however, only 67 tons of coal remained, and he was not prepared to risk becoming beset without further supplies. Since none had been arranged, his only means of advertising his need was to launch balloons. There was no response. By this stage, in any case, Baldwin’s increasingly desperate solicitations for volunteers to stay on were meeting universal rebuttal. Finally, he had no choice but to put the best face on it and head back to Tromsø, where he arrived on 1 August, much to the surprise of Ziegler, who had sent Frithjof with his secretary William S. Champ to Franz Josef Land with supplies for next year’s planned activities.

Baldwin’s expedition had been a fiasco. Beyond establishment of the base at Camp Ziegler and the three depots, virtually nothing had been achieved. Ziegler, however, was a man of determination. Clearly, Baldwin was inadequate, as the other expedition members did not hesitate to inform him. Sec-
ond-in-command Fiala, however, was popular and spoken of with general respect. He would lead a second expedition. See also: Abruzzi, Luigi; Duke of; Alger Island; Fiala, Anthony; Franz Josef Land; Gerlache, Adrien de; Graham Bell Island; Mikkelsen, Ejnar; North Pole; Payer, Julius; Peary, Robert; Wellman, Walter (1898–1899); Wilczek Land.

References and further reading:

Balleny Islands (Antarctic)
Located at 66°55'S, 163°20'E, this group of three small and two very small islands, lying 150 miles off the coast of Oates Land, East Antarctica, was discovered by the British sealer John Balleny on 9 February 1839 during an exploring voyage sent out by Enderby Brothers. From north to south the islands are Young, Row, Borradaile, Buckle, and Sturge, all named for merchants who held part-shares in Balleny’s expedition. Thomas Freeman, captain of Sabrina, the cutter accompanying Balleny in Eliza Scott, landed briefly on 11 February, probably on Borradaile Island, the first landing anywhere south of the Antarctic Circle. The next sighting was by James Clark Ross early in March 1841, when he spent four days off the islands. Following brief sightings by Thomas Tapsell on another Enderby Brothers’ voyage in February 1850 and by Mercator Cooper in February 1853, the islands were not seen again until December 1894 by Henrik Bull, with further sightings by Carsten Borchgrevink in January 1889, Robert Falcon Scott on 2 March 1904, and Joseph Stenhouse on 3 November 1915.

A first attempt to survey the islands was made in February 1936 by RRS Discovery II. It was abandoned when a landing could not be made on Borradaile Island. Two years later, Discovery II made a running survey from out to sea. The first air photographs were obtained by the Western Group of Operation Highjump in January 1948. In the same year, during a running survey carried out by Australian National Antarctic Research Expeditions in HMAS Wyatt Earp, Group Captain Stuart Campbell made only the second landing, again on Borradaile Island on 29 February. Further landings were made on Buckle Island in March 1949 from the French vessel Commandant Charcot; on 7 March 1958 on Young Island by a party from the Soviet Slava whaling fleet; and on 27 January 1959 on Buckle Island from USS Midway Island. From 8 to 10 March 1964, a New Zealand party carried out the most extensive survey to date, landing by helicopter on Sturge, Borradaile, and Sabrina Islands. (This list is not intended to be exhaustive.) In the 1986–1987 season, an automatic weather station was deployed on Buckle Island by the U.S. Antarctic Program. At the time of writing, the most recent study was the biological reconnaissance carried out by a New Zealand party in 1992–1993.

See also: Balleny, John; Borchgrevink, Carsten; Bull, Henrik; Cooper, Mercator; Discovery Investigations; Enderby Brothers; Operation Highjump; Ross, James Clark (1839–1843); Scott, Robert Falcon (1901–1904); Sealing and Antarctic Exploration; Stenhouse, Joseph (1915–1916)

References and further reading:

Balleny, John
(ca. 1770–ca. 1843)
The Antarctic voyage of the British sealer John Balleny was the third in a series of commercial and exploring expeditions organized by the London whaling and sealing concern Enderby Brothers. On this voyage, Balleny penetrated into the Ross Sea more deeply than had been achieved previously, discovering the Balleny Islands and the Sabrina Coast on the Antarctic continent.

A Sealing Voyage of Discovery, 1838–1839
Regardless of losses incurred during their previous exploratory expeditions made by John Biscoe (1830–1833) and Hopefull and Rose (1833–1834), the Enderbys were determined to launch another expedition but were no longer able to do so unaided. The vessels selected for this voyage were the 154-ton schooner Eliza Scott and the 54-ton cutter Sabrina. To raise the necessary additional funding, majority holdings in both vessels were sold to a group of merchants: Thomas Sturge, George Young, John Buckle, William Beale, James Row, William Borradaile, and William Brown, who together owned fifty-three out of sixty-four shares, with only eleven remaining to the Enderbys.

Neither of the two captains chosen, John Balleny and Thomas Freeman, had any experience of sealing or exploratory voyages. Like James Cook and William Smith, Balleny, the expedition leader and captain of Eliza Scott, had learned his trade sailing colliers from Newcastle to London. Where and when he was born is unknown, but having been part-owner of a vessel as early as 1798, by 1838 he was probably well into his sixties.

Although Freeman experienced relatively few problems in Sabrina with either vessel or crew, Balleny in Eliza Scott soon had difficulties. Eliza Scott had been built as a pleasure yacht and handled poorly in the open sea, which was not helped by inadequate ballasting, with many casks empty rather than filled with water. As a result, all on board endured an extremely uncomfortable voyage, and a promised program of barometric observations for the hydrographer of the Admiralty had to be abandoned since the ship’s motion was too lively for readings to be made.
Balleny also had problems with his crew. Although his piety may have endeared him to the evangelical Enderbys, it was not popular with all his men. Sunday services were halted early in the voyage, when the starboard watch refused to come on deck, and the cooper went on strike after one Balleny service. That was merely the beginning of disciplinary problems. Particularly bad were his relations with the chief mate, William Moore, with whom he fell out after refusing to allow him to bring a woman on board because Moore was married and had a family. Moore’s drunkenness and insubordination led to problems throughout the voyage, but it is also probably true that Balleny was ill-equipped, both personally and by experience, to command such a crew on such a voyage. It was certainly different from anything he had done previously. This stated, Balleny proved himself to be extremely determined and an excellent navigator, who made good use of the navigational instruments he had on board, including two chronometers and an azimuth compass.

Sailing from London on 16 July 1838, by 22 July Eliza Scott and Sabrina were at the Scilly Islands, and their course was fixed for the south. The first landfall was at Amsterdam Island on 4 November, where Balleny hoped to find seals. Only fish were obtained, but at least they provided a change of diet. Chalky Bay, New Zealand, was reached on 3 December. Although it had been chosen partly because it offered little opportunity for jumping ship to a disenchanted crew, nevertheless several did, the remainder being put to work hunting, fishing, and fetching water to replenish supplies. Sailing from there on 7 January 1839, they were at Campbell Island nine days later, where they encountered John Biscoe in Emma. He too was seeking new lands.

Eliza Scott and Sabrina now kept within half a mile of each other as they sailed south in fair weather, sighting their first iceberg at 63°37’S, 176°30’E. At a similar latitude, though some six weeks earlier in the season, Fabian von Bellinghausen had been turned eastward by thick ice. Balleny, however, was able to continue unobstructed to a farthest south of 69°S at 172°11’E, reached on 1 February 1839, 220 miles farther south than Bellinghausen and only one day’s sail from Victoria Land and Antarctica itself. Forced to adopt a northwestern course in now frequently foggy conditions, they sighted land on 9 February at 11:30 A.M. Three islands initially could be seen, Balleny estimating their height as reaching 3,660 meters or more, though in fact none exceeds 1,340 meters. After they spent some time waiting offshore, the fog lifted, and on 11 February a landing was made by Freeman, who jumped ashore on a beach only a few meters wide backed by perpendicular cliffs. No proper beach or harbor could be seen. His was the first landing anywhere south of the Antarctic Circle. The islands were named after the merchants owning part-shares in the expedition—Sturge, Young, Buckle, and so on—being later named as a group for Balleny by the hydrographer of the navy, Francis Beaufort. Heading west, on 2 March, they sighted land again briefly, not more than 1 mile off at 64°58’S, 121°08’E. It was the expedition’s one and only sighting of the continent and the discovery of the Sabrina Coast. Sailing northwest and now north of the Antarctic Convergence, they ran into a severe storm on the night of 24–25 March. Eliza Scott was turned on its side and wallowed for ten minutes before righting itself, but matters were worse for Sabrina, which was not seen again. Returning via Madagascar and St. Helena, Eliza Scott reached London on 18 September.

Financially the voyage was yet another disaster for Enderby Brothers and their partners, since only 178 sealskins were brought back. Nevertheless, in terms of the voyage’s primary objective, Charles Enderby had further discoveries to report proudly to the Royal Geographical Society, and extracts from Balleny’s log were printed in the society’s journal. Information derived from Balleny’s voyage determined James Clark Ross’s decision to seek high southern latitudes between 180° and 170°E, the decisive choice in ensuring the success of his great expedition of 1839–1843.

See also: Balleny Islands; Biscoe, John; Enderby Brothers; Ross, James Clark; Sealing and Antarctic Exploration; Wilkes Land

References and further reading:

Balloons

Until 2000, when David Hempleman-Adams sought to repeat Salomon Andrée’s attempt to reach the North Pole in an unpowered balloon, many had assumed that polar ballooning began and ended with Andrée’s disastrous flight in 1897. Not so. References to the possibility of reaching the Pole by balloon can be traced back at least to 1845, when M. Dupuis-Delcourt advocated their use to the French minister of public works. Messenger balloons were employed on several expeditions searching for Sir John Franklin’s lost expedition, and captive balloons were found useful in Antarctica by Robert Falcon Scott and Erich von Drygalski. Balloons have also been used extensively in scientific studies of the upper atmosphere.

In 1849, Lieutenant Gale proposed a balloon expedition to search for Sir John Franklin. Although he was unable to win the Admiralty’s backing, a Mr. Hampton was inspired to project and complete “a new and improved fire balloon, called The Arctic Surveying Balloon,” for the purpose of assisting the search for Franklin (Ward 1935, 107). Indeed, it is not difficult to envisage how the search might have benefited from the use of captive balloons, which would have enabled those on board to see to a considerable distance across the bleak, largely unvegetated landscape. The only balloons used during the Franklin search, however, were messenger balloons. They were first employed in 1852 during the expedition led by Horatio
Austin, when thousands of paper slips bearing the locations of the relief vessels and food caches were scattered across Arctic Canada by means of small hydrogen balloons.

The first detailed plans for a balloon expedition to the North Pole were put forward in 1872 by the well-known French balloonist M. Sivel to the French Society of Aerial Navigation. Sivel proposed that he and several scientific companions would sail as far north as possible, where he would inflate his balloon. It had a number of special features, including replacement of the wicker basket by a boat equipped with two keels to serve as skates. Sivel’s death in a balloon accident three years later prevented him from putting his plan into practice.

In 1880 Commander John Powles Cheyne, a veteran of three Franklin search expeditions, proposed an expedition that would winter on Ellesmere Island before setting out in the spring to sledge farther north. Having got as far as they could, they would inflate three hydrogen balloons in which seven members of the party would seek to reach the Pole. The balloons would be linked together by a triangular arrangement of wooden spars fitted with foot ropes, allowing the men to climb from one balloon to another while in flight. Cheyne considered that it would take thirty to forty hours to reach the Pole and that he would be able to remain there about a week to make scientific observations before heading back. Cheyne was rather more definite in his ideas as to how the Pole was to be reached—along a “wind circle” of known diameter—than he was about how they would return. “My first duty is to get there. When there, leave it to us to get back” (Ward 1935, 114).

Others giving serious consideration to the use of balloons on polar expeditions included George De Long, who eventually concluded that balloons could not help him, and Walter Wellman, who visited Paris to consult balloon manufacturers in 1894 because he was convinced that there must be an easier way of reaching the North Pole than sledging over the ice. The great disadvantage of balloons, however, was that they could not be steered, and in the Arctic in particular, inability to return to one’s starting point could be disastrous. Only in 1906 did Wellman attempt an expedition in a lighter-than-air vessel, and that was an airship rather than a balloon. Luigi, Duke of the Abruzzi, had an ingenious plan to make use of captive balloons in his attempt to reach the Pole. His idea was to attach small balloons to lift the sledges, the raised sledge being placed above another on the ground and both pulled by a single team of sixteen dogs. Although he took two balloons with him, they were never inflated, the weight of the sulfuric acid needed for inflation and the inelasticity of the balloon fabric proving insuperable obstacles. Andrée’s famous expedition is described under his name.

First to advocate the use of balloons in Antarctic exploration was the distinguished botanist Baron F. von Mueller. In his presidential address to the Victorian Branch of the Royal Geographical Society of Australasia in 1886, he recommended the use of balloons for reconnaissance purposes, arguing that no polar expedition should be undertaken without including an experienced aeronaut (Swan 1961, 47). Von Mueller’s advice was adopted by Scott and Drygalski, who, as expedition leaders, took on the responsibility of making the first ascents in captive balloons on 4 February and 29 March 1902, respectively. Scott obtained an extensive view over the Ross Ice Shelf, giving him a good idea of the type of terrain to be traversed en route to the Pole. Drygalski’s flight was even more informative, since it enabled him to identify the most promising areas for study as well as indicating the most likely route out of the ice in which his ship was beset.

During much of the twentieth century, the prime use of balloons was in studies of the upper atmosphere. To obtain high quality gamma- and X-ray measurements, for example, heavy instruments must be carried to altitudes of 20–25 miles. Balloons offer the ideal platform: most flights last from ten to
forty-eight hours and end when the balloon either drifts out of range or loses altitude. The first manned balloon flight over the South Pole took place on 8 January 2000, when a balloon with Anulfo Gonzalez, Faustino Morera, and Ivan Trifonov on board took off at the Pole and flew 12 miles. Hempleman-Adams's flight in the same year to near the North Pole is described under his name.

See also: Abruzzi, Luigi, Duke of; Airships; Andréé, Salomon; Austin, Horatio; De Long, George; Drygalski, Erich von; Franklin Search Expeditions; Hempleman-Adams, David; Scott, Robert Falcon (1901–1904); Wellman, Walter

References and further reading:


**Banks Island (Canada)**

Located at 73°15'N, 121°30'W, Banks Island is the most westerly island in the Canadian Arctic Archipelago. It is separated from Prince Patrick and Melville Islands to its north by McClure Strait, from Victoria Island to its east by Prince of Wales Strait, and from the mainland to its south by Amundsen Gulf. It is 250 miles long and 110 to 180 miles wide and has an area of 27,038 square miles.

Although Thule house ruins indicate that the island was occupied some 500 years ago, it is probable that by the beginning of the nineteenth century, it had no resident population and was merely visited by hunting parties from Victoria Island. The first sighting by an exploring expedition was made from Melville Island by Frederick Beechey in August 1820. His leader, Edward Parry, named it for Sir Joseph Banks (1743–1820), president of the Royal Society. Robert McClure saw southwestern Banks Island on 7 September 1850 and named it "Baring Land" for Sir Francis Baring (1796–1866), first lord of the Admiralty. Between 1850 and 1852, the entire coastline was explored by McClure, who wintered in 1850–1851 in the Princess Royal Islands in Prince of Wales Strait and spent the following two winters in Mercy Bay on the north coast. Learning that he was there, Henry Kellett (see entry) sent Bedford Pim across McClure Strait from Melville Island to relieve him on 6 April 1853. McClure's ship, the HMS *Investigator*, was abandoned on 3 June.

*Investigator* proved an important source of iron and wood to the Inuit of Victoria Land, who appear to have discovered it within six years of abandonment. It was systematically gutted during the next twenty to thirty years, with little worth taking remaining after 1890, when the last visits took place.

Alfred Harrison landed at Nelson Head, the southernmost extremity of Banks Island, in 1906, before following the southwest coast as far as Cape Kellett. While wintering on the southern coast of Melville Island, Joseph-Elzéar Bernier sent several parties across McClure Strait to this island: Octave Morin landed at Russell Point in April 1909; Charles Green and Morin, on a second journey, both visited Mercy Bay to see what remained of *Investigator* and to leave behind a proclamation stating that the island had been claimed by Canada.

Members of Vilhjalmur Stefansson's Canadian Arctic Expedition traveled extensively around and across the island from 1914 to 1917. Stefansson himself wintered on the west coast at Cape Kellett in 1914–1915. In the following summer, he undertook the first extended journey across the interior by an exploring expedition, when he chose to return to Cape Kellett from Mercy Bay across the island rather than follow the coast, where the state of the ice made sledging difficult. In 1915–1916, three separate parties of this expedition wintered at Cape Kellett, Robilliard Island, and off the Princess Royal Islands in Prince of Wales Strait.

The modern period of Inuit occupation began in 1929, when families from the Mackenzie Delta came here to hunt arctic fox. Prior to the 1950s, they were based on the island only during the winter, returning home each year to trade furs. Sachs Harbour (71°59'N, 125°17'W) was one of several winter encampments, its name being derived from Stefansson's expedition vessel *Mary Sachs*. Today's resident community has grown up around the Royal Canadian Mounted Police detachment post established in 1953. The meteorological and radio station was opened in 1954. A meteorological station has also been maintained at Johnson Point (72°46'N, 118°30'W).

Two expeditions undertaken after 1945 require special mention. In 1949, a Norseman airplane piloted by Ernie Boffa enabled Alf Erling Porsild, Lincoln Washburn, and John Jessen to travel extensively across the interior to make botanical, geological, and geographical studies. In 1952, Thomas Manning began a detailed coastal survey using a 7-meter canoe equipped with an outboard motor. Becoming beset near Mercy Bay, he fashioned a small hand sledge out of timbers taken from the wreck of *Investigator*, with the aid of which he made a 200-mile journey across the island to safety. He returned to complete his survey in 1953.

See also: Beechey, Frederick; Bernier, Joseph-Elzéar; Kellett, Henry (1852–1854); Manning, Thomas (1952–1953); McClure, Robert; Parry, Edward (1819–1820); Stefansson, Vilhjalmur (1913–1918)

References and further reading:


**BANZARE (British, Australian, New Zealand Antarctic Research Expedition)**

See Mawson, Douglas (1929–1931)

**Barents Island (Svalbard)**

Located at 78°20'N, 21°10'E, Barents Island is one of the larger islands in the Svalbard Archipelago at 544 square miles. The
official Norwegian name is Barentsøya. It was first seen in 1617 during an English whaling and exploring expedition, when a ship captained by John Ellis was detached from the rest of the expedition to explore east of Spitsbergen. Ellis almost certainly landed on Barents Island, from where he saw islands to the east, probably North East Land and King Charles Land. Brief visits to the island were made by Adolf Erik Nordenskiöld in 1864; Willy Kükenthal and Alfred Walter in 1889; and William Speirs Bruce, who discovered oil shales here in 1898. The Russian/Swedish Arc of Meridian Expedition (1899–1900) erected a triangulation signals station at Mistakodden, one of four such stations along Stor Fjord.

Barents was only proved to be an island in the nineteenth century by Norwegian sealers, who named it for Willem Barents, discoverer of Spitsbergen. The first aerial photographic survey was organized in 1936 by Norwegian Svalbard Expeditions (see Hoel, Adolf). Scientists from the Norwegian Polar Institute have conducted research here since 1948.

See also: Barents, Willem; Bruce, William Speirs; Hoel, Adolf; Nordenskiöld, Adolf Erik (1864); Svalbard; Whaling and Arctic Exploration

**Barents Sea (Arctic Ocean)**

This sea marginal to the Arctic Ocean lies on the continental shelf north of Norway and European Russia, extending east from a line drawn south from Spitsbergen to North Cape via Bear Island to Novaya Zemlya and Vaygach Island. The Greenland Sea lies to its west and the Kara Sea to the east. It has an area of 542,000 square miles. The current name first appeared on a map dated 1853, and none could be more appropriate, for Willem Barents voyaged across its length and breadth during his three expeditions of 1594, 1595, and 1596–1597. Before receiving its current name, it was known at various times as the Murman Sea and the Cold Sea (Studenoye). Kolguev is the only island, apart from those at the fringes. Because of the influence of the Gulf Stream, the southwestern half of the sea is generally free of ice throughout the year. Farther north, the pack ice retreats in summer, occasionally leaving the entire sea free of ice, except for icebergs drifting south from Franz Josef Land and Svalbard.

From Ohthere’s ninth-century voyage along the coast of northern Norway to the White Sea, we know that the Norse had some familiarity with these waters, though it is unlikely that they sailed across them to discover Svalbard. The Pomor inhabitants of the White Sea region clearly knew the full extent of its southern coast, as well as routes north to Novaya Zemlya and Svalbard, though scholars disagree as to exactly when they began visiting the latter. It is not impossible that Pomor exploration may predate the sixteenth- and early-seventeenth-century Western European voyages exploring the Northeast Passage: Sir Hugh Willoughby and Richard Chancellor (1553–1554), Stephen Borough (1556–1557), Arthur Pet (1580–1581), Olivier Brunel (1584–1585), Barents, Henry Hudson (1608), and Jens Munk (1609, 1610). Of these, only Pet and Barents succeeded in getting beyond the Barents Sea to reach the Kara Sea. Willoughby’s expedition was particularly disastrous, ending with sixty-two men dying on the north coast of Lapland.

Knowledge of Pomor hunting and trapping on Svalbard encouraged merchants based in the northern Norwegian town of Hammerfest to organize expeditions to the Arctic from the 1770s onward, activities that expanded greatly in the economic boom following the end of the Napoleonic Wars in 1815. Initially focused on Svalbard, Norwegian sealers, walrus hunters, and trappers gradually extended their activities across the Barents Sea region.

As with other Arctic seas, there were rumors of land being seen where now known not to exist, or else to be of strictly limited extent. In the case of “Willoughby’s Land” (named for its “discoverer”), incorrect longitude resulted in Novaya Zemlya being charted far west of its true location. Hudson searched for it in 1608. “Gillis Land” was named for the Dutch whaler Cornelius Giles, who reported sighting land in 1707 in the northeastern Barents Sea, an area occasionally visited by whalers in favorable years. Just as the small White Island was to inspire “Gillis Land,” sightings of the almost equally small King Charles Land were to inspire Adolf Erik Nordenskiöld’s belief in 1864 that he had discovered a continent extending east of Svalbard across the Barents Sea. The true extent of White Island and King Charles Land was demonstrated by Alfred Nathorst in 1898, but expeditions continued to search for “Gillis Land” well into the 1930s, following a sighting by Frank Worsley in 1925 (see Umberto Nobile; Rudolf Samolyovitch; and Georgiy Ushakov).

During the second half of the nineteenth and first decade of the twentieth centuries, the Barents Sea became something of a playground for those sufficiently wealthy to own large yachts. Although some were simply concerned with hunting for sport, “bagging” as many polar bears and walruses as possible, others found time for scientific studies—particularly ornithology—and geographical exploration. One of the first to do so was the British yachtsman James Lamont, who hunted walruses and searched for “Gillis Land” in Diana in 1869 and 1870. Sir Henry Gore-Booth made three voyages in 1879, 1882, and 1888. Hunting and collecting natural history specimens on the first, he assisted in the search for Benjamin Leigh Smith, another yachtsman who had gone missing, on the second. More significant were the voyages of Smith himself, who discovered a navigable route to Franz Josef Land through the northern Barents Sea in 1880, and those of Andrew Coats (Blencathra, 1898) and Louis-Philippe-Robert, Duc d’Orléans (Belgica, 1907, 1909). Coats and the Duc d’Orléans both made a point of including naturalists in their parties. Coats chose William Speirs Bruce, beginning a friendship that resulted in his later sponsorship of Bruce’s Scottish National Antarctic Expedition (1902–1904). In comparison with most other polar destina-
tions, the Barents Sea was relatively affordable too for those with more modest budgets, such as Aubin Trevor-Battye in 1894 (see Kolguev Island) and Henry Pearson, an ornithologist, who chartered vessels to explore the region in 1895 and 1897.

Much of the Barents Sea had been first investigated by Dutch navigators and whalers over a period of more than 200 years. Dutch involvement ceased in the eighteenth century with the decline of the whaling industry. In the 1870s, a group of private individuals came together in the Netherlands to organize a series of expeditions in the schooner Willem Barents, which were designed to restate the place-names originally given by Dutch explorers and erect memorials at the scene of their achievements. From 1878 to 1884, no less than seven voyages were made to the Barents Sea. Unfortunately, they coincided with a series of bad ice years and as a result repeatedly failed to erect a memorial at the site where Barents had wintered on north Novaya Zemlya in 1596–1597. Three other memorials, however, were raised—on Amsterdam Island (Svalbard) and Cape Nassau and the Orange Islands (Novaya Zemlya)—and useful oceanographic and meteorological observations made.

Subsequent exploration has tended to focus on the sea’s economic potential, its fisheries and oil reserves. The Russian Scientific Murman Expedition (1898–1908), marked the beginning of systematic study of the region’s biological resources. Led during the first year by Nikolay Mikhailovich Knipovich and afterward by the noted polar scholar Leonid Lvovich Breitfuss, the expedition conducted hydrographic observations at 1,500 stations and biological studies at about 2,000 with the aid of two research vessels—Andrey Pervozvanny and Pomor. The biological station established at Yekaterinskaya Gavan remained in operation until 1914. It was reopened in 1918 and taken over in 1920 by Rudolf Samoylovich’s Northern Scientific Expedition, continuing today as the N. M. Knipovich Polar Research Institute of Marine Fish Economy, under the auspices of the Russian Academy of Sciences. As a direct result of this research, the first Russian trawler was introduced into the Barents Sea in 1903 and the first Russian trawler in 1906. The last decades of the twentieth century have seen intense drilling activity by oil companies.

See also: Barents, Willem; Borough, Stephen; Bruce, William Speirs; Brunel, Olivier; Chancellor, Richard; Hudson, Henry (1608); King Charles Land; Kolguev Island; Nothern, Alfred (1896); Netherlands; Nobile, Umberto; Nordenskiöld, Adolf Erik (1864); Norse Arctic Exploration; Northeast Passage; Otter; Pet, Arthur; Pomor Contribution to Polar Exploration; Samoylovich, Rudolf (1928); Smith, Benjamin Leigh; Ushakov, Georgiy (1935); White Island; Willoughby, Hugh

Barents, Willem
(ca. 1550–1597)
The three voyages of the sixteenth-century Dutch navigator Willem Barents are remembered today chiefly for the first wintering in the high Arctic, when seventeen men were cut off by ice and their ship crushed off Novaya Zemlya in 1596. How twelve of the party eventually escaped to safety after a voyage of 1,100 miles in two open boats is one of the classic stories of polar exploration. The contribution made by Barents to geographical knowledge was also considerable, his most notable discoveries being Spitsbergen and Bear Island.

The Dutch Reach the Kara Sea, 1594
Balthasar de Moucheron, a merchant based at Middelburg in Zeeland, present-day southwestern Netherlands, had been the chief sponsor of Olivier Brunel’s first Dutch expedition to seek the Northeast Passage in 1584–1585. Brunel died during this expedition or shortly afterward, but de Moucheron retained his interest in the Arctic and some years later won support to organize another voyage from Prince Maurice, stadtholder of the United Provinces. On the basis of Brunel’s extensive knowledge, derived from many years’ travel in northern Russia, de Moucheron favored attempting entry to the Kara Sea by means of Yugor Strait between Vaygach Island and mainland Russia. This proposal was disputed by the merchants of Amsterdam, who were also eager to back the expedition, but they were advised by the geographer and cartographer Peter Plancius that this strait was too shallow and generally blocked by ice. Instead, Plancius suggested a route north of Novaya Zemlya, which he insisted was an island, though others viewed it as a southward projection of land continuing toward the North Pole. Unable to agree, the Dutch merchants decided to explore both possibilities.

Willem Barents, a well-known navigator and associate of Plancius, was appointed captain of the Amsterdam vessel Mercurius [I]. Cornelis Cornelis Zhaoon Nai and Brant Ysbrantszoon, the captains of Swane and Mercurius [III], were sponsored respectively by the merchants of Zeeland and Enkhuizen. Throughout all but the return voyage from Vaygach, Mercurius [II], accompanied by a small fishing boat, sailed separately from the Zeeland and Enkhuizen ships, though they did meet up briefly at Killid Island off the Kola Peninsula on 23 June, agreeing to rendezvous there later if they missed each other at Novaya Zemlya and Vaygach Island.

On 29 June 1594, Barents departed from Kilid, heading northeast toward Novaya Zemlya. After making landfall there on 4 July, his objective was to find a navigable passage north of this island. Sailing up the west coast, he initially made good progress. The wreck of a Russian craft was found on an off-lying island at 75°55’N, a sure sign that Pomor hunters had reached at least this far. On 13 July, thick ice was encountered stretching to the horizon. During the next two weeks, Barents attempted to work his way northward, indefatigably putting his vessels about again and again in a fruitless effort to find the northern passage predicted by Plancius. Farthest north was reached at the Islands of Orange, at which point he lay somewhat north of Cape Zhelaniya, the northern tip of Novaya Zemlya. Rounding it was impossible. With disaffection spreading among the crews, on 1 August he was forced to head south
toward Vaygach Island. Here, he met up with the other ships near Yugor Strait on 15 August.

Meanwhile, Nai and Ysbrantszoon had remained at Kil’din until 2 July. Sailing east through seas made dangerous by ice and surfacing whales, they had reached Yugor Strait on 22 July. While exploring the land close by and waiting for the strait to clear of ice, they made contact with the local inhabitants—Nentsy reindeer herders—who told them of an extensive sea lying farther east, which could be reached in the six-week ice-free season, the only time the strait was navigable. Following this helpful advice, on 1 August Nai and Ysbrantszoon sailed through Yugor Strait into the Kara Sea. Now reaching waters almost completely free of ice, by 10 August they were at the mouth of the Kara River, with the estuary of the Ob’ just a short portage away across the Yamal Peninsula. Recalling the Nentsy advice that the strait would remain open for only six weeks, Nai as overall leader decided to return rather than pressing on in an attempt to reach Cathay. It was clear that the seaway to the Far East had been discovered and all that remained was to bear the good news back to the Netherlands, where they arrived on 16 September.

**Turned Back by Ice, 1595**

Prince Maurice and the United Provinces States-General were enormously encouraged by the optimistic reports of Nai and Ysbrantszoon. In addition to having found a navigable route to the Ob’ River, which was believed to be the key to reaching the Far East, they also reported discovery of an island with rock crystals like diamonds. A fleet of seven vessels, including a yacht, was fitted out. They were laden with trading goods and carried merchants as well as sailors. Nai was again appointed overall leader, with Jacob van Heemskerck commander of the two ships from Amsterdam, which this time were to sail in company with the rest of the fleet. Barents was appointed pilot-major. So many ships took time to assemble, and only on 2 July, very late in the year, were they ready to depart.

After a more difficult voyage than that of the previous year, the North Cape was rounded on 10 August, rapid passage made across the Barents Sea, and Yugor Strait reached on 19 August. Fearing that the brief ice-free season might already be over, they found that the strait was indeed blocked by ice when they arrived. The previous winter had been exceptionally long and
cold, and they learned that even the Pomors had experienced difficulties in sailing their craft through the strait. Barents was keen to press on regardless, and on 2 September passage was forced through to the Kara Sea, where they made straight for the island where the promising crystals had been discovered. As the men hunted along the beach for diamonds, one of them was seized by the neck by a bear that crept out behind him, killing him and another seaman who sought to drive it away. Instead of diamonds, the crystals proved to be crumbling rock glass. Among the leaders, opinion now divided, with Barents urging Nai to allow at least some ships to winter in the far north so as to be well-placed for further exploration the next year. Nai was reluctant to allow this, and his decision to bring the entire expedition home was probably determined when mutiny broke out on 8 September among his increasingly disaffected men. Five of the ringleaders were hung. Despite these events, another attempt was made to sail farther east three days later, but it proved hopeless because the sea was almost entirely covered by ice. On 15 September, the decision was made to return to the Netherlands. This time there was no good news to give the expedition’s many sponsors when they arrived on 26 October.

Through the First High Arctic Winter, 1596–1597

Enthusiasm for further expeditions to the Northeast Passage was dampened by the very considerable financial losses incurred by the 1595 expedition. Meanwhile, mercantile interest was focused on the first Dutch expedition to the East Indies via the Cape of Good Hope, which had also been launched in 1595. Encouraged nevertheless by the offer of a substantial reward by the states-general to anyone succeeding in reaching Cathay by the northern route, the merchants of Amsterdam decided to sponsor one more expedition, this time consisting of two ships commanded by Van Heemskerck and Jan Corneliszoon Rijp, with Barents once more chief pilot.

The intention now was to follow the program of exploration consistently advocated by Plancius. Plancius believed in the presence of an open polar sea close to the North Pole. To reach it, one must first find a way through the ring of surrounding ice, something he believed Barents to have been on the point of achieving in 1594 when he had been forced to turn back by his crew. This time great care was taken in selecting crews consisting only of young unmarried men who were prepared to be away from home some time. Under the circumstances, it was just as well.

The two ships left Amsterdam on 10 May 1596. On 5 June, they met their first icebergs and two days later were at 74°N, with ice on either side of them. On 9 June, they came upon a small island where a polar bear had been killed, giving the island its name: Bear Island. There they remained for three days before continuing northward and passing to the west of the Svalbard archipelago without sighting land until they met up with the main polar pack. Unable to continue north, they adopted a westward course, which on 19 June brought them within view of a mountainous land dissected by sweeping glaciers. They were at 80°11’N, and what they saw was the northwest coast of Spitsbergen. A strong wind blowing offshore kept them from landing until two days later, by which time it was apparent that an extensive land had been discovered, which, according to the ideas of their day, they assumed to be part of the great promontory of Greenland stretching out in an arc north and west of Eurasia. Breeding barnacle geese were found on a small island, disproving the medieval theory that they hatched out of barnacles. No one had ever seen their eggs before. In comparison with Novaya Zemlya, Spitsbergen was well vegetated, despite being 4° farther north, and was evidently able to support reindeer as well as carnivores and scavengers such as polar bears and arctic foxes. One more attempt was made to get farther north on 23 June. Again, impenetrable ice was encountered, causing Barents to sail south along the island’s west coast before looking for another route. Clearly, he was not going to reach the “open polar sea” here.

Leaving Spitsbergen behind on 29 June, on 1 July the ships were again in sight of Bear Island. Rijp now came on board to discuss strategy with Barents and van Heemskerck. He suggested that the next attempt should be made to the east of the newly discovered land. The others, however, were determined to try still farther east off Novaya Zemlya, where Plancius believed Barents to have come close to success in 1594. The two captains decided to separate.

Landfall was made on the west coast of Novaya Zemlya on 17 July 1596. Barents followed the coastline northward and on 6 August succeeded in rounding its northern tip. Soon afterward, the ship was totally surrounded by ice and unable to sail either south into the Kara Sea or return the way it had come. With the prevailing winds coming from the northeast, on 26 August it was finally cut off by ice at Ice Haven. There, at 76°12’N, the seventeen men would be forced to winter. Two were to die during their ten-month stay, the first being the carpenter, who was dead within a week of their arrival. They could ill afford to lose someone with his skills, and partly as a result, it took six weeks to make a hut out of driftwood, which was fortunately abundant.

On 4 November the sun disappeared, and although the darkness depressed their spirits further, at least it brought relief from the incessant depredations of the polar bears, which prowled around the hut, scratching their claws against its walls and placing in peril anyone venturing out to collect driftwood for fuel to help stave off the intense cold. Now, instead of bears came arctic foxes, whose flesh tasted like rabbit whenever these nimble scavengers could be caught. Once, they used sea coal rather than driftwood to stoke their fire and all but died as a result of carbon monoxide poisoning. Just in time, someone thought to open the door before they all choked to death. Three men suffered hypervitaminosis—excess of vitamin A—from eating too much polar bear liver. Their skin flaked off in
large strips, as did that of Douglas Mawson and Xavier Mertz three centuries later in Antarctica, after they ate too much dog liver. Despite the reappearance of the sun on 24 January 1597, the worst of the winter was yet to be got through, the bears returned, and the intensity of the cold remained unendurable.

It was not until 14 June that the ice in the bay was sufficiently reduced for the survivors to try to reach safety, by setting out in two patched-up open boats. Barents was now so sick that he had to be carried to the boats on a sledge. Within a week, on 20 June, he was dead, as was one of the sailors. Another died shortly afterward. Without Barents’s great skills as a navigator, the task ahead for the twelve men remaining appeared impossible. First, they must head north to reach the west coast of Novaya Zemlya and then south through seas infested by tossing ice floes that presented a constant threat to their fragile craft. Meanwhile, polar bears roamed alongside, waiting for their opportunity. For more than forty days, the men were completely exposed to the elements in their tiny boats. On 28 July, contact was made at last with Pomor hunters, who gave them food. One week later, they reached the Russian mainland, after which they were guided west with the help of the Pomors to Kil’din Island, where both boats arrived in August, having become separated some time before. A friendly Laplander was sent ahead with one of their number to the Kola River, where they had heard that three Dutch ships lay at anchor. One of these was captained by Rijs, their colleague of the previous year, who by chance happened to be engaged in a trading voyage and was now able to bring them safely back to Amsterdam, where they arrived on 1 November. Although the loss of Barents was a great setback, Dutch interest in the Northeast Passage remained high, and Henry Hudson, Barents’s English successor, was to find Dutch backing for his expedition of 1609.

See also: Barents Sea; Bear Island; Brunel, Olivier; Hudson, Henry; Kara Sea; Mawson, Douglas (1911–1914); Netherlands; Northeast Passage; Novaya Zemlya; Open Polar Sea; Pomor Contribution to Arctic Exploration; Spitsbergen; Svalbard; Vaygach Island

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Barrow, John
(1764–1848)
The most influential figure in the revival of British polar exploration in the first half of the nineteenth century was not a naval officer, scientist, or politician but a man of humble birth, who, on the basis of talent alone, in 1804 was appointed second secretary of the Admiralty, a post he held until 1845.

John Barrow had established a reputation as a capable and energetic administrator first with Lord Macartney’s mission to China—on which he typically found time to learn Chinese—and then in South Africa, where he would most probably have remained, had not Cape Colony been returned to the Dutch in 1803. While at the cape, Barrow had impressed the military governor General Francis Dundas, who drew him to the attention of his uncle, Henry Dundas, who in 1804 became Lord Melville and first lord of the Admiralty. Whereas the first secretary was responsible for the political aspects of naval affairs, as second secretary Barrow ran the Admiralty office and conducted correspondence with naval officers. So long as he retained the confidence of the first lord, he possessed enormous powers of patronage and exerted great influence on promotions.

Barrow had been interested in the Arctic since adolescence, when he had visited Spitsbergen on a whaling vessel. In 1817, unprecedentedly ice-free conditions were reported by a number of whalers, leading Sir Joseph Banks, president of the Royal Society, to approach Barrow concerning the possibility of the
Admiralty organizing an exploratory voyage to the far north. Both men agreed that conditions appeared exceptionally favorable, and, prompted by Barrow, Banks wrote to Lord Melville with a formal proposal that such an expedition be mounted. Permission was obtained for two voyages: one toward the North Pole, to be led by Commander David Buchan; and one to search for the Northwest Passage through Baffin Bay, to be led by Commander John Ross. Banks also introduced Barrow to the whaler William Scoresby, in the hope that he might find a suitable role for him. No one knew more about the Arctic than Scoresby, but Barrow was unprepared to offer him anything more than the post of pilot on his own ship under a naval officer, terms that not surprisingly were completely unacceptable to the whaler. It was not just lack of ice that was particularly favorable for the resumption of Arctic exploration in 1818. Great Britain had built up a vast navy during the Napoleonic Wars. Following the declaration of peace in 1815, large numbers of naval officers found themselves on half-pay. Arctic exploration offered the possibility of useful employment for some of them, and there was never to be any shortage of volunteers. Thanks to Barrow, indeed, more than a few were to enjoy highly successful careers on the basis of their polar service.

The activities of the many expeditions instigated by Barrow are described under the names of their leaders. Those focusing on the North Pole—by Buchan in 1818 and Edward Parry in 1827—achieved little. Although the results of John Ross’s first expedition to seek the Northwest Passage were similarly disappointing, Parry’s voyage of 1819–1820 was the most successful of its era. Although he achieved less on his second and third voyages in 1821–1823 and 1824–1825, when combined with what was learned of the American Arctic coastline from the two overland journeys led by John Franklin, the results of Parry’s three expeditions did much to narrow down the possibilities as to where the passage might be found.

Barrow also initiated exploration from the west through Bering Strait, sending Frederick Beechey there between 1825 and 1828. If Parry’s voyage of 1819–1820 was the most remarkable of Barrow’s Arctic achievements, then at least equally notable was the success of his one Antarctic expedition, led by James Clark Ross in 1839–1843. Despite being eighty years old, the indefatigable Barrow exploited the euphoria generated by Ross’s triumphant return to organize one final expedition, a voyage to complete the discovery of the Northwest Passage. It was led by Sir John Franklin (see Table 4).

Like many of his contemporaries, Barrow’s optimism as to what could be achieved through polar exploration was founded upon belief that close to the Pole would be found open water. In October 1817, he had written that a “sea of more than two thousand miles in diameter and in constant motion, is not likely to be frozen over at any time” (Barrow 1817, 222). For evidence that it was not, he pointed to the presence of a southern current through Davis Strait and of driftwood from Siberia reaching Greenland and noted that whales had been found off northwestern America with harpoons implanted in their bodies by Spitsbergen whalers. He believed that Greenland was an island and that an “open polar sea” lay to its north. Prior to John Ross’s voyage in 1818, Barrow held that Davis Strait was continued north by “Baffin Sea,” not by a bay. Although he was prepared to modify his views according to what was discovered, as in the case of Ross’s expedition, Barrow remained sufficiently convinced of the reality of the open polar sea in 1845 to instruct Franklin to search for it through Wellington Channel, should he be unable to find passage to the southwest.

Barrow’s preoccupation with the Northwest Passage requires some explanation. He himself wrote that the search was not motivated by economic interests but had “for its primary object that of advancement of science, for its own sake, without any selfish or interested views” (1846, 379). This statement was disingenuous in that he made no reference to political factors and national prestige, which were by no means insignificant given that he was required to satisfy his Admiralty masters that these expensive expeditions served the ends of the British government. More revealingly, he had written earlier that it would be “somewhat mortifying, if a naval power but of yesterday should complete a discovery in the nineteenth century, which was happily commenced by Englishmen in the sixteenth” (Barrow 1817, 219). The naval power he had in mind was Russia. At the conclusion of peace in 1815, Russia had organ-

<table>
<thead>
<tr>
<th>Date</th>
<th>Explorer</th>
<th>Region Explored</th>
</tr>
</thead>
<tbody>
<tr>
<td>1818</td>
<td>Buchan</td>
<td>Spitsbergen and adjacent waters</td>
</tr>
<tr>
<td>1818</td>
<td>John Ross</td>
<td>Baffin Bay</td>
</tr>
<tr>
<td>1819–1820</td>
<td>Parry</td>
<td>Lancaster Sound, Baffin Strait, and Parry Islands</td>
</tr>
<tr>
<td>1819–1822</td>
<td>Franklin</td>
<td>American Arctic coast, Coppermine to Point Turnagain</td>
</tr>
<tr>
<td>1821–1823</td>
<td>Parry</td>
<td>Fury and Hecla Strait discovered in Foxe Basin, Canada</td>
</tr>
<tr>
<td>1824</td>
<td>Lyon</td>
<td>Hudson Bay</td>
</tr>
<tr>
<td>1824–1825</td>
<td>Parry</td>
<td>Prince Regent Inlet, Arctic Canada</td>
</tr>
<tr>
<td>1825–1827</td>
<td>Franklin</td>
<td>American Arctic coast, Return Reef to Coppermine</td>
</tr>
<tr>
<td>1825–1828</td>
<td>Beechey</td>
<td>American Arctic coast, Kotzebeu Bay to Point Barrow</td>
</tr>
<tr>
<td>1827</td>
<td>Parry</td>
<td>First attempt to reach North Pole across the ice</td>
</tr>
<tr>
<td>1836–1837</td>
<td>Back</td>
<td>Hudson Bay and Foxe Basin</td>
</tr>
<tr>
<td>1839–1843</td>
<td>James Clark Ross</td>
<td>Discovery of Victoria Land, Antarctica; Ross Island and the Ross Ice Shelf; also discoveries off the Antarctic Peninsula</td>
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<tr>
<td>1845–1848</td>
<td>Franklin</td>
<td>Northwest Passage</td>
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Barrett, Bob (1875–1946)

Regarded by some as the finest ice master of his time, the Canadian seaman Bob Bartlett provided indispensable support to Robert Peary in his assault on the North Pole, as well as being a formidable explorer in his own right. That anyone survived the shipwreck of Karluk in 1914 was due to his leadership.

Robert Abram Bartlett—“Captain Bob”—was born into a well-known Newfoundland sealing family. A boyhood spent as much among ice floes as on land was followed by employment as a sealer, until his uncle Samuel Bartlett took him on as mate of Windward in an Arctic expedition led by the American explorer Robert Peary. Peary liked what he saw of the younger Bartlett and appointed him captain of Roosevelt for his next expedition in 1905–1906. Bartlett succeeded in forcing Roosevelt through the ice-choked channels north of Smith Sound to reach the northern tip of Ellesmere Island. He also proved to be a powerful sledger, and on Peary’s next attempt on the North Pole in 1908–1909, Bartlett was placed in command of the first sledding team, whose role was to break trail for the others and build igloos for them. Having reached 87°47’N, he was desperately disappointed to be excluded from the Polar Party, having fully expected to go on with Peary to the Pole.

Throughout the bitter controversy over which explorer actually reached the Pole first, Bartlett was one of Peary’s most loyal supporters, and when Harry Whitney failed to find papers supposedly left with him by Peary’s rival Frederick Cook at Anoritoq, North Greenland, during a voyage captained by Bartlett in 1910, those backing Cook’s claim accused Bartlett of foul play. Whitney found only instruments in the cairn, which had already been opened, though by whom and when remains unclear.

The Wreck of the Karluk, 1913–1914

Bartlett had returned to sealing when he was approached by Vilhjalmur Stefansson concerning the possibility of his capturing one of several vessels during a major expedition to explore the Canadian Arctic archipelago and look for new land off the northern coast of Alaska. Bartlett’s only reservations concerned the vessel assigned to him. Karluk was an elderly wooden barkentine originally built for fishing but converted to a whaler in 1899. It was slow and underpowered, and even after strengthening with crossbeams and extra sheathing, was insufficiently strong to survive a bad ice squeeze. Bartlett agreed to act as captain only on the understanding that the ship and crew would not have to winter.

Karluk sailed from Esquimalt, British Columbia, on 17 June 1913 with Stefansson and a party of scientists on board. Bartlett’s first objective was to reach the expedition’s initial

Barrow Strait (Canada)

Barrow Strait is the name given to that part of the Parry Channel east of Lancaster Sound and west of Melville Sound. Devon, Cornwallis, and Bathurst Islands lie to the north and Somerset and Prince of Wales Islands to the south. The strait was first reached on 22 August 1819 by Edward Parry, who named it for Sir John Barrow (1764–1848), second secretary of the British Admiralty. Having discovered Wellington Channel leading north, Parry considered that at this point he had penetrated beyond lands forming the western side of Baffin Bay and had here entered the polar sea, with only islands and discontinuous land ahead. He therefore decided to give the seaway its own name to distinguish it from Lancaster Sound.

Horatio Austin’s squadron wintered in 1850–1851 between Cornwallis and Griffiths Islands. Sledging parties were dispatched to investigate Garrett, Lowther, and Davy Islands farther west; south across the strait to Russell and Prince of Wales Islands; and north to Cornwallis, Bathurst, Byam Martin, and Melville Islands, during a comprehensive examination of the region for signs of Sir John Franklin’s expedition.

See also: Austin, Horatio; Barrow, John; Franklin Search Expeditions; Lancaster Sound; Northwest Passage; Parry, Edward (1819–1820); Wellington Channel

Bartlett, Bob

Mercifully, Barrow died in ignorance of the calamitous end of Franklin’s expedition. During a full life, in which the polar regions were just one interest among many, he did more to promote their exploration than arguably anyone before or since. Africa, China, and philology were among his other enthusiasms, on each of which he wrote prolifically and was counted among the greatest authorities of his day. His role in the foundation of the Royal Geographical Society in 1830 was particularly influential.

See also: Back, George (1836–1837); Beechey, Frederick; Buchan, David; Franklin, John; Kotzebue, Otto von; Lyon, George; North Pole; Northwest Passage; Open Polar Sea; Parry, Edward; Ross, James Clark (1839–1843); Ross, John (1818); Scoresby, William

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See also: Austin, Horatio; Barrow, John; Franklin Search Expeditions; Lancaster Sound; Northwest Passage; Parry, Edward (1819–1820); Wellington Channel
base at Herschel Island. Karluk rounded Point Barrow on 7 August and continued east off Alaska until ice near Camden Bay stopped its progress, only two days’ sailing distance from Herschel. By 12 August, the ship was firmly beset. Stefansson sought to persuade his scientists to abandon the ship and travel overland to Herschel. Although some were willing to do this, for others it meant leaving behind heavy equipment essential for their research. On 20 September, Stefansson went ashore with three members of the scientific party and two Inuit. Whether his intention was, as he said, to lay in a stock of fresh meat for the winter through hunting or to begin exploration and abandon Karluk to its fate remains debated to this day, but Bartlett for one accepted Stefansson’s account. Whatever the truth, three days after his departure, a gale arose, and Karluk was torn away from the coast. Fortunately, it was enclosed in a large floe, which provided protection from the worst of the pressure during the week that the storm continued to drive it west. Knowing that Karluk was likely to sink the moment it was seriously squeezed, Bartlett made preparations to abandon ship. Concentrated provisions were brought up on deck and all boats loaded with supplies. Two igloos were built on the ice nearby. By 5 October, Karluk was off Point Barrow, Alaska, and heading northwest out into the Chukchi Sea. On 15 November, it reached its farthest north at nearly 73°N.

With Bartlett on board Karluk were six scientists, twelve crew, the trader John Hadley, and five Inuit, including a woman and two children. Only Bartlett and Hadley had any experience traveling on sea ice. Even the two veterans of Sir Ernest Shackleton’s first expedition to Antarctica—Dr. Alistair Mackay (surgeon) and James Murray (oceanographer)—had done most of their traveling on land. The Inuit had hunted seals on coastal ice, but that was all. Throughout the winter, Bartlett taught his novice companions how to look after themselves when called upon to take to the ice. Meanwhile, the Inuit seamstress Kiruk was kept busy making boots and shirts. Ice pressure built up again with the New Year, increasing in an easterly gale until Karluk was badly sprung on 10 January 1914. With water pouring in through the hull, Bartlett ordered its abandonment. He was the last to leave, staying on to play gramophone records in the saloon. Karluk slid under water to the sounds of Frédéric Chopin’s Funeral March.

At 175°W, they were some 50 miles north of Herald Island, with Wrangell somewhat farther west, and the Chukotka Coast 100 miles beyond to the south. Bartlett was in no hurry to start out. While waiting for the sun to return, they made preparations to lay depots and reconnoiter a route along which he and his colleagues could travel in a compact group. From his experiences with Peary, he well understood the danger of becoming separated. Anyone cut off from food would stand no chance of survival. Bartlett’s painstaking planning looked to some like uncertainty and hesitation. They were eager to head south as soon as possible. At last on 21 January, first officer Sandy Anderson was given permission to proceed with six men and eighteen dogs toward Herald Island. Steward Ernest Chafe and seaman Hugh Williams were sent out the next day to mark the trail with flags, which were placed on the highest hummocks at intervals of 2–3 miles. At Shipwreck Camp, frustration deepened as days passed without word from Anderson. Eventually, Murray felt unable to tolerate further delay and asked Bartlett to provide him with supplies for four men for fifty days. On 5 February, Murray and Mackay departed, accompanied by anthropologist Henri Beuchat and the seaman Stanley Morris. That afternoon, three members of Anderson’s party returned—assistant geologist Bjarne Mamen and the two Inuit, Kuraluk and Kataktovick. When last seen, Anderson had been camped on the ice 3 miles off Herald Island and waiting for an opportunity to get ashore. Chafe was now sent with the Inuit to lay a depot on Herald Island. He returned with a tale of woe. The island was inaccessible beyond constantly running ice. They had lost their supplies and had been lucky to escape with their lives. Anderson’s party had disappeared and was presumably dead. Most likely, so too were those with Murray, whom they had encountered 20 miles from Herald Island. Unable to handle dogs, Murray had resorted to man-hauling, and he and his companions had been completely done in. Morris had a badly cut hand, and Beuchat was lagging a mile behind with frostbitten hands and feet. Murray’s party could not be persuaded to return to Shipwreck Camp. To avoid disheartening the others, Bartlett ordered Chafe to keep this information to himself.

Bartlett was at last ready to move on 19 February. Two teams of four men and four dogs led off with two sledges piled high with food and clothing. Bartlett himself followed five days later with thirteen dogs, three sledges, and the remaining nine expedition members, including Kiruk and her two daughters. The condition of the ice was atrocious, especially as they approached Wrangell, and the sledges were repeatedly battered as they were manhandled across high pressure ridges. The cold was unbearable, never above −43°C (−45°F), and several had frostbitten feet by the time they reached the north coast of Wrangell Island on 12 March. Leaving the others here to await rescue, Bartlett continued on with Kataktovick and seven dogs to sledge around the island to its southern side and, from there, across Long Strait to the coast of Chukotka. Once through the shattered ice surrounding the island, they made faster though more perilous progress, with the ice even this early in the year already beginning to thin and break up. After a journey of 200 miles, they reached the mainland on 4 April near Cape Yakat. From there, assisted by a Chukchi guide, Bartlett traveled east along the coast to Bering Strait. At Providence Bay, he went aboard the American whaler Herman, which brought him to St. Michael, Alaska. There, at last, on 29 May, he was able to send a wireless message informing the Canadian government of the loss of Karluk and the presence of survivors on Wrangell Island.

Back on Wrangell, the survivors were having a hard time of it. Chief engineer John Munro had been left in charge, with
instructions from Bartlett to try to reach Herald Island, just in case any members of Anderson's and Murray's parties were marooned there. Blizzards and rough ice forced him to abandon the attempt several days out, though not without first searching for any sign of a camp through his binoculars. Soon afterward, he set out with Chafe and Williams to obtain further supplies from Shipwreck Camp, only to find that the trail had been destroyed in the drifting ice. They were lucky to get back alive. Following Bartlett's advice, several camps were set up around the island to reduce the number needing to be fed from the limited resources available in any one locality. Unfortunately, only Kuraluk and Hadley were competent hunters, and when Mamen, geologist George Malloch, and the young cook Robert Templeman found themselves based on the south coast 60 miles from the others, they were unable to feed themselves. By the time that a relief party got through to rescue Templeman, Mamen and Malloch were dead. Fireman George Breddy also died, killed by a single shot from a revolver through his right eye. Although his death was later represented as suicide, it is more likely that Breddy was murdered by his tent mate, second engineer Robert Williamson, with whom he had repeatedly quarreled. Through the summer Wrangell remained surrounded by ice, and by early September rescue looked unlikely. Munro and his colleagues built a stout hut out of the abundant driftwood and prepared for a harsh winter.

Bartlett, meanwhile, had been obliged to remain at St. Michael until 13 July 1914, when he joined the U.S. revenue cutter Bear, which was making its annual tour of the Alaskan coast. With Wrangell accessible in late summer, if at all, not until 23 August did it depart from Point Barrow toward the Chukchi Sea. On 8 September, Bear was attempting to approach Wrangell through the ice, when Olaf Swenson was encountered in the trading vessel King and Winge. Swenson had reached the survivors the previous day and now had them on board. To Bartlett's sorrow, they numbered just twelve: nine men, one woman, and two girls. Bear brought them south to Esquimalt on 24 October.

The Arctic Voyages of Effie M. Morrissey, 1926–1945

Apart from an award from the Royal Geographical Society, Bartlett received scant recognition for his heroic endeavors on behalf of those shipwrecked with him in Karluk. He returned to Newfoundland, where he resumed sealing with limited success, being perhaps too impatient for this profession. In 1917, he was sent to assist Donald MacMillan after three relief ships had failed to reach him in North Greenland. The ice was very bad that year in Melville Bay, but Bartlett got through and, with canvas patched over a hole in Neptune's bow, brought much-needed supplies to MacMillan at Etah. Bartlett next sought to organize his own expedition, which involved constructing an icebreaker of his own design capable of penetrating the densest polar ice, in which he planned to conduct systematic exploration of the Arctic Basin. Despite his contacts through Peary with many rich and influential Americans, he was never able to raise enough money.

Bartlett was very much down on his luck in 1925, when he was invited to dine at the New York Yacht Club with Commodore James B. Ford. Ford was vice president of American Rubber, and when he offered to pay for a schooner, Bartlett knew just which one to buy. The 120-ton Effie M. Morrissey was the product of a famous Massachusetts shipyard. Built for fishing, it had been launched in 1894 and in every respect was a beauty: stout, clean-lined, and a fine sailor. For twenty-two years, Effie M. Morrissey was to be Bartlett's "home, office and magic carpet," (quoted in Wordie, 1947, 107) as he took parties of students and scientists, generally to Baffin Bay but on four occasions to East Greenland, to conduct research and make natural history and ethnographic collections for the American Museum of Natural History and other museums, including the Smithsonian.

The first expedition, to West Greenland in 1926, was organized by publisher David Putnam. Also on board was William Hobbs with a party from the University of Michigan, which included the young Laurence Gould, soon to go south to Antarctica with Richard Byrd. Each year, Bartlett headed north in early summer, often visiting regions still barely explored. Thus, in 1927, he and Putnam mapped the west coast of Baffin Island. In 1928, on behalf of the American Museum of Natural History, plans were made for him to take a team of scientists to Severnaya Zemlya. No one had landed on this high Arctic archipelago since 1914, and its interior remained completely unknown. The Soviet government refused access, however, and Bartlett visited the western Arctic instead to make archaeological collections. In 1930, he reached as far north as Cape Bismarck in King Frederik VIII Land on the east coast of Greenland. Few ships have ever reached farther. In 1931, he planned to search Franz Josef Land for signs of Roald Amundsen, lost with his plane in 1928. Although it was hardly likely that Amundsen was still alive, Bartlett's backer Arthur D. Norcross considered it just possible that he might have made his way there. Heavy ice in the northern Barents Sea forced Bartlett to visit East Greenland instead, where collections were made for the American Museum of Natural History and the New York Botanical Garden. Norcross also funded an attempt in 1933 to explore Foxe Basin by following the course taken by Edward Parry in 1821. Unlike Parry, Bartlett was unable to reach Repulse Bay through Frozen Strait north of Southampton Island and instead had to round this island to the south, before heading along its west coast through Roes Welcome Sound. Fury and Hecla Strait proved as impassable for Morrissey as Parry had found it in 1822. In 1941, Bartlett was joined by Louise Boyd in a voyage commissioned by the U.S. government to identify suitable sites for airfields in North and West Greenland. Once war was declared in December 1941, Morrissey was commandeered for the war effort. Bartlett insisted on retaining command despite being far too old for conscription and
undertook a series of voyages during which secret airfields were established in Greenland and northern Canada. He was planning his next voyage in 1946, when a cold developed into pneumonia and led to his death.

Without Bartlett, Peary would most probably not have come even close to the Pole because Bartlett was indispensable, both for his skills as navigator and for his power as a sledger. Certainly, it is thanks to his leadership that anyone survived *Karluk*. Not least among his contributions were the lessons he taught the next generation of explorers and scientists on board *Morrissey*.

**See also:** Amundsen, Roald; Boyd, Louise; Chukchi Sea; Foxe Basin; Gould, Laurence; Greeley, Adolphus; Herald Island; Herschel Island; King Frederik VIII Land; MacMillan, Donald (1913–1917); North Pole; Parry, Edward (1821–1823); Peary, Robert (1898–1902, 1905–1906, 1908–1909); Shackleton, Ernest (1907–1909); Stefansson, Vilhjalmur (1913–1918); Wrangel Island

**References and further reading:**


**Bathurst Island (Canada)**

Located at 76°30’N, 100°30’W, this member of the Parry Islands lies north of Melville Sound, with Melville and Byam Martin Islands to the west and Cornwallis Island to the east. It is separated from the former by Byam Martin Channel and from the latter by McDougall Sound and Crozier Strait. Farther north, Queen’s Channel and Penny Strait lie between it and western Devon Island. It has an area of 6,194 square miles and is 160 miles long and 50–100 miles wide. It was discovered on 25 August 1819 by Edward Parry and named by him for Henry, Third Earl of Bathurst (1762–1834), then British secretary of war and the colonies. The island has had no permanent Inuit population within historic times, though there is evidence of extensive occupation by PaleoEsksimo peoples.

The south and west coasts were explored in 1851 by sledging parties from Horatio Austin’s Franklin search expedition. While Leopold McClintock followed the south coast to Cape Cockburn before crossing over to Byam Martin Island, Robert D. Aldrich continued north to explore the west coast between Graham Moore Bay and Pell Inlet before investigating the west coast of the islands to the northwest as far as Cape Aldrich, about 76°11’N. The survey of the island’s coastline was continued in 1853 by parties from Sir Edward Belcher’s expedition: George H. Richards and Sherard Osborn sledged west along the north coast in April 1853, and Osborn on his return journey explored south to about 75°50’N.

The island was formally claimed for Canada in 1906, when Joseph-Elzéar Bernier landed at Cape Cockburn. It was visited in 1929 by Inspector A. H. Joy’s Royal Canadian Mounted Police patrol during their epic sledging journey and in 1944 by Henry Larsen, who landed at Cape Cockburn to locate Bernier’s cairn on his return voyage through the Northwest Passage. Staff of the Geological Survey of Canada (GSC) mapped the island in 1955 during Operation Franklin. The GSC summer camp in central Bathurst Island was taken over by the Zoology Section of the Canadian National Museum of Natural Sciences in May 1968 and named “Polar Bear Pass.” A range of studies has been conducted since, many of which have focused on muskoxen and birds. Wildlife artist George Sutton (1971) and zoologist David Gray (1987) have written interesting accounts of their work.

**See also:** Austin, Horatio; Belcher, Edward; Bernier, Joseph-Elzéar; Franklin, John (1845–1848); Franklin Search Expeditions; Kellett, Henry (1852–1854); Larsen, Henry (1944); Parry, Edward (1819–1820); Parry Islands

**References and further reading:**


**Bay of Whales**

*See Ross Ice Shelf*

**Bear Island (Svalbard)**

Located at 74°30’N, 190°0’E, this geographically isolated island of some 70 square miles is the southernmost member of the Svalbard Archipelago, lying 127 miles south of Spsbergen and 240 miles north of Norway. The official Norwegian name is Bjørnøya. It was discovered on 9 June 1596 by a Dutch Northeast Passage expedition piloted by Willem Barents. The first landing was made the next day and the island named “Het Beyren Eylandt” after a polar bear killed here on 12 June. Between 1604 and 1613, Muscovy Company ships regularly hunted walruses following the island’s rediscovery by William Gorden and Stephen Bennet in 1603. Believing it previously unknown, the English named it “Cherie Island” for Sir Francis Cherry, an influential member of the Muscovy Company. Walrus hunters and whalers undoubtedly continued to visit the island through the seventeenth and eighteenth centuries, though relatively few landings are documented. In 1794, the first wintering was made by a party organized by the Hammerfest merchant Peter Chr.
Buck. His was the first Norwegian hunting party to winter anywhere in Svalbard. Other winterings followed in 1795 and on four occasions in the 1820s, but one in 1834–1835 ended with the death of all members of a seven-man party.

The first scientific studies were conducted by Balthasar Keilhau, who spent four days here in 1827. Other nineteenth-century scientific expeditions landing on Bear Island included Paul Gaimard (1839); Adolf Erik Nordenskiöld (1864 and 1868); Albert I, Prince of Monaco (1898); Theodor Lerner (1898); Alfred Nathorst (1870 and 1898), who conducted the first accurate survey on the later visit; and Gunnar Andersson, who spent a summer studying geology in 1899. Apart from Andersson’s, most of these visits were of only a few days’ duration. The island had no harbor where a vessel might safely anchor, and anyone contemplating extended work risked being cut off for a longer period than planned since weather and ice frequently made landings difficult.

In 1925, five years after the Spitsbergen Treaty granted Norwegian sovereignty over the rest of Svalbard, Bear Island was declared a Norwegian possession. Norway had opened a meteorological and radio station on the northeast coast in 1923 at Tunheim (74°52′N, 19°02′E), and Norges Svalbard-og Ishavsforskningsinstituttet, under Adolph Hoel conducted a geological survey in 1924–1925. A Polish expedition led by Czeslaw Jack Centkiewicz was accommodated at Tunheim during the Second International Polar Year (1932–1933). Tunheim was destroyed by the British in 1941 to prevent its use by the Germans. It was reopened in 1945 and is now maintained by seven to eight staff. Scientists from the Norwegian Polar Institute have conducted research on the island since 1948.

See also: Andersson, Gunnar; Barents, Willem (1596–1597); Bruce, William Speirs; Hoel, Adolf; International Polar Years; Muscovy Company; Nathorst, Alfred; Nordenskiöld, Adolf Erik; Norway; Svalbard

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Bear Islands (Russia)

This group of six small islands north of the Kolyma River in the East Siberian Sea is one of several low-lying archipelagoes characteristic of the shoaling waters off the Arctic coast of Russia. They were discovered in 1655 by a hunting expedition led by Yakov Vasil’yev Vyatka, who probably landed on Krestovskiy Island and found animal tracks but no sign of human occupation. The islands were next reported in 1669, when Rodion Mikhaylov sighted one of the islands on another hunting expedition from Yakutsk. Several other hunters visited subsequently, including Grigoriy Kuzyakov in 1714, Ivan Vilegin in 1720, Fedor Amosov in 1724, and Nikita Shalaurov in 1761. The four largest islands are Krestovskiy, Pushkareva, Leont’yeva, and Chetyryrekshtol’bovo. The official Russian name for the archipelago is Ostrova Medvezhi’i.

In 1763, Stepan Andreyev was sent by Fedor Plenisner, commander in chief of Anadyr’ region, to conduct the first survey of the islands and to search beyond them for a “Great Northern Land,” which had been reported as lying farther north. Andreyev traveled with dog teams along the coast from the Kolyma River and then across the sea ice to reach Krestovskiy Island on 22 April, before making a brief visit to all six islands. The large number of bear tracks found on one island led Plenisner to give the archipelago its name. Shortly before turning back from the last island, Andreyev believed that he saw a large area of land farther east and in the following year was sent back to search for it. Almost certainly he was misled by a mirage. Doubts about the accuracy of Andreyev’s work led Plenisner to send out another expedition in 1769, led by Ivan Leon’t’yev. His instructions were to conduct a survey of the islands—a task that he completed with commendable accuracy, given the time and techniques available to him—and to search for “Andreyev Land.” He returned here the following year to continue his investigation farther north across the sea ice.

The search for “Andreyev Land” was also to inspire Ferdinand von Wrangel’s visit in 1821. On his way out across the sea ice, he landed on the most easterly of the islands, which he named “Four Pillar Island” (Chetyryrekshtol’bovo) on account of its distinctive rock formations. On his way back, he conducted a brief survey of the group and compiled a chart. Later visitors include the astronomer Karl Neyman, who sledged here in 1870 during the expedition led by Gergard Maydel, and Adolf Erik Nordenskiöld during his first transit of the Northeast Passage in 1878. The first accurate survey was conducted in 1912 by the icebreakers Taymyr and Vaygach (see Vil’kitskiy, Boris). In 1924–1925, Roald Amundsen’s ship Maud wintered 5 miles east of Chetyryrekshtol’bovo. A meteorological station was established in 1955 at 70°21′N, 142°17′E.

See also: Amundsen, Roald (1918–1921); East Siberian Sea; Nordenskiöld, Adolf Erik (1878–1880); Vil’kitskiy, Boris; Wrangel, Ferdinand von

Beaufort Sea (Arctic Ocean)

This marginal sea of the Arctic Ocean lies north of Alaska and Canada, extending west from Banks and Prince Patrick Islands to the Chukchi Sea, which lies west of Point Barrow, Alaska. Unlike the seas north of Russia, nowhere is the continental shelf wider than 90 miles, and much of the Beaufort Sea is really part of the Arctic Ocean, with an average depth of 1,000 meters and a maximum depth of 5,000 meters. Occupying an area of 184,000 square miles, it is named for Sir Francis Beaufort (1774–1857), hydrographer of the Royal Navy. The sea is covered by multiyear ice throughout the year, though near the coast the ice breaks up in August and September. Experienced navigators keep close inshore, despite the shoaling water. Those heading out into the pack tend to get into difficulties (e.g., Bob Bartlett and Karluk in 1913).

Once James Cook had demonstrated that any entrance to the Northwest Passage would have to be sought north of
Alaska, explorers turned their attention beyond Bering Strait, though no vessel was to enter the Beaufort Sea itself until 1849, when Robert Shedden’s Nancy Dawson accompanied William Pullen’s boat parties for 50 miles beyond Point Barrow in the search for Sir John Franklin. The first exploring vessel to enter the sea was Robert McClure’s HMS Investigator in 1850, one year ahead of his nominal commander Richard Collinson in HMS Enterprise. Both followed the narrow belt of open water close to the coast to reach Banks Island at the eastern termination of the sea before continuing on to explore waters farther west.

In the wake of the explorers came the whalers. American whalers first entered the Beaufort Sea in 1854. Following Thomas Ross’s discovery of large stocks of bowhead whales in the Chukchi Sea, the whalers did not attempt to round Point Barrow until assured by officers of HMS Plover that Elson Lagoon beyond the point provided a safe anchorage. Five whalers then entered the Beaufort Sea but had little success in taking whales. The main period of whaling activity began in 1873, as the whalers pushed east, looking for the breeding grounds of the bowhead whale. The short navigation season limited how far east they were prepared to go, until a fine natural harbor was discovered on Herschel Island. Between 1890 and 1914, vessels regularly wintered there and farther east at Baillie Island and off Cape Parry, enabling them to fish the rich whaling grounds off the Mackenzie Delta. Although accomplishing little themselves in the way of exploration, whalers did contribute in other ways. The existence of a local whaling industry meant the availability of ice-strengthened vessels and ice pilots trained in local conditions. Herschel Island provided a natural logistics center, where further supplies could be taken on and communications exchanged.

Like most Arctic seas, the Beaufort had its mythical land, “Keenan Land,” first reported by the American whaler John Keenan in the 1870s and long sought by explorers. “Keenan Land” was a mountainous land believed to lie 300 miles north of Alaska. First to search for it were Ejnar Mikkelsen and Ernest Leffingwell. Setting out in 1907 from Flaxman Island, Mikkelsen and Leffingwell had to turn back just 120 miles north of the coast, when they found the ice drifting disconcertingly fast to the west, threatening to carry them south through Bering Strait and into the Pacific Ocean. Vilhjalmur Stefansson began his journey farther east from Martin Point in 1914. He reached 72°58’N, 140°W before heading east to Banks Island. Neither party saw land, and both obtained soundings of increasing depth, showing that the continental shelf did not extend far and that land was therefore unlikely to be found. Stefansson tried a different approach in 1918, when a five-man team led by Storker Storkerson spent six months on the ice 180 miles north of Alaska. Despite drifting 440 miles, they saw no land. For some, such findings might have appeared categorical, but the whalers had indicated that “Keenan Land” lay much farther north, in areas best searched by air. Sir Ernest Shackleton laid plans to explore this region in 1921, before support was withdrawn by the Canadian government. Roald Amundsen had every expectation of finding land between the North Pole and Barrow in 1926, when the airship Norge made the first flight across the Arctic Ocean. He was disappointed. Amundsen experienced good visibility as far as 85°N beyond the Pole but for the rest of the journey could see little because of fog.

All this exploration still left a large area for George Hubert Wilkins to investigate. After a preliminary flight over the Beaufort Sea in 1926, Wilkins was forced down on the ice the following year by a misfiring engine at 77°45’N, 175°W, 450 miles north of Alaska. Not only was there no land, but he obtained the exceptional value of 4,800 meters for his sounding. If correct, there was no chance whatever of any land nearby. Flights subsequently undertaken by Wilkins, especially during his search for the missing Soviet aviator Sigismund Levanevskiy in 1937, demonstrated that no land remained to be discovered north of North America.

Given the presence of multiyear ice throughout most of the year across the entire sea, serious scientific exploration began only in the 1950s with the aid of aircraft, icebreakers, drifting ice stations, and nuclear submarines. Much of this work was coordinated locally by the Naval Arctic Research Laboratory at Barrow, which was operated from 1947 to 1981 by the U.S. Office of Naval Research.

See also: Amundsen, Roald (1926); Arctic Ocean; Bartlett, Bob (1913–1914); Collinson, Richard; Cook, James (1776–1780); Herschel Island; McClure, Robert; Mikkelsen, Ejnar (1906–1908); Northwest Passage; Shackleton, Ernest; Stefansson, Vilhjalmur (1913–1918); Whaling and Arctic Exploration; Wilkins, George Hubert (1927)

Beechey, Frederick

(1796–1856)

Charged with the apparently unexciting duty of waiting for two exploring expeditions to reach Bering Strait, men under the command of the British naval officer Frederick Beechey were first to explore the Arctic coast of Alaska east to Point Barrow.

Part of the training of midshipmen customarily included instruction in draughtsmanship. Prior to the advent of photography, sketches provided an essential supplement to charts in giving a more immediate impression of land explored. Although official artists were occasionally included on exploring expeditions—for example, those of James Cook—in general naval officers were relied upon for artwork, many indeed showing more than a little talent. As son of the distinguished artists Sir William Beechey and Phyllis Jessup, Lieutenant Frederick William Beechey not surprisingly demonstrated particular gifts as a draughtsman and painter, which undoubtedly played a part in his selection as second-in-command of HMS Trent on David Buchan’s expedition of 1818. Many years later, Beechey wrote the standard account of this expedition,
which failed to reach Bering Strait via the North Pole but was noteworthy for its ambitious objective as well as for introducing to the Arctic John Franklin, George Back, and Beechey himself. Beechey participated next in Edward Parry’s epoch-making expedition of 1819–1820, serving as second-in-command of HMS Hecla and putting his artistic talents to good use, both by directing theatrical productions—entertainments designed to reduce the monotony of the long Arctic winter—and drawing numerous sketches, twenty-six being included in Parry’s published account.

Waiting for Franklin at Bering Strait, 1825–1828

Three years after being promoted to commander in 1822, Beechey was appointed to the sixteen-gun sloop HMS Blossom, with instructions to explore previously uncharted areas of the Pacific and then sail through Bering Strait to effect a rendezvous with Parry and Franklin. Parry was supposed to voyage through the Northwest Passage in HMS Hecla and Fury, and Franklin was to conduct a boat journey along the north coast of Alaska from the Mackenzie River. Both were expected to reach Kotzebue Sound, Alaska, in the summer and fall of 1826. The mastermind behind this ambitious campaign to resolve the remaining major gaps in knowledge of the North American Arctic was John Barrow, second secretary of the Admiralty.

Blossom sailed from Spithead, England, on 19 May 1825 to reach the Pacific via Cape Horn. After surveying several island groups in the central Pacific, the ship reached Petropavlovsk on the east coast of Kamchatka on 4 July 1826. Here Beechey learned of the early abandonment of Parry’s expedition. With Franklin still on his way, Beechey continued on to the appointed meeting place, Chamisso Island in Kotzebue Sound, arriving there on 25 July, fifteen days after the appointed date. There was no sign of Franklin. Since Icy Cape had been mentioned as another possible rendezvous, Beechey sailed north to this forbidding cape on 13 August, where bottles containing messages were left, and the master Thomas Elson was sent with a party in the barge to look for signs of Franklin farther along the coast. Elson explored nearly 150 miles of coast previously unvisited by Europeans, reaching as far east as Point Barrow on 23 August, where he found a large Inuit community. Although he had no means of knowing it, at this time Franklin was just over 200 miles farther east, having turned back five days previously. Elson rejoined Blossom in Kotzebue Sound on 9 September. Because of some slight possibility that Franklin’s party might appear, Beechey remained another month before heading south to San Francisco and the central Pacific, where he was to winter.

Aware that Franklin might have been substantially delayed and forced to winter in northern Alaska, Beechey returned to Kotzebue Sound in August 1827, then following the coast north to Cape Lisburne. Meanwhile, Elson surveyed the west coast of the Seward Peninsula in the barge, in the process discovering Port Clarence and Grantley Harbor and then working north toward Icy Cape, looking for signs of Franklin. No evidence of him was found, and in early September the barge was wrecked and three men lost in Kotzebue Bay. Beechey still remained as long as he dared, not leaving the Sound until 5 October to make his long journey back to England via Cape Horn, arriving there on 12 October 1828. (For details of Franklin’s 1825–1827 expedition, see the entry under his name.)

Beechey led no further Arctic expeditions but instead conducted major surveys off South America and Ireland. As a member of the Arctic Council, he was one of those chosen to advise the Admiralty when concern arose about the fate of Franklin’s next expedition in the late 1860s.

See also: Barrow, John; Bering Strait; Buchan, David; Cook, James; Franklin, John (1825–1827, 1845–1848); Northwest Passage; Parry, Edward (1819–1820; 1824–1825)

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Beechey Island (Canada)

This small island off the southwest tip of Devon Island has an importance in the history of polar exploration altogether out of proportion to its size, since it was here that Sir John Franklin wintered in 1845–1846 before sailing south through Peel Sound to become beset off King William Island, with the loss of all expedition members. The island, 3 miles long and 8 miles in circumference, was discovered to be separate from Devon Island on 22 August 1819 by Frederick William Beechey, causing the expedition leader Edward Parry to name it for Beechey’s father, the well-known artist Sir William Beechey (1753–1839).

Sir John Franklin spent the winter of 1845–1846 anchored in Erebus Bay, the fine natural harbor formed by the spit joining Beechey and Devon Islands. He probably remained here for about ten months. The first evidence of Franklin having visited the island was found on 23 August 1850 by Erasmus Ommanney during Horatio Austin’s expedition. That Franklin had spent his first winter here was proved a few days later, when members of William Penny’s expedition found the graves of three members of his expedition—William Braine, John Hartnell, and John Torrington—dated January and April 1846. Remains of a large storehouse, forge, carpenter’s shop, garden, and neatly stacked pile of several hundred cans were also found, the last emptied of their original contents of preserved meat and filled with limestone pebbles, but for what
purpose is unclear, though it has been suggested that the meat was bad. It is more likely that it was simply a dump for cans whose contents had been consumed; certainly all of the cans were empty. Sir John Ross deposited his small yacht *Mary* here in 1851, in the hope that it might prove useful to any survivors or else to subsequent search expeditions.

The excellence of Erebus Bay as a harbor and Beechey Island’s strategic location at the junction of Barrow Strait and Wellington Channel led to its selection as the central depot and base for Sir Edward Belcher’s expedition in search of Franklin. Reaching here on 11 August 1852, William Pullen remained behind in HMS *North Star*, while Belcher and Kellett explored farther north and west. Edward Inglefield and William Fawcett arrived with fresh supplies on 8 August 1853 in HMS *Phoenix* and HMS *Breadalbane*. Thirteen days later, *Breadalbane* was nipped by ice and sank. Although it went down within fifteen minutes, no lives were lost. Some exploration was attempted by Pullen’s men in Wellington Channel, but *North Star’s* primary purpose was precautionary; to be available in reserve should either Belcher or Kellett become beset. In the event, both did. Kellett returned with the crews of HMS *Assistance* and HMS *Pioneer* in May 1854.

The crews of HMS *Assistance* and HMS *Pioneer* followed on 26 August. Fortunately, the supply vessels *Phoenix* and HMS *Telbot* also arrived that day, just in time to help *North Star* transport the 278 men home.

A much briefer visit was made by Leopold McClintock between 11 and 16 August 1858. He erected a marble memorial tablet to Franklin and those dying with him. He also noted that Ross’s yacht *Mary* was still in good condition, as were two lifeboats, but that ice had accumulated inside Northumberland House, the wooden storehouse built by Pullen in 1854. Allen Young stopped briefly to examine the relics of Franklin’s winter quarters in August 1875 before continuing south through Peel Sound. In April 1902, Otto Sverdrup sent a three-man party here to inspect the state of the supplies left in Northumberland House and to check on *Mary’s* seaworthiness. *Fram* was beset on the south coast of Ellesmere Island, and Sverdrup was considering the possibility of reaching Greenland via Beechey. Since *Mary* was now a wreck and the storehouse broken into by bears and its supplies spoiled, it was fortunate that *Fram* was released later in the year. Others visiting the island include Roald Amundsen (1903), Albert Low (1904), Joseph-Elzéar Bernier (1906, 1908, 1910, and 1923), and Henry Larsen (1944).
The remains of shore installations erected by Franklin in 1845–1846 may still be seen, as well as the graves of three of his men, the mast and scattered spars of Ross's yacht Mary; Pullen's storehouse, and the memorials erected by Belcher to Lieutenant Joseph-René Bellot and others dying on his expedition and by McClintock to Franklin. The many historic sites were comprehensively documented in July 1975, and the wreck of Breadalbane was rediscovered and investigated by divers led by Joe MacInnis from 1980 to 1983. It survives in near-perfect condition a little over 1 mile south of the island, still upright and with two of the three masts standing.

See also: Austin, Horatio; Beechey, Frederick; Belcher, Edward; Bernier, Joseph-Élzéar; Franklin, John (1845–1848); Franklin Search Expeditions; Kellett, Henry; Larsen, Henry (1944); Low, Albert; Parry, Edward (1819–1820); Ross, John (1850–1851); Sverdrup, Otto (1898–1902)

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Belcher, Edward (1799–1877)
The reputation of the British naval officer Sir Edward Belcher is overshadowed by his decision to abandon no less than four exploring vessels in the Canadian Arctic, when he determined that at no cost would he spend another winter there. He also succeeded in alienating most of his officers, few having anything good to say about him afterward. As an explorer, Belcher was less inept; a considerable extent of coastline was surveyed under his leadership, and many new islands were discovered. In his primary aim of learning the whereabouts and fate of Sir John Franklin, however, he was entirely unsuccessful, though in that he was far from unique.

Edward Belcher's first experience of polar exploration was as lieutenant and assistant surveyor with Frederick Beechey in HMS Blossom (1825–1828). His problems began once he was given his first command. No one doubted his expertise as a surveyor or his general ability and courage, but time and again his crews found his arrogant and hypercritical manner insufferable. Nevertheless, his achievements were such that he was knighted in 1843 and on grounds of seniority alone could not be refused appointment when the Admiralty sought to organize a new expedition to search for Franklin, who had not been seen since 1845.

Futile Explorations for Franklin in the Canadian High Arctic, 1852–1854
If the Admiralty had had its way, there would have been no more Franklin search expeditions after Horatio Austin returned in 1851 to express the view that nothing more was to be discovered concerning the missing explorer. In 1850 and 1851, five expeditions and eleven vessels had searched the vicinity of Barrow Strait for any indications of Franklin's location and fate. Austin's one achievement was to locate his first winter quarters. Franklin's wife Jane and her many supporters were unwilling to accept Austin's view, especially when it was vehemently disputed by the veteran whaler William Penny, another participant in the search. Public opinion favored Lady Franklin, and under this pressure, the Admiralty was eventually persuaded to organize another expedition.

Apart from confirming the location of Franklin's first winter quarters on Beechy Island, the findings of 1850–1851 were essentially negative. No trace of Franklin had been found either west or south of Barrow Strait, despite exhaustive investigations covering several thousand miles of coastline. The two major waterways leading south—Peel Sound and McClintock Strait—appeared completely unnavigable, the former being possibly frozen to the bottom. Franklin's instructions were to search for the Northwest Passage south and west of Cape Walker, which, on the basis of these findings, now appeared to be a complete impossibility. Assuming that Franklin too had discovered this, he was next enjoined to investigate the possibility of sailing north through Wellington Channel to a possible open polar sea beyond. Although Penny had conducted a detailed examination of this channel, he was not granted opportunity to explore beyond it when Austin refused him the use of a steamer. Penny was adamant that the key to finding Franklin lay in Wellington Channel, a cause taken up with vigor by the popular press. When it became inevitable that the Admiralty must organize a new expedition, investigating beyond Wellington Channel became its primary objective. Belcher's secondary aim was to lay a depot at Winter Harbour, Melville Island, just in case it should be required by Richard Collinson and Robert McClure, whose vessels HMS Enterprise and HMS Investigator had entered the Arctic Ocean through Bering Strait and were known to be making their way east, though where they were now was uncertain.

Belcher's was the largest of all the Franklin search expeditions, comprising five vessels and 222 men. HMS Assistance, HMS Resolute, HMS Pioneer, and HMS Intrepid had all participated in Austin's expedition, the first two being sailing ships of over 400 tons, and the latter two screw steamers of 400 tons. The fifth vessel was the depot ship HMS North Star. Belcher sailed in Assistance. Accompanied by Lieutenant Sherard Osborn in Pioneer, he planned to establish winter quarters as far north as possible through Wellington Channel. While North Star remained at Beechy Island under the command of Commander William Pullen, Captain Henry Kellett in Resolute was to make for Melville Island, accompanied by Commander Leopold McClintock in Intrepid.

Departing from London on 15 April 1852, the expedition began well, with Beechy Island being reached on 11 August. Here, North Star remained to act as a base for Belcher's and
Kellett’s squadrons, just in case they ran into difficulties. What happened to Kellett is told under his name, but Belcher succeeded in reaching Northumberland Sound, close to the northern outlet of Wellington Channel. Establishing his winter quarters there, Belcher lost no time in setting out with Commander George H. Richards on a boat journey to reconnoiter the region to the northeast, in the process discovering Belcher Channel and Cornwall Island.

On 10 April 1852, Richards left with Osborn to explore the north coast of Bathurst Island and islands farther north for signs of Franklin. From Cameron Island, they crossed Byam Martin Channel to reach the Sabine Peninsula of Melville Island. There, Osborn turned back to investigate the east coast of Bathurst south to about 75°50’N before returning to Northumberland Sound. Richards continued on to sledge round the Sabine Peninsula and across Melville Island before reaching Kellett’s winter quarters at Dealy Island. He returned via the east coasts of Melville and Cameron Islands. Belcher, meanwhile, explored farther east. Departing from Assistance on 2 May, he examined the north coast of Devon Island as far as Cardigan Strait, in the process discovering Buckingham, Graham, and North Kent Islands. No sign of Franklin was found anywhere. Farther south, Pullen was equally unsuccessful from his station at Beechey Island, from where he and surgeon Robert McCormick searched in vain for a strait linking Wellington Channel with Jones Sound.

With the onset of the summer thaw, Belcher managed to cut his vessels out of Northumberland Sound on 14 July, only to steer them into the ice soon afterward and become beset, after refusing to follow advice from the more experienced Osborn. Thus, instead of reaching Lancaster Sound, he found himself forced to spend a second winter in Wellington Channel, some 50 miles north of Beechey Island. To no one was this more unwelcome than Belcher himself. In poor health and aware that he was not held in high regard by his officers, he took it out on one in particular, the sensitive and artistic Lieutenant Walter May, who was threatened with court-martial for criticizing Belcher behind his back. Had he done so, he would not have been alone. When Belcher learned that he was the subject of derisive comment among the officers of Pioneer, he placed Osborn under arrest.

Since he had no intention of risking yet another Arctic winter, Belcher now prepared instructions to be sent to Kellett, requiring him to meet him at Beechey Island with the crews...
of all ships before 26 August 1854. Since Belcher avoided making it a direct order and placed the burden of initiative on Kellett, the latter sought further clarification, to which he received a direct and unambiguous response. Kellett had no choice but to obey. Hence, Resolute and Intrepid were abandoned in Melville Sound on 15 May and Assistance and Pioneer on 25 August. The crews of all four vessels made their way by boat and sledge to North Star at Beechey Island. Since Kellett brought with him McClure and the crew of Investigator, there were now 278 men to be transported in one ship. Fortunately, the supply vessels HMS Phoenix and HMS Talbot arrived from Great Britain on 26 August, just in time to assist in bringing the crews home.

Belcher was strongly criticized for abandoning the ships but was acquitted on a technicality at the resulting court-martial. He was never again given command of a vessel and became a public laughingstock when Resolute was found afloat in Baffin Bay and was salvaged by an American whaler. Although he titled his book The Last of the Arctic Voyages, his was by no means the last such voyage, and although it certainly was the last naval expedition organized to search for Franklin, it was far from the last Franklin search expedition. It is unlikely that the Admiralty would have considered undertaking another expedition in any circumstance, but with the outbreak of the Crimean War in 1854, it was clear even to the popular press that the Royal Navy had other priorities.

See also: Austin, Horatio; Beechey, Frederick; Collinson, Richard; Cornwall Island; Devon Island; Franklin, Jane; Franklin, John (1845–1848); Franklin Search Expeditions; Kellett, Henry (1852–1854); McClure, Robert; Northwest Passage; Penny, William (1850–1851); Wellington Channel

References and further reading:
Belcher, E. 1855. The last of the Arctic voyages; being a narrative of the expedition in HMS Assistance, under the command of Captain Sir Edward Belcher, C. B. . . . London: Lovell Reeve.

Belgium

Although Belgium’s role in the exploration of central Africa is well-known, considerably less so is this country’s significant contribution to the exploration of Antarctica. The Belgian Antarctic Expedition led by Adrien de Gerlache (1897–1899) was the first expedition of the so-called Heroic Era and the first to winter south of the Antarctic Circle. Its dramatic story is told under its leader’s name. Great national pride was aroused at the time by Belgium’s achievement in anticipating the efforts of its larger and wealthier rivals, particularly Great Britain and Germany. In a wave of enthusiasm after the expedition’s return, an international congress for the study of the polar regions was hosted by the Belgian government in 1906 and an international polar institute established at Brussels in 1907. Two members of Gerlache’s expedition—George Lecointe and Henryk Arctowski—laid plans for a second Belgian Antarctic expedition, with the aim of investigating the region between 105° and 150°W, beyond where Gerlache had reached in the Bellingshausen Sea. This project came to nothing, however, and Belgium’s enthusiastic participation in Antarctic exploration was cut short by the outbreak of World War I.

More than in any other country, Antarctic exploration in Belgium has been a family affair. The next expeditions to Antarctica were to be led by Gaston de Gerlache, Adrien’s son. When he learned of plans for the International Geophysical Year involving international collaboration on an unprecedented scale, both national and family feeling led Gaston to determine that Belgium should be represented. In December 1957, he opened Roi Baudouin station on Princess Ragnhild Coast, one of the least-known regions of Antarctica and previously seen only from the air. A comprehensive program covering many fields of geophysical science was maintained at the station, and surveys were made of the surrounding region, particularly the spectacular Sør-Rondane Mountains, where several new ranges were discovered. Belgium continued to operate Roi Baudouin until January 1961. It was reopened by a joint Belgian-Netherlands expedition in 1963–1964 before closing finally in February 1967.

One of the twelve original signatories to the Antarctic Treaty, Belgium has continued to be actively involved in Antarctic science and exploration, though in recent years Belgian scientists have had to rely on logistical support from South Africa, Germany, and Japan rather than on national expeditions. They have continued to investigate the Sør-Rondane Mountains in particular, where much pioneering work has been done.

See also: Antarctic Peninsula; Danco Coast; Gerlache, Adrien de; Gerlache Strait; Heroic Era of Antarctic Exploration; International Geophysical Year; Princess Ragnhild Coast

References and further reading:

Bellingshausen, Fabian von

(1778–1852)

In one of the most notable of all polar voyages, the Russian expedition led by Fabian von Bellingshausen accomplished only the second circumnavigation of Antarctica, the first being by James Cook, and in so doing made what is now generally
accepted to have been the first sighting of the continent. Other discoveries included the Traversay Islands (the northern group of the South Sandwich Islands) and Peter I and Alexander Islands.

The First Sighting of the Antarctic Continent, 1819–1821

Fabian Gottlieb Benjamin von Bellingshausen—also known as Thaddeus Thaddevich Bellingshausen—was born in Estonia and educated in Moscow. Becoming a naval cadet at an early age, he served largely in the Baltic and Black Seas, apart from a formative experience as fifth lieutenant during Adam Krusenstern's first Russian round-the-world voyage in 1803–1806. Krusenstern thought highly of Bellingshausen's navigational skills, a reputation he was later to more than justify. During the eighteenth and early years of the nineteenth centuries, Russia colonized vast territories to the east of the Ural Mountains, stretching to Bering Strait and across to Alaska. Following the defeat of Napoleon Bonaparte in 1815, Tsar Alexander I was conscious of the potential weakness of his overextended empire. A powerful navy would help to bind his territories together, but unlike Great Britain, Russia possessed no network of far-flung ports where ships might be resupplied on their voyages from his western to his eastern lands, nor indeed did his navy possess a cadre of officers with the necessary nautical and navigational expertise. When Bellingshausen was appointed as commander, his instructions were to search the high southern latitudes for as-yet undiscovered harbors that could be used by the Imperial Russian Navy; he was to carry out a wide range of scientific studies considered essential on a well-conducted expedition; and he was to train his young officers for future command. His expedition was one of two, its northern counterpart being led by Mikhail Vasil'yev, who sought the Northwest Passage through Bering Strait.

On 16 July 1819, Bellingshausen sailed from Kronstadt, Russia, in his two large and not particularly suitable ships, Vostok (600 tons) and Mirnyy (530 tons). Bellingshausen as overall expedition leader sailed in Vostok (East), commanded by Lieutenant Commander Ivan Zavodovski, with Lieutenant Mikhail Lazarev commanding Mirnyy (Peaceful). Although the ships were built of unseasoned pine and not ice-strengthened, they were sheathed below the waterline and coppered to provide some protection. Mirnyy's poor sailing qualities were later to prove a liability. In other respects, with the full resources of the imperial navy to call upon, the expedition was well-equipped: for example, the navigational instruments were specially purchased in England and the best available. Apart from the senior officers, the crew was inexperienced but eager, and with the training of officers a significant objective, no expedition has ever undertaken so many positional sights or exceeded the accuracy achieved. A first call was made at Copenhagen to collect two German scientists. Neither was willing to come, and as a result all scientific observations had to be made by ship's officers. After dropping anchor successively at Portsmouth, England, Tenerife, Canary Islands, and Rio de Janeiro, Brazil, they finally set course for South Georgia, which was sighted on 27 December.

For Bellingshausen, James Cook was the greatest of all navigators, and he set himself the task during this voyage, wherever possible, of complementing and extending what Cook had achieved during his Antarctic circumnavigation of 1772–1775. This plan was first revealed at South Georgia where, rather than sailing north of the island along a coast charted by Cook, Bellingshausen chose to sail on a potentially dangerous lee shore along the island's south coast. In charting this coast and in the process rediscovering Annenkov Island, Bellingshausen thus completed Cook's South Georgia chart. The strategy continued at the South Sandwich Islands, reached on 3 January 1820, when an island uncharted by Cook was discovered—Leskov—followed by Visokoi and Zavodovski Islands the next day. Bellingshausen named this northern South Sandwich group the Traversay Islands for the Marquis de Traversay, Russian naval minister and a prime mover behind the expedition. On 5 January, a landing was made on Zavodovski, which
Bellingshausen named for the leader of the landing party, Lieutenant Commander Ivan Zavodovski. A large penguin colony was found breeding on the steep slopes of an active volcano. The ground was hot underfoot, and their stay was cut short by a combination of volcanic fumes and the stench of penguin guano. Mount Asphyxia, the island’s highest point, was well-named. Bellingshausen remained for two weeks in the South Sandwich Islands, making as complete a survey as he could in frequently atrocious conditions and ascertaining that, as Cook had suspected but had been unable to prove, no continent lay to the east of the islands.

Trying now to get as far south as possible, they crossed the Antarctic Circle on 26 January for the first time since Cook had done so in 1773, and on 27 January the expedition was at 69°21’S, 2°14’W, when its way was barred by solid ice covered with ice hillocks. As his log and letters subsequently written to his superiors show, Bellingshausen was aware at the time that this ice represented something new, being quite unlike the pack ice with which he was now familiar. Indeed, in his correspondence, Bellingshausen uses the word materik, for which the best translation is “continental” (Jones 1982, 94). Similar ice was seen again four days later and again in February. No one had ever seen an ice shelf before, but the descriptions given by Bellingshausen and his officers indicate that this is what they saw, and indeed it is more than likely that the Bellingshausen and Lazarev Ice Shelves on the Princess Martha and Princess Astrid Coasts, respectively, were significantly farther extended then than now, reaching out close to the expedition’s plotted track. This sighting of 27 January 1820 merits detailed discussion since if it was not sea but land ice—which is what an ice shelf is—then it marked the first sighting of Antarctica. Should it be argued on the contrary that land was not sighted on 27 January but was perhaps four days later, then Edward Bransfield would have preceded Bellingshausen by one day. As it is, there can be little doubt that priority lies with Bellingshausen.

Still seeking to complement Cook in order to compare ice conditions, Bellingshausen sought to sail south near the same longitude where his predecessor had first crossed the Antarctic Circle but was unable to get as far south. Farther east, however, the positions were reversed, with Bellingshausen sailing south where Cook had pursued a more northerly course in his search for the Kerguelen Islands. The season now being late, the expedition headed for Sydney, where the ships were repaired and the crew rested before a comparatively relaxing four-month cruise through the South Pacific to make ethnographic observations and inspect potential harbors. Returning to Sydney in mid-September, Bellingshausen set sail again on 11 November, calling at Macquarie Island before farther progress south was prevented by heavy pack ice enclosing the Ross Sea.

At Sydney, word had reached Bellingshausen from Baron Teyl’, Russian consul-general at Rio de Janeiro, concerning William Smith’s discovery of the South Shetland Islands. Bellingshausen now set his course for them, sailing in as high latitudes as conditions would permit and reaching the voyage’s farthest south of 69°53’S, 92°19’W on 19 January 1821. The next day, a small island was discovered at 68°57’S, 90°46’W and named Peter I Island for the tsar who had founded the Imperial Russian Navy. On 27 January, more land was sighted with high mountains. Thick ice prevented close approach, and the land was named Alexander Land—for the tsar who had dispatched the expedition. No more land was seen until 3 February, when Smith Island’s peaks were observed from a distance. During this and the next day, Bellingshausen made a running survey of the South Shetlands in conditions of much better visibility than Bransfield had experienced in January 1820. Following a course east-northeast, he was able to discriminate all the major islands, naming them in turn Borodino (Smith), Little Yaroslavetz (Snow), Teyl’ (Deception), Smolensk (Livingston), Berezino (Greenwich), Polotsk (Robert), Leipzig (Nelson), and Waterloo (King George). Given that he had known about the islands’ discovery since he had landed at Sydney, it is not clear why he thought it necessary to name them, but he may have considered it likely that at least some might not have been previously named. In any case, it provided him with opportunity to remind the French of their recent defeats by the Russians and their allies. On 8 February, Elephant and Clarence Islands were charted and named Mordvinov and Shishkov. These names may still be seen on Russian charts but are not otherwise used.

Bellingshausen’s reception on his return to Kronstadt in August 1821 was less than rapturous. No significant harbors had been discovered, and despite the expedition’s other achievements, it was not clear how Russia could benefit from its Antarctic investigations. Bellingshausen himself was restored to routine duties, though he was eventually elevated to admiral and died in 1852 as governor of Kronstadt. Only in 1831 was his account of the voyage published and only then in a limited edition of 600 copies. It is now one—if not the greatest—for rarities sought by collectors of Antarctic books. Even the Scott Polar Research Institute does not possess a copy of the accompanying atlas. Outside Russia, little was known of this great expedition until 1902, when a German translation was published. An English edition did not appear until 1945.

See also: Alexander Island; Antarctica; Bransfield, Edward; Cook, James (1772–1775); Peter I Island; Princess Astrid Coast; Princess Martha Coast; Vasil’ev, Mikhail

References and further reading:
Bellingshausen Island (South Sandwich Islands)

Located at 59°26'S, 27°05'W, this small island about 1 mile across lies toward the southern end of the volcanic arc forming the South Sandwich Islands. It was probably first seen on 31 January 1775 by James Cook, who, unable to discern whether it was an island or part of some more extensive land, named it together with the nearby islands Cook and Thule as “Southern Thule.” Its separate insularity was established by Fabian von Bellingshausen in January 1820. In 1930, it was charted by RRS Discovery II and named for Bellingshausen. The first recorded landing was made by helicopter in 1962, when it was recharted by HMS Protector. Further landings were made from this ship in 1964. The most recent scientific visit took place in 1997 from HMS Endurance, during a comprehensive geological and biological survey of the South Sandwich Islands.

See also: Bellingshausen, Fabian von; Cook Island; Cook, James (1772–1775); Discovery Investigations; Sealing and Antarctic Exploration; South Sandwich Islands; Thule Island; Whaling and Antarctic Exploration

References and further reading:

Bellingshausen Sea (Antarctica)

This marginal sea to the west of Alexander Island and occupying an embayment at the foot of the Antarctic Peninsula is named for the Russian navigator Fabian von Bellingshausen, who sailed in these waters in January 1821, where he discovered Peter I Island. First to visit the sea, however, was not Bellingshausen but James Cook, who achieved his farthest south here of 71°10'S, 106°54'W on 30 January 1774.

Cook was to prove uniquely successful in reaching so far south in a sea that others found impenetrable because of very heavy ice. Indeed, the coastline here was not seen before the 1940s. With the coast unreachable, what lay beyond the impassable pack could only be the subject of hypothesis. In 1898, the Belgian explorer Adrien de Gerlache believed that the Ross Sea quite possibly extended far east in this region and therefore decided to head deep into the ice in the expectation of reaching open water beyond, through which he could sail to his planned winter station in Victoria Land. Gerlache’s bravery was rewarded instead by his ship becoming beset, forcing him and his crew to spend an exceedingly uncomfortable winter adrift in the Bellingshausen Sea, until they were lucky to be able to cut themselves out the following year. Gerlache’s conduct during this expedition and in particular his decision to head into the pack at this point has baffled generations of scholars, but it is in fact to be explained quite simply in terms of his not unreasonable but nevertheless erroneous views of the geography of this region. Only in February 1960 was the coast reached by ship, when the icebreaker USS Glacier penetrated thick ice to reach Thurston Island.

See also: Bellingshausen, Fabian von; Cook, James (1772–1775); Gerlache, Adrien de; Peter I Island

Bellot Strait (Canada)

This deep and narrow strait, 15 miles long and in places less than half a mile wide, lies between Somerset Island and Boothia Peninsula in the Canadian Arctic. By uniting Prince Regent Inlet with Franklin Strait, it marks the first meeting of the Atlantic and Pacific tides north of Magellan Strait. Although open water may be found throughout the year, it has a tendency to fill up rapidly with ice sucked in by the strong tidal currents of up to 8 knots. The rapidly moving ice floes and intense pressure generated present a considerable hazard to shipping. It is most easily navigated in the brief periods of slack water between the tides.

Somewhat surprisingly, the strait was missed by John Ross (see Savelle and Holland 1987) and only discovered in 1852 by William Kennedy, who named it for his second-in-command enseigne de vaisseau Joseph-René Bellot (1826–1853). Although Kennedy was sure he had discovered a strait, Bellot himself was not, but Kennedy did not allow him time to complete a survey. Thus, when Leopold McClintock ventured down Prince Regent Inlet in 1858 in the hope of reaching as close as possible to King William Island to search for relics of Sir John Franklin’s expedition, he was uncertain whether he would find a strait or a bay. In the event, Kennedy proved to be correct. McClintock encountered considerable difficulty with currents and ice, and when he did finally succeed in reaching Franklin Strait on the fifth attempt, impenetrable ice beyond caused him to return to the eastern end of the strait to winter at Port Kennedy.

The strait was next navigated by E. J. “Scotty” Gall in Aklavik in 1937. In this year, the Hudson’s Bay Company (HBC) established a small trading post at Fort Ross, Somerset Island, on the northern shore of the strait. HBC’s hope was that this location would become a natural point of exchange for products from the western and eastern Arctic. In 1937 and 1938, Aklavik, traveling from the west, was met by Nascopie from the east, which constituted the first commercial use of the Northwest Passage. In 1942 and 1943, however, Nascopie was unable to reach Fort Ross, forcing manager Ernie Lyall to undertake a 500-mile journey for supplies across Prince Regent Inlet to Arctic Bay, Baffin Island. The station was closed in 1948 and replaced by Spence Bay on the west coast of Boothia Peninsula. Henry Larsen’s first transit of the Northwest Passage in St. Roch was completed through Bellot Strait in 1942.

In 1957, a detailed hydrographic survey was conducted by HMCS Labrador during Operation Bellot. Although Bellot Strait is navigable by larger vessels, shoals here and farther south in James Ross Strait mean that deeper draught vessels

See also: Bellingshausen, Fabian von; Cook Island; Cook, James (1772–1775); Gerlache, Adrien de; Peter I Island
completing the Northwest Passage tend to do so via Prince of Wales Strait. Bellot Strait is preferred by smaller craft. David Cowper and John Bockstoce, for example, came this way in 1986 and 1988.

See also: Hudson’s Bay Company; Kennedy, William; Larsen, Henry (1940–1942); McClintock, Leopold; Northwest Passage; Prince of Wales Strait

References and further reading:

Bering Strait (Arctic)
One of the most famous locations in exploration history, this strait separates the continents of Asia and North America. The Chukchi Sea lies immediately to its north and the Bering Sea to its south, and through it the waters of the North Pacific join those of the Arctic Ocean. At its narrowest point—between East Cape (Asia) and Cape Prince of Wales (North America)—it is 45 miles wide. Without Bering Strait, there would be no Northeast or Northwest Passage.

Generations of North Americans reached this continent across Bering Strait or its Ice Age predecessor, the Bering land bridge. The capes on either side have a long history of Inuit occupation, as do Big (Nunárbook) and Little (Ignálook) Diomede, two small islands in the strait. Bering Strait was long familiar to native peoples, but the first European explorer to sail through it was Semen Dezhnev in 1648. Knowledge of Dezhnev’s voyage was lost for eighty years, until Vitus Bering heard rumors of cossacks making a voyage from the Kolyma River on the Arctic coast to the Kamchatka Peninsula. In August 1728, Bering reached 67°18’N. Because visibility was poor, he was unable to see the land reported by the native people as lying to the east (North America), but he was able to confirm the westward trend of Asia. Trusting their testimony, he turned back, considering that he had done enough to prove that a navigable channel lay between the two continents, which were thus separate and not joined by a land bridge, as some had suggested. First to chart the strait and anticipating Bering in the sighting of North America was Mikhail Gvozdev in 1730. The significance of James Cook’s third voyage (1776–1780) was to prove that the Northwest Passage would be found north of Bering Strait or not at all. Cook’s surveys of the vicinity were continued by two Russian expeditions led by Otto von Kotze-
bue (1815–1818) and Mikhail Vasil’ev (1819–1822) and by several British expeditions, including those of Frederick Beechey (1825–1828), Henry Kellett (1848–1850), and Thomas Moore (1848–1852).

During the Cold War, Bering Strait was a region of considerable strategic sensitivity, with Soviets and Americans facing each other across the narrow channel separating Big and Little Diomede Islands. One consequence was the relocation to the mainland of the Inuit population of Soviet-held Big Diomede Island, where a station was established in 1940. More recently, crossing the strait has become a favorite objective for adventurers. Despite the short distance, erratic currents make doing so exceptionally difficult, and solid ice is seldom found across the strait. The first modern crossing was made by Dmitriy and Matvey Shparo in 1998. An Inupiaq Inuk named Spike Milligrock is said to have made the crossing in both directions in the early 1900s.

See also: Adventurers; Beechey, Frederick; Bering, Vitus; Cook, James (1776–1780); Dezhnev, Semen; Gvozdev, Mikhail; Kellett, Henry (1848–1850); Kotzebue, Otto von; Moore, Thomas (1848–1852); Northeast Passage; Northwest Passage; Shparo, Dmitriy; Vasil’yev, Mikhail

References and further reading:

Bering, Vitus
(1681–1741)
The Danish explorer Vitus Bering famously sailed through Bering Strait on his first expedition (1725–1730) and discovered Alaska on his second (1733–1743). Puzzlingly, on both occasions, having overcome innumerable obstacles before he was able even to begin exploration, he turned back just at the point where a little further perseverance would have proved his findings beyond doubt. Was it, as some have argued, due to want of resolution or lack of appreciation of what was required for a full scientific demonstration, or were his objectives actually somewhat different from how they have been subsequently interpreted?

Bering Discovers His Strait, 1725–1730
In 1639, the first Russians reached the Pacific Ocean in their eastward expansion across Siberia in pursuit of the rich fur of the sable. Simultaneously, they spread northward and along the Arctic coast in a process described in the entries for Semen Dezhnev and Ivan Tolstoukhov. Tsar Peter the Great (r. 1682–1725) took great interest in the massive growth of the Russian Empire and one of his last acts was to issue instructions for a naval expedition to investigate its far eastern regions. He had long wanted to know whether Asia was connected to North America. If so, not only could there be no Northeast Passage but no Northwest Passage either. This was an important unsolved question of world geography and of especial significance to Russia in that a navigable Arctic sea-way, linking its European to its Far Eastern territories, could play a potentially critical role in holding together the tsar’s vast domain. The search for this seaway was the reason officially declared for the expedition, but the instructions actually given to the expedition leader directed him to seek North America, over which Peter wished to establish control. Given the sensitivity of Spain, Great Britain, and France to such a goal, Peter thought it best to obscure this aspect of the expedition by focusing on its more scientific aims. The strategic importance of the expedition, however, ensured that it was well-equipped and that officials across Siberia were instructed to give it every support.

Peter’s chosen commander was the Danish captain Vitus Jonassen Bering, who since 1704 had served in the Russian Navy, where he had earned a reputation for logistical expertise. It proved to be a highly relevant qualification.

On 24 January 1725, the first party, consisting of twenty-five wagonloads of supplies and equipment, set out from St. Petersburg under Lieutenant Aleksey Chirikov. Bering followed on 5 February, catching up with Chirikov nine days later. They made slow progress eastward, with much of the early traveling a hard slog along rough tracks impassable except in winter. By 16 March, they had reached Tobolsk. Leaving there on 15 May, by means of the Irtysh, Ob’, and Ket Rivers, they reached the Yenisey River, down which they sailed to the Tunguska and Ilim Rivers to reach Ilimsk on 29 September. There they wintered. On 5 May 1726, Bering set out again, initially overland across the watersheds to the Lena River and then down the Lena to Yakutsk. It was reached in several detachments in mid-June.

Bering could not afford to delay long in Yakutsk but waited for more supplies and horses to be acquired before setting out again toward Okhotsk on the Pacific coast. He and Chirikov led two parties overland. Second-in-command Lieutenant Morten Spanberg traveled with the majority of the heavy supplies by a more indirect route down the Aldan and Maya Rivers. Bering reached Okhotsk on 1 October. Chirikov and Spanberg had a much harder time of it, especially the latter, who finally arrived in January 1727, having had to abandon many essential stores and equipment on the way. At Okhotsk, an advance party had begun construction of a vessel, Fortuna, in which the expedition was to sail across the Okhotsk Sea to the Kamchatka Peninsula. Once this ship was launched in June, Spanberg made the first voyage to Bol’sheretsk on the Kamchatka Peninsula, and Bering following with the remainder of the expedition in August. Had the Pacific coast been better known, Bering would no doubt have chosen to land his expedition not on the west but on the east coast of the peninsula and in so doing would have saved himself a major overland journey, but at that date ignorance of Kamchatka’s geography was such that it was considered likely that it was joined to another landmass to the east, possibly even North America. Thus, Bering opted to winter at Bol’sheretsk, transporting his supplies by sledge
to Ust'-Kamchatsk in the first five months of 1728. Here at last, he was able to prepare for the voyage he had been instructed to undertake by Peter the Great. A new vessel was built, St. Gabriel, and on 14 July Bering was ready to embark.

With forty-four men on board and provisions for a year, Bering kept within sight of land insofar as he could as he made his way north along the coast of Kamchatka and then north-east across the Gulf of Anadyr'. With fresh water running short, several landings were made, but it was not until 8 August at 64°30'N, with only one barrel remaining, that he was able to find a suitable supply. Here, eight Chukchi approached in their skin boats, the first contact Bering had with this region's inhabitants. One came aboard, and although mutual comprehension was difficult, with the aid of two Koryak interpreters, Bering learned that farther north the land turned to the west, there was no land bridge extending east, but islands were to be found offshore that were visible in good weather. Two days later, St. Lawrence Island was seen and named. With the mainland now turning west, on 13 August at 65°30'N Bering consulted Spanberg and Chirikov about whether they should continue sailing farther north. His own belief was that they had passed the easternmost point of Asia and had thus fulfilled the Tsar's instructions. Spanberg agreed but suggested that to make certain, they should continue for three more days. Chirikov, however, took the view that they should continue toward the Kolyma River, since it marked the easternmost extent of previous knowledge of the Arctic coast, and only by reaching it would they prove that they had sailed between Asia and America. Should they need to winter, he suggested searching for a suitable place on the coast reported as lying east of Chukotka. Bering decided to follow Spanberg's advice and turned back on 16 August at 67°18'N. A significant factor in his decision was the absence of safe places to winter, given the general hostility of the Chukchi. The season was growing late, and he feared meeting headwinds on his return, which would prevent him rounding the Chukotka Peninsula. Although he had in effect now sailed through the strait later to be named for him, Bering was unfortunate in the weather, which was continuously foggy and prevented him from seeing North America, even as he sailed back to discover the Diomede Islands, located where the two landmasses approach each other most closely. On 7 September, Ust'-Kamchatsk was reached and there the expedition wintered.

The following season, Bering completed his survey of the

east and south coasts of the Kamchatka Peninsula, as well as investigating native reports of land farther east. Just in case it was North America, he sailed 130 miles into the Pacific before turning back just short of the Commander Islands, where fog and adverse winds impeded further exploration. This work accomplished, Bering now rounded Kamchatka's southern tip at Cape Lopatka and sailed up the west coast to Bol'sheretsk, where he picked up the remainder of his men and returned to Okhotsk, reaching it on 14 July.

Because Peter the Great had died shortly after the expedition’s departure in 1725, responsibility for its administration had been assumed by the Admiralty College. Therefore Bering made his report to that body when he finally returned to St. Petersburg on 1 March 1730, after the arduous overland journey. Since he was promoted and soon afterward placed in charge of a second and larger expedition, it is clear that his first expedition was not regarded as a failure, despite its apparently inconclusive proof of the separation of Asia and North America. Nor had he found North America. He did, however, return with excellent maps of Kamchatka, which was now shown to be unconnected with any more easterly landmass. On his journey across Siberia, he had also gathered information about an important voyage made some time in the previous century by cossacks from the Kolyma River to Kamchatka around the Chukotka Peninsula, reinforcing Bering’s view that he himself had done enough to prove the separation of the continents (see Dezhnev, Semen). Peter’s admirably terse instructions were unfortunately not free from ambiguity, and how they were interpreted by Bering remains subject to debate. Carol Urness (in Frost 1992, and elsewhere) has suggested that he may have understood them as an injunction to provide accurate maps of Kamchatka, a task he certainly achieved. Raymond Fisher (1977), in contrast, intriguingly argues that when he sailed north, Bering was looking not for a strait but for an isthmus between the two continents, turning back when he considered himself to have disproved its existence.

**The Great Northern Expedition, 1733–1743**

Also known as the Second Kamchatka Expedition or the Great Northern Expedition, Bering's second expedition was to be an even more ambitious endeavor than he had outlined in his original proposals for further exploration in 1730. It was in fact to be the greatest program of Arctic exploration organized until the twentieth century, at times involving more than 1,000 men, not a few of whom lost their lives. In addition to making far-reaching recommendations for the improved administration and exploitation of natural resources in the Russian Far East, Bering proposed that voyages be organized south to Japan and east to North America to initiate trade. Furthermore, he suggested that a survey be made of the Arctic coast between the Ob' and Lena Rivers. This coherent plan was adopted with enthusiasm by the Russian Senate and further expanded by the Admiralty College, which now instructed Bering to take charge not just of the Far Eastern voyages but also of a comprehensive coastal survey of Arctic Russia from Archangel to Kamchatka.

Trade and economic development underlay Bering’s proposals, and it was trade also that caused him to identify the coast between the Ob’ and Lena Rivers as that most likely to repay investigation. While at Yakutsk, it is likely that he had learned of the annual convoys formerly organized from Yakutsk down the Lena and east to the Kolyma River. Taken together, Dezhnev’s and his own voyage had proved the possibility of a navigable route east from the Kolyma River to the Kamchatka Peninsula. An expedition organized by Peter the Great in 1720–1721 had proved that the Ob’ River could be reached from the west. The only part of the Northeast Passage not yet navigated—and Bering did not know of Tolstoukhov’s voyage of 1686–1689—lay between the Ob’ and the Lena.

Bering’s own voyage, on which he and Chirikov independently reached Alaska, falls outside the area covered by this encyclopedia. Chirikov’s landfall was made at 57°50’N and Bering’s at 59°50’N. Spanberg’s voyage down the Kuril Islands toward Japan similarly falls outside its range. The exploration of the Arctic coast of Russia, however, is a little-known episode of central relevance to the history of polar exploration, and for it Bering was initially charged with overall responsibility of all parties working from the Ob’ River eastwards.

The Arctic coast was divided into five sections, each of which was to be surveyed by a separate detachment. From the west, they were (1) Archangel to the Ob’ River (Stepan Murav’yev and Stepan Malygin); (2) the Ob’ to the Yenisey River (Dmitriy Ovtysyn); (3) Yenisey to the Taymyr Peninsula (Fedor Minin); (4) Taymyr to the Lena River (Vasily Pronchishchev and Khariton Laptev); and (5) the Lena to the Gulf of Anadyr’ (Dmitriy Laptev). Bering himself was expected to complete the charting of Kamchatka north to the Anadyr’, and Spanberg was to survey south along the Kuril Islands to Japan. In addition, a team of scholars and scientists headed by historian Gerhard Friedrich Müller and botanist Johann Georg Gmelin was sent to Siberia by the Academy of Sciences.

The burden of organizing a major exploratory campaign far to the north of where he himself was to travel, while simultaneously administering his own and Spanberg’s expeditions, proved a daunting test, even for someone with Bering’s logistical expertise. Inevitably, a logjam developed at Yakutsk, as more men and supplies arrived, until eventually Bering came to the conclusion that only by moving personally to Okhotsk could he at least ensure that his own voyage eventually took place. This he did in 1737. When news of the chaos at Yakutsk reached St. Petersburg, lieutenants Vasily Larionov and Gavril Tolbukhin were sent by the imperial cabinet with authority to make all arrangements necessary to further the expedition. They did so with some efficiency, so that by 1740 most men and supplies had been forwarded to their intended destinations.
During the three years that he remained at Yakutsk, Bering was able to exercise quite close supervision over the detachments surveying the Arctic coast, especially those engaged in charting work to the west and east of the Lena River, for whom Yakutsk served as the logistical center. Once he had moved to Okhotsk, the leaders of these detachments had to look to St. Petersburg and the Admiralty College for further instructions, with consequent considerable delays as the leader or his envoy followed the long route there and back.

What happened to the detachments engaged in the Arctic survey is told under the names of their leaders. Bering himself sailed in two specially built vessels, St. Peter and St. Paul, to the newly constructed port of Petropavlovsk on the east coast of Kamchatka. Taking command of St. Peter and designating his longtime subordinate Chirikov as captain of St. Paul, Bering set out east across the Pacific on 4 June 1741 in a fruitless search for the nonexistent “Juan de Gama Land.” Having disproved its existence, both captains separately continued northeast to make brief landings on islands off the Alaskan coast. Popularly believed to have been the first Russians to sight Alaska, both in fact were anticipated by nine years by Mikhail Gvozdev in 1732. Both Bering and Chirikov subsequently endured exceptionally hard voyages west, following the arc of the Aleutian Islands, as scurvy spread through the crews and rations of freshwater ran low while they battled all too slowly eastward against a succession of westerly storms. Chirikov eventually reached Petropavlovsk on 10 October, but Bering was less fortunate, St. Peter being wrecked in the Commander Islands on 6 November. When the survivors made Petropavlovsk the following year, Bering was not among them, having died on 8 December 1741.

Evaluations of Bering range from those (usually Danish) who equate him with Christopher Columbus as the western discoverer of America to those (usually Russian) who credit such of his achievements as they are prepared to grant to his impeccably Russian subordinate Chirikov. Nationalism is by no means incidental in the historiography of polar exploration. According to critical caricature, Bering was a “plodder,” capable of carrying out orders in a slow and deliberate fashion but little more. The lie to this is given by his most imaginative and coherent proposals for the development of the Russian Far East. Careful adherence to orders was mandatory for all officers serving the autocratic Russian state, where too much display of individual initiative could easily lead to demotion, exile, or worse. In these proposals, which no one asked him to put forward, Bering revealed a deeply thoughtful appreciation of the geography of the regions he had explored and of how they might be best integrated within the Russian Empire.

See also: Bering Strait; Dezhnev, Semen; Gvozdev, Mikhail; Laptev, Dmitriy; Laptev, Khariton; Malhygin, Stepan; Minin, Fedor; Muravyev, Stepan; Northeast Passage; Ovtsyn, Dmitriy; Pronchishchev, Vasily; Russia; Tolstoukhov, Ivan

References and further reading:

Bernier, Joseph-Elzéar
(1852–1934)

Although unable to fulfill his dream of reaching the North Pole, the French-Canadian explorer Joseph-Elzéar Bernier did as much as anyone to maintain Canadian sovereignty in the High Arctic. Directing the city jail might not appear the most likely background for a polar explorer, but prior to taking up this post in Quebec, Joseph-Elzéar Bernier had sailed the high seas since the age of fourteen. Directing the jail at least gave him time to read, accounts of Arctic expeditions being particularly to his liking. In 1898, he gave a lecture to the Geographical Society of Quebec, outlining plans to reach the North Pole by sailing through Bering Strait and letting his ship drift with the ice, as had Fridtjof Nansen in 1893–1896, but from farther east. The response was sufficiently encouraging to persuade him to resign from the jail and begin fund-raising. At this date, the Canadian government had done little to demonstrate its sovereignty over the large areas of Arctic North America explored by British expeditions, which had been transferred to Canada in 1880. Nevertheless, Bernier managed to persuade the government to provide him with $75,000 to purchase Gauss, the vessel that had taken Erich von Drygalski to Antarctica in 1901–1903. Renamed Arctic, no ship could have been more suited to his purpose, with an oak and pitch-pine hull 1.5 meters thick and shaped like an egg to rise above ice pressure rather than be crushed within it. Unfortunately for him, what his government had in mind was not the North Pole but a series of patrols during which he would be required to plant the flag on as many islands as he could reach north of the mainland between 60° and 141°W.

Planting the Flag in the Canadian Arctic, 1906–1907

After an initial voyage to Hudson Bay with a police patrol in 1904–1905, Bernier was charged by the Department of Marine and Fisheries with undertaking a voyage to the Arctic islands. Most of them had been claimed previously by Great Britain, but that was no longer considered sufficient. He was also to sell licenses and collect dues from any whalers encountered, most of whom were nonnationals. As described in the entry for Albert Low, leader of the first Arctic patrol in 1903–1904, there was now real concern that the United States or Norway might
claim parts of the Canadian High Arctic, and Low's and Bernier's voyages were intended to ensure that it did not occur; or if it did, to provide Canada with the strongest possible case for continued sovereignty.

Departing from Quebec City on 28 July 1906, Bernier visited the Scottish whaling station at Albert Harbour, north Baffin Island, before heading west through Lancaster Sound to land and take possession of Somerset, Griffiths, Cornwallis, Bathurst, Byam Martin, and Melville Islands. Eglinton and Prince Patrick Islands proved unreachable by sea, so Bernier stated Canada's claim at the nearest point he could reach, on Melville Island. Returning east, he landed at Beechey Island and made a preliminary survey of Admiralty Inlet, before winter quarters were established at Albert Harbour. During the winter, sledging parties visited Milne Inlet, Erik Harbour, and Navy Board Inlet, conducting surveys that significantly extended knowledge of northern Baffin Island. Bernier's chief task for the following year was to sail through Jones Sound farther north to reach the Sverdrup Islands. This group, west of Ellesmere Island, had been discovered and claimed for Norway by Otto Sverdrup between 1898 and 1902. Since this claim was disputed by Canada, it was considered essential that a Canadian expedition land there. This Bernier was unable to do. Twice he attempted to enter Jones Sound, only to find it blocked by ice. Finally, he had to resort to stating Canada's claim at Edward VII Point on the south coast of Ellesmere. Whaling stations at Kekerten and Blacklead Island, in Cumberland Sound, were visited on Arctic's voyage south to Quebec, where it arrived on 19 October 1907.

Collecting Historic Relics on Melville and Banks Islands, 1908–1909

On 28 July 1908, Arctic left Quebec on its second Arctic patrol, whose purposes were essentially the same as before. It was an exceptionally favorable year with very little ice, and having sailed through Lancaster Sound, Barrow Strait, and Melville Sound with ease, Bernier found himself halfway through McClure Strait and on the point of completing a crossing of the Northwest Passage, one of his life's ambitions. Unfortunately, he was not authorized to make a passage and so dutifully withdrew to Winter Harbour, Melville Island. Not until the 1990s did any surface ship succeed in completing the passage through McClure Strait.

Edward Parry had been stationed at Winter Harbour in
1819–1820, and Henry Kellett had wintered at nearby Dealy Island in 1852–1853. At both locations, Bernier collected what relics he could and conducted a survey of visible remains. In addition to their historic importance, such evidence of former occupation might prove invaluable should another nation ever contest Canadian sovereignty. Similar surveys and collections were made by second officer Octave Morin at Mercy Bay, Banks Island, where Robert McClure had been forced to abandon HMS Investigator in 1853. Morin also left behind records proclaiming Canadian sovereignty there and on Victoria Island. On his way back, Bernier visited whaling stations at Pond Inlet and Cumberland Sound to ensure that all were properly licensed.

**Hopes Thwarted in the Northwest Passage, 1910–1911**

Bernier arrived back at Quebec on 5 October 1909 to hear that Frederick Cook and Robert Peary were claiming to have reached the North Pole. There was clearly little point now in his trying, but at least he could attempt the Northwest Passage. Having obtained appropriate authorization, Bernier began his third Arctic patrol on 7 July 1910. By 15 August, he was in Lancaster Sound. It was clear that the ice was much more dense than in 1908, and McClure Strait proved impassable beyond the southwest point of Melville Island. The passage would not be feasible this year. Bernier’s instructions in these circumstances were to continue the survey of north Baffin Island begun on his first voyage.

Winter quarters were established in Arctic Bay, Admiralty Inlet, from where the geologist J. T. E. Lavoie made two extended journeys to explore the southern reaches of the inlet and the west coast of the Brodeur Peninsula, where a large bay was fittingly named for Bernier. Once released in the summer, *Arctic* visited Pond Inlet, where Lavoie continued his survey from a launch, charting the southern shores of Pond Inlet and Eclipse Sound. Deprived of the passage itself, Bernier had reserved one spectacular objective for his return voyage. No vessel had yet succeeded in sailing through the customarily ice-clogged Fury and Hecla Strait between the Gulf of Boothia and Foxe Basin. That was the route Bernier planned to follow south to Quebec. Yet again, however, he was to be thwarted by circumstance. The strait was completely un navigable, and he was forced to return via Baffin Bay and Davis Strait.

**Last Patrols, 1922–1925**

Soon after returning to Quebec on 25 September 1911, Bernier resigned from government service. Gold had been discovered near Eclipse Sound on his most recent voyage, and three separate expeditions were organized to prospect for more. Bernier himself failed to find gold, though he did manage to make a living by trading furs. Meanwhile, *Arctic* was put to other purposes, including a spell as a navigational beacon on the lower St. Lawrence River. In 1922, however, further high Arctic patrols were planned by the newly constituted Northwest Territories and Yukon Branch of the Interior Department. *Arctic* was reconditioned, and Bernier appointed as captain, despite being now seventy years old.

For the next four years, Bernier and *Arctic* conducted a series of annual patrols. Again, the chief purpose was to maintain sovereignty, but they served other needs also: establishing new posts for the Royal Canadian Mounted Police (RCMP), relieving existing posts, watching over the welfare of the Inuit, and conducting a range of scientific studies. In 1922, Bernier set up a new RCMP post at Craig Harbour, Ellesmere Island. Two years later, another post was established on Devon Island at Dundas Harbour. In 1925, *Arctic* and Bernier went on their last voyage. *Arctic* had taken a severe battering during these voyages, though it had not prevented Bernier from completing his missions. *Arctic* was sold to a ship breaker, but proved too solidly built to be broken up. Bernier hoped that it would be used as a training vessel, but instead it was left to rot offshore, an unworthy end for one of the world’s great polar ships.

In the eastern Arctic, the patrols begun by Bernier were continued by CGS *Beothic* until 1931, by *Ungava* in 1932, and between 1933 and 1940 by the HBC vessel *Nascopie*. In the Western Arctic, similar duties were discharged between 1928 and 1948 by Henry Larsen in RCMP St. Roch.

**References and further reading:**


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**Biscoe Islands (Antarctic Peninsula)**

Located at 66°00’S, 66°30’W, this chain of islands, extending some 80 miles parallel to the Antarctic Peninsula, was discovered by the British sealer John Biscoe on 17 February 1832. The major islands are now known as Renaud, Rabot, Lavoisier, and Watkins. Biscoe landed on “Pitt Island,” named for some similarity to former British prime minister William Pitt that was apparent to him but not to anyone else since. In January 1905, Jean-Baptiste Charcot carried out a rough survey, which he continued in February 1909 during his second expedition. In the 1950s, Argentine refuge huts were built on Watkins Island (Capitán Estivariz) and Rabot Island (Cadete Guillochon), but little fieldwork appears to have been con-
ducted there. The first systematic aerial survey was undertaken by the Falkland Islands and Dependencies Aerial Survey Expedition in 1956–1957.

See also: Argentina; Biscoe John; Charcot, Jean-Baptiste; Sealing and Antarctic Exploration

Biscoe, John
(1794–1843)

On the first of a series of combined exploring and commercial expeditions organized by the whaling and sealing concern Enderby Brothers, the British sealer John Biscoe circumnavigated Antarctica for only the third time and generally at higher latitudes than had been achieved by either James Cook or Fabian von Bellingshausen. Land was discovered in widely separated locations, demonstrating Antarctica’s probable continental nature more clearly than any previous expedition.

The Third Circumnavigation of Antarctica, 1830–1833

Born in London, Biscoe was one of many naval officers forced to find a new career at the end of the Napoleonic Wars in 1815. Appointment to the Tula, a 150-ton brig, was his first command. Although without previous experience of sealing or whaling, he had clearly acquired a reputation as a competent and determined sailor. Tula was accompanied by Lively, originally built as a cutter for use by pilots at the English port of Cowes and weighing only 50 tons but having the advantage of a shallow draft of just 2.4 meters. Little is known of the crew of twenty-seven men and two boys, but voyages such as the Enderby’s were known to be long and hard and in consequence tended to attract those unable to find employment elsewhere.

If Biscoe’s crew was of doubtful quality, then so also were his vessels. Neither sailed well, and Tula was particularly recalcitrant, especially in light winds, when the vessel was difficult to steer, and in calms, when it jerked and rolled uncomfortably. The ships also sailed at different speeds, and keeping them together proved a recurrent problem. Biscoe’s navigational aids were also not of the highest quality. He was given no artificial horizon, his three chronometers proved unreliable, and the barometer broke at a critical moment close to the South Sandwich Islands. In the face of such difficulties, Biscoe’s achievements were remarkable.

On 10 July 1830, the expedition sailed for the southern Atlantic Ocean with instructions to search for the “Aurora Islands,” which had been reported near South Georgia, and to visit the South Sandwich Islands farther south in the hope of finding undiscovered sealing grounds. Slow progress was made, and they reached the Cape Verde Islands off West Africa only on 21 July, having averaged no more than three knots, and the Falkland Islands on 9 November. There Captain Smith, Lively’s master, absconded after Biscoe reprimanded him over his failure to keep up with Tula. Smith’s place was taken by the competent George Avery. After watering and provisioning his ships, Biscoe next searched for the Auroras, sailing due east along their reported latitude but seeing nothing. The first iceberg was sighted on 10 December, followed soon afterward by fog in which Tula and Lively became separated. Fortunately, they found each other again several days later. Now heading south toward the supposed position of the South Sandwich Islands, Biscoe became aware that his charts were inaccurate and decided that he had most probably passed them. Heading west, he found them 50 miles west of where they had been charted. Following Charles Enderby’s instructions to look for seals and landing places, they thoroughly searched this chain of small volcanic islands. Finding neither by 30 December, they decided that the South Sandwich Islands offered no sealing potential and set course to the southeast.

At first conditions were deceptively benign: 16 January 1831 was particularly idyllic, with fifty-eight icebergs in view and temperatures rising to 77°F. On 22 January, the Antarctic Circle was crossed, and six days later farthest south was achieved at 69°S, 10°43′E. Conditions soon became more difficult, with thick ice blocking the way south and persistently unfavorable easterly winds. Finding prevailing easterlies close to the Antarctic continent was one of Biscoe’s chief discoveries, prompting him to recommend that future expeditions should sail east to west rather than west to east, as he was now attempting. At his farthest south, land was still 60 miles off—the Princess Astrid Coast—but on 25 February an “appearance of land” was seen, with a high ice cliff and ice hummocks resembling mountaintops stretching far inland. Impenetrable ice prevented close approach, but it was in fact the Tange Promontory of the Antarctic continent and Biscoe’s first discovery, Enderby Land. Three days later, land was unmistakable, with black tops of mountains visible through the ice, which were named by Biscoe for the three Enderby brothers—Mounts Charles, George, and Henry. On 5 March, the two vessels became separated in a blizzard of hurricane force. Tula was driven 120 miles to the northwest, the sea smashing across its decks on which ice formed an ever-thickening load. Despite serious damage to his ship, the determined Biscoe again turned south as soon as the weather moderated, hoping that the storm might have blown the pack away from the coast. On 16 March, Enderby Land was again seen, but ice conditions were no better, and the weather was worse, with regular storms and only short intermissions of calm. Despite the now rapid spread of scurvy among his crew, Biscoe spent the next three weeks searching for a place to land, only finally turning north on 6 April, by which time just he, three men, and one boy could stand. A nightmare voyage to Hobart, Tasmania, ensued, in which two crew died of scurvy and the vessel finally crept into port on 9 May 1831. Lively did not reach Hobart until August. Her crew of ten had also been ravaged by scurvy, the only survivors being Avery, one seaman, and a boy. Beaching Lively on the Australian mainland, they had gone in search of food and water, only to return to find their ship gone. It had dragged its
anchor, and was not rediscovered for two weeks, when it was located aground in an inlet.

Biscoe recuperated for five months at Hobart. Not until 10 October 1831 were Tula and Lively ready to weigh anchor to try their luck at sperm whaling north of New Zealand and then to seal at the Chatham Islands, where indeed a few fine seal-skins were obtained. The Bounty Islands were sighted on 22 December but no seals taken. No trace could be found of the mythical “Nimrod Islands.” Course was next set east for the South Shetland Islands, and they reached 66°27'S in the Bellingshausen Sea. After an uneventful passage, land was sighted on 15 February 1832, which at the time Biscoe believed to be the southernmost land yet seen. It was Adelaide Island and the first of Biscoe’s new discoveries, as his course took him north along the Antarctic Peninsula. There he also saw Alexander Island, which had been seen previously by Bellingshausen. North of Adelaide, Biscoe spotted a range of high mountains to the east. He named this region Graham Land after the first lord of the Admiralty. Landings were made on 19 February on Pitt Island and two days later on Anvers Island. There, a high mountain was named William for King William IV and Graham Land was claimed for Great Britain in Biscoe’s mistaken belief that he was on the mainland rather than on an island. The South Shetlands were reached on 5 March, and anchorage found at New Plymouth, Livingston Island. Boats were sent out to search for seals, particularly elephant seals, but very few were found. By now, Biscoe was desperate for any kind of catch and planned to try whaling and sealing off the Falkland Islands. Before he could sail, however, a severe storm arose, forcing the temporary abandonment of Tula as it repeatedly struck bottom in the tossing waves. Fortunately, the vessel survived, and Biscoe was finally able to set sail on 15 April.

After a very rough passage, the Falklands were reached on 29 April 1832. The original plan had been for Biscoe to remain in the south for one more year and to meet the Enderbys’ smack Rose. After a month’s recuperation in Berkeley Sound, Biscoe decided to try his luck again at sealing but again had no success. This time Lively was wrecked on Mackay’s Island, happily without loss of life. With an increasingly disaffected crew and still no sign of Rose, Biscoe reluctantly decided to return home, a decision made none too soon for most of the crew, all of whom, apart from four men and three boys, jumped ship at the first opportunity in Brazil.

For the Enderbys, Biscoe brought back only thirty seal-skins—his voyage was a commercial disaster—but great geographical glory. Within three days, his discoveries were announced by Charles Enderby to the Royal Geographical Society, which made Biscoe only the second recipient of its Royal Premium Medal. However, for Biscoe geographical glory was not to mean financial prosperity, and after 1833 he largely disappeared from view, gaining occasional employment as a ship’s master for the Enderbys and others before migrating with his family to Australia. There tantalizing references appeared to a voyage in the Emma in 1838–1839, during which he met John Balleny at Campbell Island and from there quite possibly again circumnavigated Antarctica. Very little is known about this voyage, though on 15 May 1839 the Sydney Herald reported that he reached 75°S, a remarkable if unlikely latitude, which would have bettered James Weddell’s achievements and approached those of James Clark Ross. The final reference is tragic. An appeal was published for funds to pay a now pauperized Biscoe’s passage back to England. We know that his family returned to England since they received Admiralty charity, but Biscoe himself died during the voyage and was buried at sea.

See also: Adelaide Island; Antarctic Peninsula; Anvers Island; Bellingshausen, Fabian von(1819–1821); Biscoe Islands; Cook, James (1772–1775); Enderby Brothers; Enderby Land; Sealing and Antarctic Exploration; South Shetland Islands

References and further reading:


East Base was one-half of the most ambitious Antarctic expedition to date, the U.S. Antarctic Service Expedition of 1939–1941. Although the story of East Base is told here under the name of its leader, the background of the expedition and its important shipboard discoveries are described under Richard Byrd’s name as overall commander, and operations at West Base can be found in the entry for Paul Siple. Had World War II not intervened, permanent occupation of Antarctic stations by U.S. personnel would have begun in 1940 with this expedition, rather than in 1956 with Operation Deep Freeze.

Richard Blackburn Black’s introduction to Antarctica was as a member of Richard Byrd’s second expedition (1933–1935). Two years later, he found himself in the spotlight of international attention when he was stationed on Howland Island, a tiny spit of land in the central Pacific. It was an essential refueling stop on Amelia Earhart’s attempted flight around the world in 1937. Unfortunately, she was unable to find the island, her last message stating that she had just thirty minutes of fuel left.

East Base, Stonington Island, 1940–1941

In 1938, Black was commissioned by Dr. Ernest Gruening, director of the Division of Territories and Island Possessions of the Department of the Interior, to write a report on U.S. interests in Antarctica. The resulting memorandum made a
persuasive case for increased U.S. involvement, including plans for a small expedition to be led by Black with Finn Ronne, another veteran of Byrd’s second expedition. Gruening drew this report to the attention of President Franklin D. Roosevelt, and it was a significant factor in his decision to establish the U.S. Antarctic Service. This agency, as originally conceived, was to carry out a series of ongoing expeditions in order to maintain a permanent U.S. presence on the continent. The outbreak of World War II and the refusal of Congress to appropriate further funds meant that only one expedition was carried out under the overall leadership of Richard Byrd, with Black appointed commander of East Base.

East Base was one of two major operating stations established by the expedition, one on each flank of 1,700 miles of unexplored coastline between the foot of the Antarctic Peninsula and the Bay of Whales on the Ross Ice Shelf. To reduce the length of the flights necessary to survey this vast area, East Base was to be sited as far west as possible, with Charcot and Alexander Islands the preferred locations. First, however, West Base had to be established, and it was only on 5 March 1940 that the expedition’s two ships, USNS North Star and USS Bear, met in Marguerite Bay, in a region first explored by Jean-Baptiste Charcot in 1909. On its voyage from the Bay of Whales, Bear had been prevented by impenetrable ice from approaching either Charcot or Alexander Island, and Marguerite Bay was very much the third choice. On 8 March, a promising small island was identified by Black and Byrd on a reconnaissance flight made with pilot Ashley C. Snow and radio operator Earl B. Perce. At the head of Neny Fjord at 68°12'S, 67°03'W, Stonington Island was connected to the Antarctic Peninsula by a snow slope leading onto a quiescent glacier. As well as offering possible access up to the high inland plateau, this glacier would provide a suitable landing strip at times when the sea ice could not be used for this purpose.

Unloading began on 11 March and was completed ten days later, when the two ships sailed north to South America, leaving Black behind with twenty-five men. To help him achieve his planned objectives, he also had seventy-five dogs, a Curtiss-Wright Condor biplane, a light army tank, and a light artillery tractor. Before the onset of winter, on 20 May, Black flew south to the northern entrance of George V Sound to obtain photographs of his planned sledging routes for the coming season. A cache of equipment and food was landed the next day south of the Wordie Ice Shelf at 69°32'S, 66°56'W. Black had devoted careful study to the work of John Rymill’s British Graham Land Expedition (BGLE), which had conducted extensive work in this region, and he was eager to avoid the necessity of having to return to base too often, particularly since after early January it would be unsafe to travel far over the melting sea ice. It was because Rymill had been forced to return to his base in the Debenham Islands before the sea ice went out that he had been unable to descend to the Weddell Sea coast farther east after successfully climbing onto the high inland spine of the Antarctic Peninsula. Surveying the unexplored Weddell Sea coast south of Cape Eielson was one of Black’s chief goals. Similarly, Black wanted to follow up BGLE’s discovery of George VI Sound, a rift apparently separating “Alexander Land” from the continent. Black wished to demonstrate that it was indeed an island by sledging along the sound to its end.

Before winter was over, a determined attempt was made to reach the inland plateau up the Northeast Glacier, and on 9 August, “Mile High Camp” was established at 1,676 meters. With the hours of daylight now sufficient to resume flying, Black was frustrated by continually poor weather—windy and overcast—which meant that no flights at all could be made prior to the departure of the Weddell Coast depot party on 9 September, and no flights of any length before 21 September, when Black, Snow, Perce, and photographer Arthur J. Carroll flew across the peninsula and south along the Bowman Coast to 69°S. Seven days later, the same crew, together with chief-of-staff Finn Ronne and surveyor J. Glenn Dyer, made a more extended flight south, confirming BGLE’s observations that the four channels reported as cutting through the peninsula by aviator Sir Hubert Wilkins in 1928 did not exist. From high above Stonington Island, they saw the Weddell Sea depot party making their second ascent of the Northeast Glacier. Consisting of Paul H. Knowles, Donald C. Hilton, and Henry Darlington and assisted by Joseph D. Healy and Lytton Musselman, this party returned to Stonington on 15 October, having laid two caches of man and dog food on a glacier leading down to the Weddell Sea.

Preparations were now almost complete for the major sledging journeys, but first a meteorological station was established at “Mile High Camp,” where Lester Lehrke and Robert Palmer remained from 26 October until 30 December, sending twice-daily weather reports to Stonington that proved invaluable for Black’s air operations. One final reconnaissance flight was made on 4 November, during which photographs were obtained covering much of the west coast of Alexander Island. Two days later, the Southern Party set out across the sea ice. Led by Ronne, it consisted initially of two teams: the Southwestern Party of Ronne and Carl Eklund and the survey party, consisting of Dyer, Healy, and Musselman. Knowles and Hilton accompanied them to the Wordie Ice Shelf before returning to join Darlington to form the Weddell Coast party, which then set out up Northeast Glacier and across the inland plateau on 18 November. Meanwhile, Black had flown caches of supplies to George VI Sound near the Batterbee Mountains and another to the Wordie Ice Shelf, when the one laid previously could not be found. On 22 November, the two southern parties divided, with Ronne and Eklund continuing on toward the Batterbee cache and Dyer’s party heading southeast toward the Eternity Range, spectacular mountains rising to 2,860 meters, which had been discovered from the air in 1935 by Lincoln Ellsworth.
With the three sledging parties making good progress toward their respective goals, on 20 December Black took off on an intended flight to photograph the Weddell Coast but was forced to turn back in overcast conditions, when the heavily loaded plane proved incapable of climbing sufficiently high to cross the inland plateau. Two days later, Ronne radioed that he was within sight of open water at the end of George VI Sound. What Rymill and BGLE had suspected, Ronne had now proved. Alexander “Land” was an island, completely cut off from the peninsula by the sound. The same day, Snow took off on the major Pacific Coast flight, over Alexander Island, across George VI Sound, and back to Stonington Island via the Batterbee cache, where a landing was made to take on fuel. The two last flights took place on 28 and 30 December, now using the glacier landing strip rather the sea ice, which had thinned and would soon break up. The second of these flights made significant discoveries.

Having learned from the abortive flight of 20 December that, when fully loaded, the plane could not climb over the peninsula plateau, on 30 December Black headed south along George VI Sound until a pass was found to the east at 70°45'S. Climbing slowly as the ice beneath rose higher, he followed a southeasterly course until the Eternity Range was within sight to the northeast. New mountains now blocked their course to the Weddell Sea until a way through was found along a transverse depression. At 72°32'S, 60°W, Black reached the coast of the Weddell Sea, 130 miles south of Cape Eielson and some way beyond the farthest south of Knowles’s sledging party. Here, Black turned south to extend knowledge of the coast as far as 74°42'S, 61°W, before circling to return to Stonington Island, the Weddell Sea, 130 miles south of Cape Eielson and some way beyond the farthest south of Knowles's sledging party. Here, Black turned south to extend knowledge of the coast as far as 74°42'S, 61°W, before circling to return to Stonington Island, flying north along the Weddell Coast to 69°30'S and then through passes across the peninsula.

By 21 January 1941, all three sledging parties had returned, Ronne and Eklund after an epic 1,264-mile journey. By mid-February, Black expected imminent relief by Bear and North Star, but thick ice south of Adelaide Island prevented the ships from approaching Stonington. By early March, it was clear that this year at least, they would never get through, and plans began to be made for an emergency evacuation by air. On 20 March, North Star headed back to Chile with the men from West Base, while Bear anchored off Mikkelsen Island, a low-lying, flat-topped island just north of the Antarctic Circle. From the crow’s nest of Bear, it was just possible to identify the island’s potential as a landing strip for the East Base Condor biplane, despite the 120-meter precipice of rock and snow that fringed it. What was needed now was cold, clear weather: clear conditions for flying and cold to ensure that the snow surface would be sufficiently hard for the plane to land. At 5:30 A.M. on 22 March, Black was given instructions for pilots Snow and Perce to fly out the first twelve men from East Base. Meanwhile, the crew from Bear would attempt to climb to the top of the island. At 7:15 A.M., Bear’s siren announced the safe arrival of the first party. By 11:30 A.M., the Condor was back at East Base, ready to take off. With the snow now softer, however, Snow could only get into the air after well over 100 kilograms of equipment and clothing had been thrown overboard. By twilight, all men were aboard Bear.

The survey work carried out by East Base represented a significant extension of that initiated by Rymill’s BGLE. The long sledge journey by Ronne and Eklund to the end of George VI Sound had proved the insularity of Alexander Island, and on the Antarctic Peninsula’s east coast, Knowles’s sledging party and the reconnaissance flight of 30 December had provided much new information about this very inaccessible coast. Black himself participated in three further Antarctic expeditions, making his last trip with Operation Deep Freeze in 1957 but continuing to work for the U.S. Antarctic Program until his retirement from the Office of Polar Programs in 1967. Ronne returned to Stonington Island in 1947 to continue the work of East Base.

See also: Alexander Island; Antarctic Peninsula; Byrd, Richard; Charcot, Jean-Baptiste; Marguerite Bay; Operation Deep Freeze; Ronne, Finn (1947–1948); Rymill, John (1934–1937); Siple, Paul; Wilkins, George Hubert (1928–1929)

References and further reading:

Booth Island (Antarctic Peninsula)
Located at 65°05'S, 64°00'W, this small mountainous island, 5 miles long, forms the west side of the Lemaire Channel south of Anvers and Wiencke Islands. Jean-Baptiste Charcot wintered in 1904 at Port Français (Port Charcot) on the northwest coast. Argentina planned to set up a meteorological station in 1907 but abandoned the attempt when Austral (formerly Français) was grounded on a sandbank in the river Plate at the start of a voyage intended to establish this station.

See also: Argentina; Charcot, Jean-Baptiste (1903–1905); Lemaire Channel

Boothia Peninsula (Canada)
In this peninsula, continental North America reaches its northernmost point at 71°58'N on the southern shore of Bellot Strait, separating it from Somerset Island farther north. Together with this island, it forms the dividing line between Canada’s western and eastern Arctic. Prince Regent Inlet and the Gulf of Boothia lie between it and Baffin Island and Melville Peninsula farther east. To the west, James Ross and Rae Straits separate it from King William Island. It has an area of about 12,480 square miles.

Although long inhabited by the Inuit, from the perspective of exploration history the peninsula was discovered in 1829 by John Ross, who named it “Boothia Felix” for his sponsor, Sir Felix Booth (1775–1850), sheriff of London and manufacturer of Booth’s gin. Whether Boothia was an island or a northern...
extension of the mainland was of considerable significance during the search for the Northwest Passage. If Boothia was an island, then a potential passage lay south of it through Prince Regent Inlet. This point Ross sought to determine during his first European wintering on Boothia at Felix Harbour. Inuit reports that Boothia formed part of the mainland were confirmed by sledging journeys made by James Clark Ross in 1830. In Lord Mayor Bay, the west and east coast approached within a few miles of each other, but nowhere was there a channel between the two. This conclusion was disputed by Thomas Simpson in 1839. During the expedition led by Peter Dease, he believed that from his easternmost point he could see the coast trending southward, suggesting the likelihood of a strait between Boothia and the mainland. John Rae was sent to resolve the issue in 1847, and although he found continuous coast extending north to Lord Mayor Bay on the east side of Boothia, some at the Admiralty proved unwilling to accept his conclusion and insisted that the Admiralty chart show this coast with a dotted line. In 1854, Rae returned to confirm that Boothia was not an island by extending his survey to the west coast. Charting of this coast was finally completed by Leopold McClintock in 1859.

Boothia holds an important place in exploration for other reasons also. When first discovered by James Clark Ross in 1831, the North Magnetic Pole lay in southwest Boothia at 70°05.3’N, 96°46’W. When Roald Amundsen relocated it in 1904, he found it still on the peninsula, though some distance farther northeast at 70°30’N, 96°36’W. During the search for Sir John Franklin, it was from the inhabitants of Boothia that Rae and McClintock learned what had happened to his expedition and where it was to be looked for.

Knud Rasmussen sledged across the peninsula in 1923, visiting Inuit communities and collecting folklore on his way. Henry Larsen also made a point of visiting as many communities as possible when wintering at Pasley Bay in 1941–1942. The settlement of Spence Bay was founded in 1948, following the closure of the Hudson’s Bay Company station at Fort Ross, Somerset Island, and the transfer of its population here.

See also: Amundsen, Roald (1903–1906); Dease, Peter; Franklin Search Expeditions; Larsen, Henry (1940–1942); Magnetic Poles; McClintock, Leopold (1857–1859); Northwest Passage; Rae, John (1846–1847, 1853–1854); Rasmussen, Knud (1921–1924); Ross, James Clark; Ross, John (1829–1833)
Whatever criticisms were later to be made of this expedition, chose Bernhard Jensen, second mate on Bull’s expedition. Borchgrevink’s preparations were meticulous. Further, the whaler Pollux, renamed it Southern Cross. As captain, he chose Bernhard Jensen, second mate on Bull’s expedition. Crew and scientific staff were carefully selected, and considerable attention was paid to obtaining suitable provisions. Whatever criticisms were later to be made of this expedition, Borchgrevink’s preparations were meticulous. Southern Cross sailed on 23 August 1898 from London, reaching Hobart, Tasmania, on 28 November, from where it sailed on 19 December for Antarctica. The belt of pack ice barring entry to the Ross Sea was met on 31 December. Against the advice of his navigating officer William Colbeck, Borchgrevink here adopted an extreme westerly course, heading for the Balleny Islands off Victoria Land. That this decision was a mistake became increasingly apparent when it took forty-three days to reach open water and only then after Southern Cross had been extracted from the ice to enter it again farther east. Here it only took six hours to get through the pack ice, the Ross Sea finally being reached on 11 February 1899.

Six days later, Borchgrevink landed at Cape Adare, where two prefabricated huts were set up at Camp Ridley. To allow a certain measure of privacy, each bunk was designed to form a separate enclosure after the manner used in whaling vessels. Seventy-five dogs were landed, the first time dogs were used in Antarctica. Ten men had been chosen to winter. Led by Borchgrevink, the party included one Australian (Louis Bernacchi), two Englishmen (Colbeck and Hugh Blackwall Evans), and six Norwegians (Nicolai Hanson, Dr. Herluf Kløvstad, Anton Fougner, Kolbein Ellefsen, Ole Must, and Persen Savio, the last two being Saami).

Unknown to Borchgrevink, in deciding to winter at Cape Adare, he had selected a site particularly exposed to the cold katabatic winds blowing north off the inland ice. Gales and blizzards characterized his stay there, causing considerable difficulties even before the ship sailed on 2 March, when severe winds forced Southern Cross to get up steam and sail full speed into the wind, leaving seven men marooned on shore with only a tent for shelter, which had fortuitously been brought by one of the Saami. Inside it they huddled, kept warm by the dogs that piled in on top of them. In other respects also, Cape Adare was soon found not to be ideal. Borchgrevink had planned to use the dogs to sledge to the South Magnetic Pole. Unfortunately, no way could be found onto the ice sheet through the high mountains surrounding Cape Adare. Such sledging journeys as could be attempted were therefore largely limited to the vicinity of Robertson Bay.

By the end of March, seals and penguins had abandoned Cape Adare, and on 15 May the sun disappeared below the horizon, not to be seen again until 27 July. On landing, the scientists had established a regular routine of meteorological and magnetic measurements, in between writing up observations made during the voyage and on sledging journeys. Relations within the hut, however, were not amicable, with Borchgrevink himself the focus of growing animosity. Touchy and inclined to react to criticism with strongly worded and frequently personal counter-criticism, he was probably not the easiest person to be with in any circumstances. Early in the voyage, his imposition of an embargo on letter writing, lest news of the expedition leak out to anyone other than Sir George Newnes, had been considerably resented. Questions about his judgment had then been raised in the passage through the pack ice, during
which relations with Colbeck had become particularly strained. The scientists found his pretensions to scientific expertise laughable and his desire to lecture them at all opportunities insupportable. Matters came to a head in mid-June, when Borchgrevink brought out a document threatening a charge of mutiny to anyone criticizing him as commander. Soon afterward, he withdrew to a stone hut on Duke of York Island, accompanied for much of the time only by the Saami.

Throughout the winter, the huts endured strong and frequent winds. Catastrophe threatened on 24 July, when a bunk was set on fire by a candle. Fortunately, the hut escaped destruction, though one wall was scorched. On 31 August, Hanson, Ellefsen, and Bernacchi were lucky not to be asphyxiated when some coals were left burning in the stove. Persen Savio had an even narrower escape, when he fell 18 meters head down into a crevasse. With no one to hear his cries, he used his pocket knife to cut footholds into the ice, with the aid of which he climbed to the surface before collapsing with the effort. One member of the party did die, but of a mysterious illness rather than an accident. Nicolai Hanson, the much-loved zoologist, slowly weakened during the winter and died on 14 October; an Adélie penguin—the first to return and harbinger of the Antarctic spring—was brought to him just before he died.

Sledge journeys had resumed shortly before the return of the sun in late July, becoming more ambitious as the days lengthened. An attempt was made to reach Possession Island across the ice, and Robertson Bay was explored more thoroughly. Investigating the lichen there, Kløvstad was surprised to discover springtails among it, the first insects found on the Antarctic mainland. The return of Southern Cross was now eagerly awaited, though not without concern that some accident might have befallen the ship or that it might otherwise be unable to reach them, in which case another winter would have to be endured. At last, on 28 January 1900, a figure was seen approaching the hut, and with a shout of "Post!", Captain Jensen announced the ship’s arrival.

Paying one last visit to Hanson’s grave, where a cross was erected, they left Cape Adare behind on 2 February 1900. Southern Cross now sailed south along the coast of Victoria Land toward the Ross Ice Shelf, making landings at Possession, Coulman, and Franklin Islands, as well as on the mainland at Wood Bay below Mount Melbourne. In addition to augmenting their natural history collections, they made magnetic observations, on the basis of which—in combination with those made at Cape Adare during the winter—the position of the South Magnetic Pole was calculated at 73°20’S, 146°E, indicating that it had shifted to the north and west since James Clark Ross had located its approximate position in 1841.

Landing at Cape Tennyson on Ross Island, Borchgrevink and Jensen were extremely lucky not to be swept out to sea when an iceberg calved, causing a massive tidal wave. They escaped by clinging grimly to a rock wall, while waves over 6 meters high washed over them. Relying on steam rather than sail, Southern Cross was able to approach the Ross Ice Shelf more closely than could Ross’s vessel. The shelf appeared to have receded 30 miles since his day, and on 11 February his farthest south was surpassed to general celebration. On 16 February, the first landing on the ice shelf was achieved in the Bay of Whales up a gentle ice slope. Skiing south for 10 miles, Borchgrevink, Colbeck, and Savio reached 78°50’S, the record farthest south until Albert Armitage and Robert Falcon Scott exceeded it in 1902.

With signs of young ice forming in the sea, the expedition turned about on 19 February, landing briefly on Franklin Island on 24 February before heading north through the pack ice, crossing the Antarctic Circle on 28 February, and reaching safe anchorage in the Auckland Islands south of New Zealand on 21 March. Having taken on water and fresh meat here, Hobart, Tasmania, was reached on 6 April.

Borchgrevink received less credit than he deserved. In Britain, attention was now focused on preparations for Scott’s expedition, and although Borchgrevink had proved the possi-
Rarity of surviving the Antarctic winter, it was felt that he had achieved less than he might have done at Cape Adare. The unhappiness of his scientists was noted, and his apparent negligence with regard to Hanson’s zoological notes and specimens aroused considerable criticism. Official recognition only came in 1930, when the Royal Geographical Society belatedly awarded him its Patron’s Medal.

See also: Armitage, Albert; Bull, Henrik; Campbell, Victor; Farthest South; Ross, James Clark (1839–1843); Ross Ice Shelf; Scott, Robert Falcon (1901–1904); Victoria Land

References and further reading:

Borden Island (Canada)
Located at 78°30′N, 111°00′W, this northernmost member of the Parry Islands lies immediately north of Mackenzie King Island, from which it is separated by Wilkins Channel, and west of Prince Gustav Adolf Sea. It was discovered in June 1915 by Vilhjalmur Stefansson and named for Sir Robert Borden (1854–1937), prime minister of Canada from 1911 to 1920 and sponsor of his expedition. Landing on 17 May 1916, Stefansson considered it and Mackenzie King Island to be one island, the separate insularity of the latter being only established several decades later. Borden is 50 miles long and has an area of 1,079 square miles. Surrounded throughout the year by heavy ice, it is one of the least accessible islands in the Canadian Arctic.

See also: Mackenzie King Island; Parry Islands; Stefansson, Vilhjalmur (1913–1918)

References and further reading:

Borough, Stephen (1525–1584)
The Englishman Stephen Borough had the good sense to benefit from the local expertise of the Pomor inhabitants of the Kola Peninsula and White Sea region. Without their help, his Northeast Passage expedition would have been unlikely to have reached as far east as it did.

With the Pomor Fleet to Vaygach Island, 1556–1557
Following the success of Richard Chancellor in establishing trading contacts with the Russian tsar, the newly incorporated Muscovy Company decided to organize two expeditions: one a trading mission led by Chancellor and the other an exploring expedition led by Stephen Borough. He had sailed under Chancellor as master of Edward Bonaventure during Sir Hugh Willoughby’s ill-fated expedition and had established a reputation for himself as one of England’s most competent seamen. The merchants of the Muscovy Company believed that by following the Northeast Passage to the north of Russia, it would be possible to reach the Far East without intruding on territories claimed by Portugal and Spain. Since the English queen Mary was married to the Spanish king Philip II, this last was an important consideration.

Equipped with the pinnace Serchethrift, Borough sailed from London on 23 April 1556 in company with Edward Bonaventure, which was to fetch Chancellor back from Russia. The two vessels separated on 7 June to the north of Norway, and two days later Serchethrift anchored at the mouth of the Kola River near present-day Murmansk, where it remained for nearly two weeks. It appears that Borough had learned that the Pomor living here traveled east each year to the Pechora River, where they hunted walruses and polar bears and caught salmon. His plan was to find a pilot to take him there, and in this he was successful, one Gabriel agreeing to guide Serchethrift through the frequently shoaling waters. On 22 June, Borough set out with the Pomor fleet but found it difficult to keep up, handicapped as he was by Serchethrift’s deeper draft and poorer sailing qualities in comparison with the Pomor lodyas. Gabriel, however, waited behind to assist him, and after a difficult voyage the Pechora River, some way east of the White Sea, was reached on 15 July.

Serchethrift now continued its voyage alone. Setting sail from the Pechora on 20 July 1556, Borough soon found his way seriously encumbered by ice but still managed to reach the northern archipelago of Novaya Zemlya, where he anchored and found fresh water. Sailing west along the coast, he encountered a Pomor vessel whose captain came aboard. He had been part of the fleet Borough had accompanied from the Kola River and said that he was now well on the way to the Ob’ River, which in fact he was not, not yet having found a way through to the Kara Sea. Borough continued south to anchor off Vaygach Island on 31 July, where again he met Pomor hunters. From them Borough learned that the region was inhabited by the Samoyed or Nentsy people, who lived in tents and herded reindeer. They showed him a place where several hundred wooden idols carved by these people were to be seen, blood-stained and clearly a place of sacrifice. Although Loshak, the fisherman encountered off Novaya Zemlya, now offered to pilot Serchethrift east to the Ob’ River, drifting ice and bad weather made doing so impossible. On 22 August Borough decided instead to head back to Kholmogory, a Russian White Sea port on the Northern Dvina River. There, he planned to winter before resuming exploration the following year.

Borough, however, was not to be given another opportunity to reach the Ob’. While at Kholmogory, he received orders to search for three ships of the Muscovy Company that had failed
to return to England. One of them was Edward Bonaventure, which had accompanied Serchethrift’s outward voyage, and among many friends of Borough’s on board was his former captain Chancellor. Despite an extended search of the coast of Lapland, Borough learned nothing of the fate of Chancellor’s ship until he reached London in the summer of 1557. It had in fact been wrecked off the coast of Scotland. His extended search of the Lapland coast did, however, ascertain that one of the other ships, Bona Confidentia, had sunk here.

See also: Chancellor, Richard; Northeast Passage; Novaya Zemlya; Pomor

References and further reading:

Bouvet de Lozier, Jean (1705–ca. 1788)
Jean-Baptiste-Charles Bouvet de Lozier led one of a series of French eighteenth-century expeditions during which several sub-Antarctic islands were discovered; in this case, Bouvet Island, the most isolated island on Earth and 1,000 miles from any other land.

The Discovery of Elusive Bouvet Island, 1738–1739
Born into a distinguished naval family but orphaned at an early age, Bouvet became an employee of Compagnie des Indes, the French India Company; by 1731, he had attained the rank of lieutenant. For three years, he tried to persuade the company to send him south on an exploring expedition to look for harbors suitable for the company’s use, hoping to locate them in the land reported by Binot Paulmyer de Gonneville when he returned to France in 1505. De Gonneville stated that he had lived for six months in a far southern land, whose fine climate and friendly inhabitants commended it to French colonization. Locating “Gonneville Land” proved the stumbling block. Most likely it was Brazil, but Bouvet’s expectation was that it was to be found south of the Cape of Good Hope.

At last receiving company support, the expedition was equipped with two vessels, the 280-ton Aigle and the 180- to 200-ton Marie, and supplied with provisions sufficient for a voyage of eighteen months. Captain Duclos was to command Marie, and Bouvet sailed in Aigle as expedition leader. The two vessels embarked from the Breton port Lorient on 19 July 1738, watered and reprovisioned off Brazil, and pursued a course to the southeast. Expecting to find a tropical or at least temperate land, they were ill-prepared for the increasing cold to which they found themselves exposed. Bouvet had chosen to explore that area of the world’s oceans most empty of land. With diligence and great determination, he carried out a thorough search between latitudes 44° and 55°S, sailing in all 48 degrees of longitude at close to 55°S. His great achievement was to sweep this great swathe of ocean free of land, but that is not what he is remembered for. On 1 January 1739, land was seen, a high rock cliff, possibly an island or, more likely according to Bouvet, a promontory of a larger land. Despite appalling conditions and with scurvy rife among his crew, Bouvet kept this land in view for twelve days while he desperately attempted to approach more closely, being kept away by impassable ice and not daring to launch boats for fear that they would not be able to find Aigle and Marie again in the fog. Eventually, the attempt had to be abandoned, and leaving the true nature of his discovery unknown, Bouvet sailed north to reach the Cape of Good Hope on 24 February and Lorient on 24 June.

Many later expeditions were to search for Cape Circumcision, but Bouvet’s land was not found again until 1808, when it was chanced upon by two British whalers, James Lindsay and Thomas Hopper. What Bouvet had in fact discovered was a tiny island, only 30 square miles, which he had incorrectly plotted at 54°00’S, 11°20’E rather than the correct position of 54°25’S, 3°22’E. It is not surprising therefore that it proved so difficult to rediscover. Bouvet deserves to be remembered for his determined search for land in the region where it was least likely to be found. That he found any land at all was remarkable.

See also: Bouvet Island

References and further reading:

Bouvet Island (Sub-Antarctic)
This small volcanic island, also known as Bouvetøya—6 miles by 4—is the world’s most isolated island, being 1,250 miles north of Antarctica and more than 1,000 miles from the closest land. Ninety-three percent of its surface is covered by ice. Located at 54°25’S, 03°22’E, it was discovered by Jean Bouvet de Lozier on 1 January 1739, the first land seen in the Southern Ocean. Unfortunately, Bouvet—a competent navigator handicapped by the instruments available to him at the time—gave its position as 54°S, 11°20’E, the considerable error in longitude making it difficult for subsequent explorers to find. James Cook failed to locate it on either of his second or third voyages, and James Clark Ross and Thomas Moore were similarly unsuccessful in 1843 and 1845, respectively, Ross passing 18 miles north of the island and Moore 15 miles to the east at their closest approaches.

In the meantime, the island had indeed been rediscovered on 6 October 1808 by two British sealing captains, James Lindsay and Thomas Hopper, their discovery being named “Lindsay Island,” since it was nowhere near the position given by Bouvet and thus was assumed to be a new island. On 7 December 1822, the American sealer Benjamin Morrell reported sending his second mate ashore, where he took 172 fur seals. His is the first recorded landing. On 10 December 1825, the British sealer George Norris found not one but two islands,
“Liverpool Island”—almost certainly Bouvet—on which he landed and took possession for Great Britain, and “Thompson Island.” The latter is something of a mystery since Norris’s sighting appears certain and two islands were also reported in this area by other mariners, including the American Joseph J. Fuller as late as 1893. However, when Carl Chun rediscovered Bouvet on 25 November 1898, there was indisputably only one island. Despite extensive searches, “Thompson Island” has never been seen since. The most likely explanation is that it did indeed once exist but has now subsided under the sea. Bouvet is located at a high point on the Mid-Atlantic Ridge and is itself an ancient volcano. It is quite possible that “Thompson” too was volcanic and may have collapsed following an eruption. It is one “nonexistent” island that may yet exist again at some time in the future.

In the 1920s, Bouvet was identified by the Norwegian whaling entrepreneur Lars Christensen as a potential site for a whaling station. Sending his exploration vessel Norwegia to investigate, on 1 December 1927 Captain Harald Horntvedt landed and claimed the island for Norway. He also built a hut here that was soon destroyed in a gale. Norway’s claim was initially opposed by Great Britain on the basis of Norris’s earlier landing and claim. However, an agreement was soon reached whereby, in return for British recognition of the Norwegian claim, Norway acknowledged British claims on the Antarctic continent, including Enderby Land, which was another area that Christensen had identified for possible annexation by Norway (see Riiser-Larsen, Hjalmar). In the following season, Norwegia returned to Bouvet in an attempt to establish a meteorological station. No suitable site could be found on what is an exceptionally bleak and exposed island. Lack of fresh water also posed problems. Instead, a small hut was erected at Cape Circumcision. Norwegia returned in November 1929, obtaining the first air photographs and erecting another hut on Lars Island, off the southwest cape of the island. Both huts had disappeared by the time Captain Nils Larsen returned to Bouvet in Norwegia in March 1931.

Following the failure of the Norwegians to establish any kind of permanent station on Bouvet despite repeated attempts, further investigations for the same purpose were made by Great Britain (1939 and 1964) and South Africa (1955 and 1966), but it was not until 1977 that the Norwegian Polar Institute (NPI) managed to set up an automatic weather station. In the following season, NPI occupied a temporary station between 24 December 1978 and 8 March 1979. Biological and geological surveys were carried out and two automatic weather stations,
three huts, and an emergency depot left behind. Further NPI visits were made in March 1985 and between 10 December 1996 and 18 February 1997, when an extensive further survey was conducted. In recent years, the island has also been visited by several South African parties, carrying out ornithological and other studies during brief landings. See also: Bouvet de Lozier, Jean; Christensen, Lars; Chun, Carl; Cook, James; Great Britain; Italy; Moore, Thomas (1845); Morrell, Benjamin; Norway; Ross, James Clark (1839–1843); Sealing and Antarctic Exploration; South Africa; Sub-Antarctic Islands

References and further reading:

**Boyd, Louise** (1887–1972)
The American Louise Boyd has the honor of being the first woman to lead an expedition to the polar regions. In all, she was to lead seven, four of them to East Greenland.

Louise Arner Boyd was born into a family that had prospered during the California gold rush. On the death of her father in 1920, she inherited a large personal fortune, together with presidency of the Boyd Investment Company. Throughout her life, she was never short of funds. Following a visit to the Arctic archipelago of Svalbard in a small tourist cruiser in 1924, she organized her own expedition to Franz Josef Land, Russia, in 1926 in the Norwegian sealer MS Hobby. Two years later, she was about to begin another voyage when she learned of the disappearance of Roald Amundsen while he was flying north to join the search for survivors from Umberto Nobile's disastrous airship expedition. With Hjalmar Riiser-Larsen taking command of Hobby, she now sailed more than 10,000 miles searching the west coast of Spitsbergen, the Greenland Sea, and Franz Josef Land for Amundsen and any remaining survivors from Nobile's airship Italia, but to no avail. For her efforts, she was awarded the Chevalier Cross of the Knights of St. Olaf, becoming the first non-Norwegian woman to be so decorated.

Photogrammetric Survey of East Greenland, 1931, 1933, 1937, 1938
Hearing of the magnificence of the fjord region of East Greenland, in 1931 Boyd spent two months in the sealer Veslekari, making an initial reconnaissance of this region discovered by Karl Koldewey in 1870 and subsequently explored by Alfred Nathorst in 1889. On her return to the United States, she was instructed in the use of then novel photogrammetric mapping techniques by O. M. Miller and Isaiah Bowman of the American Geographical Society. Miller participated in Boyd's next expedition to East Greenland in 1933, which, like her subsequent expeditions in 1937 and 1938, was to be undertaken in Veslekari and sponsored by the American Geographical Society. In 1933, after first visiting Jan Mayen, Boyd returned to Franz Josef and King Oscar Fjords, the area she had visited previously two years earlier. She now conducted a most thorough survey, examining and photographing every inlet and strait to which she could gain access. This minute examination of the coast was extended in 1937 and 1938 north to Ile de France at 77°48'N. Geologists were included among the staff of all three expeditions and botanists on the first two, with Boyd herself serving as botanist on the third, enabling pioneering examination of rocks and plants to be conducted while Boyd generally busied herself with photography and the detailed topographic survey.

More expeditions were planned, but they were cut short by the outbreak of World War II. Instead, Boyd conducted one last expedition in 1941, sailing with Bob Bartlett in Morrissey to conduct a survey of the waters off West Greenland for the U.S. War Department. Boyd also contributed to the national war effort by granting free access to her very extensive collection of photographs of East Greenland.

Despite receiving no formal training in geography or any scientific discipline, Boyd made a significant contribution to knowledge of the Arctic, particularly to studies of the still little known coast of East Greenland. When her exploring days were over, Boyd was determined to go on one last journey. Despite her strong dislike of aircraft, in 1955 she chartered a DC-4 to fly from Bodø, Norway, to the North Pole. Among women, her contribution to knowledge of the Arctic may only compare to that of Jane Franklin.

See also: Amundsen, Roald; Franklin, Jane; Franz Josef Land; Greenland, East; Jan Mayen; King Christian X Land; King Frederik VIII Land; Koldewey, Karl; Nathorst, Alfred (1899); Nobile, Umberto; Riiser-Larsen, Hjalmar; Women Explorers

References and further reading:

**Brabant Island (Palmer Archipelago, Antarctic Peninsula)**
Located at 64°15'S, 62°320'W, this mountainous island—the second largest in the Palmer Archipelago—was possibly first seen by John Davis, who sailed as far south as 64°S near the Antarctic Peninsula in February 1821. The first documented sighting was made in February 1829 by Henry Foster, who saw its highest peak, Mount Parry (2,520 meters), from the vicinity of Hoseason Island and named it for the English Arctic explorer Edward Parry. In January 1874, the west coast of the island was seen by Eduard Dallmann, for whom Dallmann Bay was named. The east coast was roughly charted by Adrien de Gerlache between 23 January and 8 February 1898 and the island named by him after the Belgian province for its gener-
ous support to his expedition. On 30 January 1898, Gerlache and four others (Roald Amundsen, Henryk Arctowski, Frederick Cook, and Émile Danco) landed on Brabant Island, where they remained for seven days while Georges Lecointe explored farther south in Belgica. Although it took place on an island rather than the continent itself, it may be regarded as the first Antarctic sledge journey. From a height of 300 meters on the island, Gerlache was able to carry out useful survey work as well as see the full extent of the channel he had discovered.

In 1955–1956, the Falklands Dependencies Survey (FIDS) survey ship RRS Shackleton searched unsuccessfully for a suitable site to set up Base O. This station was set up instead on Danco Island. The first thorough geographical and biological survey of Brabant Island was carried out in 1983–1985 by a British Joint Services Expedition led by Chris Furse. This party also made the first ascent of Mount Parry on 30 October 1984.

See also: Amundsen, Roald; Cook, Frederick; Dallmann, Eduard (1873–1874); Davis, John (fl. 1820); Foster, Henry; Gerlache, Adrien de; Parry, Edward

References and further reading:

Bransfield, Edward
(ca. 1783–1852)

Bransfield Strait lies between the South Shetland Islands and the Antarctic Peninsula. On and near that peninsula may be found Mount Bransfield, Bransfield Rocks, and Bransfield Island. These names record the discovery by the British naval officer Edward Bransfield on 30 January 1820 of the Trinity Peninsula. It was only the second sighting of the Antarctic continent itself, being anticipated by Fabian von Bellinghausen by just three days.

Discovery of the Antarctic Peninsula, 1819–1820

During the Napoleonic Wars, many seamen were forced into the British Royal Navy by press-gangs. Edward Bransfield was one such, being pressed into the navy in 1803. His abilities were recognized by promotion, and however unwilling he may have been originally about joining the Navy, he decided to make it his career. In 1819, he was master of HMS Andromache, flagship of the navy’s squadron on the west coast of South America, when he was appointed by Andromache’s captain William Shirreff to command the brig Williams, whose captain, William Smith, had reported important discoveries of land far to the south of Cape Horn. Smith accompanied Bransfield as master and pilot. Also transferred from Andromache were three young midshipmen—Patrick Blake, Thomas Bone, and Charles Poynter—along with surgeon Dr. Adam Young from HMS Slaney.

Shirreff’s instructions to Bransfield were extensive and detailed, beginning “You are to proceed to about the Latitude of 62 S and Longitude 52 W to discover and ascertain the extent of that tract of Land there seen by Mr. Smith Master of the Brig Williams in October last, and whether it be merely an Island or part of a Continent” (reproduced in Gould 1941, 214). If the latter, “as would appear not improbable,” Bransfield was to explore this land to the eastward, southward, or westward according to circumstances; investigate its harbors, make charts, and ascertain latitudes and longitudes. Sperm whales, otters, and seals were to be noted; specimens to be collected from the coast, and marine and plant life drawn (one reason for the inclusion in the party of the three midshipmen). The appearance of the land was to be studied, rock samples were to be collected, and meteorological and magnetic records were to be kept. Possession was to be taken of each quarter of the land, and, finally, the character of the inhabitants was to be observed.

Sailing from Valparaiso, Chile, in December 1819, they rounded Cape Horn to reach the South Shetland Islands across Drake Passage on 16 January 1820 at Start Point, Livingston Island, and from there rough charting was carried out as Williams coasted the shore to the east-northeast until it reached North Foreland, the northeastern tip of the archipelago’s largest island. Once past this, Williams headed southeast along the south coast and made a landing on 22 January at King George Bay. Bransfield named the island King George for King George III and took possession of it for Great Britain, remaining there and on nearby Penguin Island for five days. As shown by Bransfield’s surviving chart, for much of the voyage, conditions were foggy and islands and straits difficult to determine. Thus, as Williams coasted further along the southern side of King George Island, Admiralty Bay was mistaken for a strait cutting it in two, and the Fildes, Nelson and English Straits missed altogether, with the result that Bransfield’s chart shows King George in two halves with the western half forming one island with Nelson, Robert, and Greenwich Islands. Farther west, Deception Island could only be discerned as “land . . . lost in a thick fog” (Jones 1982, 75). From there, Bransfield headed south, where visibility improved sufficiently for him to see Tower Island and the north coast of the Trinity Peninsula on 30 January. Since the latter is the northern tip of the Antarctic Peninsula and thus part of the continent, it represented only the second sighting of Antarctica itself, occurring just three days after Bellinghausen’s first sighting.

Bransfield now turned to follow the Trinity Peninsula northward as far as D’Urville Island. Fog continued to be a problem, though through it could be seen “High Mountains, covered with snow” (Jones 1982, 75), which were Mounts Bransfield and Jacquinot. Out in the open sea, fog still persisted as Bransfield tracked the edge of the pack ice until he discovered Elephant and Clarence Islands, the two easternmost members of the South Shetlands Islands. Landing on Clarence on 4 February, he claimed the island for King George, little
knowing that King George III had died on 29 January 1820 and that there was now a new King George, IV rather than III. Still very much aware of Shirreff’s instructions to explore as far as possible to the east and south—there evidently being little to find to the west of Smith’s discoveries—Bransfield made one more attempt to penetrate farther south, reaching 64°50’S on 23 February, now to the east of the Antarctic Peninsula and in the Weddell Sea. He was the first to sail this sea, if only for a short distance. Unable to discover more land, the lateness of the season motivated his decision to return to Valparaiso via Livingston Island. He reached the latter on 18 March and Valparaiso on 15 April.

For many years, Bransfield’s voyage and discoveries were the subject of controversy. Despite the appearance of a detailed account in the Literary Gazette in November 1821 and the survival of Bransfield’s chart in the British Hydrographic Department, Bransfield’s log was lost (not an unusual occurrence), and questions were raised about whether the voyage had even taken place, let alone what had been seen. In these circumstances, claims were put forward that Nathaniel Palmer, not Bransfield, had discovered the Antarctic Peninsula, despite his sighting it only on 17 November 1820.

Bransfield received no further naval postings after Andromache returned to London in August 1821. In later life, he supplemented naval half-pay as a reserve officer by serving as a master in the Merchant Navy. He died on 31 October 1852.

See also: Antarctic Peninsula; Bellingshausen, Fabian von; Clarence Island; Elephant Island; Palmer, Nathaniel; Smith, William; South Shetland Islands; Trinity Peninsula; Weddell Sea

References and further reading:
—. 1982. Antarctica observed: who discovered the Antarctic continent? Whitby: Caedmon.

Brazil

Brazil’s involvement in Antarctic exploration and science began with its ratification of the Antarctic Treaty on 16 May 1975. Consultative status was achieved in 1983, following organization of the first national expedition in 1982, when Barão de Téfê (formerly Thala Dan) made an exploratory voyage to investigate suitable sites for establishment of a station, visiting the South Shetland Islands, Anvers Island, and Coats Land. This careful study resulted in the eventual selection of Admiralty Bay on King George Island, where the summer station Commandante Ferraz was opened in 1984 on the Keller Peninsula, close to the site of the former British Base G. In the following season, refuge huts were erected on Nelson and Elephant Islands, and a field party landed on Adelaide Island to examine the possibilities of setting up a second station.

As part of a national program coordinated by Comissão Intermínisterial para os Recursos do Mar, Brazilian scientists have conducted extensive work in the South Shetland Islands, focused on but not limited to King George, Nelson, and Elephant Islands, where a second field station was erected in 1988–1989. Summer parties have also worked on Adelaide Island, and oceanographical studies have been conducted in Bransfield Strait and the Southern Ocean.

See also: Adelaide Island; Elephant Island; King George Island; Nelson Island

References and further reading:

British Antarctic Survey

Continuing the long tradition of British Antarctic exploration and science, the British Antarctic Survey (BAS) works in areas of Antarctica and adjacent islands falling within the British Antarctic Territory, as well as farther north on South Georgia and the South Sandwich Islands. Prior to 1 January 1962, BAS
was known as the Falkland Islands Dependencies Survey (FIDS) and before that had its origin in the covert Operation Tabarin during World War II. As described in its entry, Operation Tabarin was mounted out of concern that territories claimed by Great Britain might be taken over by Argentina. In response, permanently manned stations—the first in Antarctica—were established at Deception Island, Port Lockroy, and Hope Bay. In July 1945, following the end of the war, Operation Tabarin became a civilian organization administered from Port Stanley in the Falkland Islands and renamed the Falkland Islands Dependencies Survey.

The early FIDS program was essentially similar to its predecessor, though conducted on a larger scale. With both Argentina and Chile disputing British territorial claims, a growing network of stations was established where scientific work was carried out and from where topographic surveys were made of the surrounding areas. In 1957–1958 FIDS operated eleven wintering stations, the largest number opened at one time by any organization.

FIDS retained Tabarin’s alphabetical nomenclature for stations, in which those denoted by letters early in the alphabet generally preceede in foundation those with later letters. Through time, they became known increasingly by their locations. (See Table 5 for a full list of stations operated by BAS and FIDS.)

The FIDS scientific program was significantly expanded in the late 1950s, when ten stations contributed to the International Geophysical Year (IGY)—Admiralty Bay, Argentine Islands, Deception Island, Detaille Island, Hope Bay, Horseshoe Island, Port Lockroy, Prospect Point, Signy Island, and View Point. In January 1959, this program was extended further when FIDS took over operation of the Royal Society IGY station at Halley Bay (Base Z) on the Caird Coast. This station and Faraday in the Argentine Islands (Base F) became the main centers for long-term upper atmospheric research, and it was on the basis of ozone observations made since 1957 at these two stations that the BAS scientists Joe Farman, Brian Gardiner, and Jonathan Shanklin were able to demonstrate the existence of the Antarctic “ozone hole” in 1985.

BAS currently maintains Halley on the Caird Coast and Rothera on Adelaide Island as permanent stations, together with King Edward Point and Bird Island on South Georgia. Since 1995, Signy in the South Orkney Islands has operated as a summer station. For further information concerning exploration conducted from individual stations, see the entries for the regions in which they are located.

See also: Adelaide Island; Alexander Island; Antarctic Peninsula; Anvers Island; Argentine Islands; British Antarctic Territory; Caird Coast; Coronation Island; Danco Coast; Deception Island; Great Britain; Hope Bay; King George Island; Laurie Island; Marguerite Bay; Operation Tabarin; Signy Island; South Georgia; South Sandwich Islands; Trinity Peninsula; Wiencke Island

References and further reading:

British Antarctic Territory
Established as a separate colony within the British Commonwealth by the Order in Council of 26 February 1962,

| Table 5 British Antarctic Stations |
| Nomenclature | Location/Name | Years of Operation |
| A | Port Lockroy, Wiencke Island | 1944–1962 |
| B | Deception Island | 1944–1967 |
| C | Laurie Island, South Orkneys | 1946–1947 |
| D | Hope Bay | 1945–1949, 1952–1964 |
| F | Faraday, Argentine Islands | 1947–1995 |
| G | Admiralty Bay, King George Island | 1948–1961 |
| H | Signy Island, South Orkneys | 1947–1995, 1996 summer station only |
| J | Prospect Point, Graham Coast | 1957–1959 |
| M | King Edward Point, South Georgia | 1950–1982, 2001– |
| N | Anvers Island | 1955–1958 |
| O | Danco Island | 1956–1959 |
| P | Coronation Island, South Orkneys | Hut built in 1946 but never occupied |
| R | Rothera, Adelaide Island | 1976– |
| T | Adelaide Island | 1961–1977 |
| V | View Point, Duse Bay, Trinity Peninsula | Refuge hut built in 1953 and afterward used as an occasional summer station |
| W | Detaille Island, Loubet Coast | 1956–1959 |
| Y | Horseshoe Island, Marguerite Bay | 1955–1960 |
| Z | Halley, Caird Coast | 1956– |

British Antarctic Territory
Established as a separate colony within the British Commonwealth by the Order in Council of 26 February 1962,
which defined the British Antarctic Territory as comprising “all islands and territories whatsoever between the twentieth degree of west longitude and 80th degree of west latitude which are situated south of the 60th parallel of south latitude.” This claim overlaps with those of Argentina (between 25° and 74°W) and Chile (between 53° and 90°W) and together with those claims is suspended but not abrogated under the terms of the Antarctic Treaty.

The British claim to this sector is based on priority of discovery, official publication of claims from 1843, and active administration from 1906. From the perspective of this encyclopedia, the first is of most concern. Claims to the South Shetland Islands were put forward by William Smith on 16 October 1819 (King George Island) and by Edward Bransfield on 22 January and 4 February 1820 on King George and Clarence Islands, respectively. George Powell claimed the South Orkney Islands on 7 December 1821 after landing on Coronation Island. In the Palmer Archipelago, Henry Foster claimed possession when landing on Hoseason Island on 17 January 1829, and John Biscoe claimed Graham Land on 21 February 1832 on Anvers Island. Islands to the east of the Antarctic Peninsula were claimed by James Clark Ross on Cockburn Island on 6 January 1843.

The adoption of the South Shetland Islands as a major center of whaling operations in the first decade of the twentieth century led to the consolidation of British claims through the establishment of the Falkland Island Dependencies under the Royal Letters Patent of 21 July 1908. The administration so established was charged with responsibility for instituting a system of whaling licenses and other measures to regulate whaling within the region claimed for Great Britain. The recognition of this administration by Argentine, Chilean, and Norwegian companies and nationals constitutes an important supporting argument in favor of the British territorial claim. Money raised by the sale of whaling licenses was used to fund a series of expeditions mounted by Discovery Investigations, during which knowledge of the Southern Ocean and of whales in particular was considerably extended.

As originally constituted, the Falkland Island Dependencies extended north to 50°S. With the provisions of the Antarctic Treaty applying south of 60°S, following this treaty’s agreement in 1959, it became necessary for the British government to subdivide the Falkland Islands Dependencies, with territorial claims suspended under the treaty’s provisions in the British Antarctic Survey to the south of 60°S, but remaining in place farther north, where South Georgia and the South Sandwich Islands continue to be administered as a British dependency.

**See also:** Antarctic Peninsula; Argentina; Chile; Discovery Investigations; Great Britain; South Orkney Islands; South Shetland Islands

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**British Graham Land Expedition**

*See Rymill, John*

**Brock Island (Canada)**

Located at 78°00’N, 114°30’W, this member of the Parry Islands lies off the west coast of Mackenzie King Island and north of Prince Patrick Island. It was discovered by Storkerson of Vilhjalmur Stefansson’s Canadian Arctic Expedition on 18 June 1915 and named by Stefansson for Reginald Walter Brock (1874–1935), director of the Geological Survey of Canada. Stefansson returned the following year to make a more detailed survey. Brock is predominantly low-lying and has an area of 400 square miles. Together with adjacent Mackenzie King and Borden Islands, it is one of the least accessible islands in the Canadian Arctic, being surrounded throughout the year by heavy ice.

*See also:* Parry Islands; Stefansson, Vilhjalmur (1913–1918)

**References and further reading:**


**Bruce, William Speirs** (1867–1921)

Bruce was the outstanding British polar scientist of his generation and one of the most effective of all polar leaders. He was also an ardent Scottish nationalist, of whom his biographers wrote “the Scottish thistle, in his keeping, was very thorny” (Brown and Murdoch 1923, 284). It was thanks to Bruce that Scotland launched a national expedition to Antarctica, one whose achievements were certainly comparable and in some respects superior to those of the contemporary national expeditions of Great Britain, Germany, and Sweden. Bruce also participated in and led several Arctic expeditions, particularly to Svalbard, accomplishing notable achievements in the north as in the south.

William Speirs Bruce first went to Antarctica with the Dundee Whaling Expedition (1892–1893). Immediately on his return, he applied to join Henrik Bull’s Antarctic expedition but was unable to reach Melbourne, Australia, in time, so instead he joined Frederick Jackson’s expedition to Franz Josef Land (1894–1897) in which he participated as zoologist and oceanographer, his chief area of scientific interest. Other Arctic expeditions followed to Novaya Zemlya and Kolguev Island in 1898 with the wealthy industrialist Major Andrew Coats— with his brother later to be the chief sponsor of Bruce’s Antarctic expedition—and to Spitsbergen in 1898 and 1899 with Albert I, Prince of Monaco, another influential supporter.

*The Scottish National Antarctic Expedition, 1902–1904*

With a wealth of polar experience behind him, Bruce had applied to join the proposed British National Antarctic Expedition as a possible leader of the scientific party but was ignored by Sir Clements Markham. With Antarctic expedi-
tions being organized by other countries, Bruce decided that Scotland should do so also, and in March 1900 he announced plans for a Scottish National Antarctic Expedition. Because the influential Markham was strongly opposed to this venture, which he feared might divert funds from the British expedition led by Robert Falcon Scott, Bruce limited his fund-raising activities to Scotland, where his expedition received widespread support, especially from the two Coats brothers, Andrew and James.

The 238-ton Norwegian barque Hekla was purchased and renamed Scotia after very extensive refitting. As captain, Bruce appointed Thomas Robertson, an experienced whaler who was well known to him from the Dundee Whaling Expedition, during which he was the only one of the four captains of whom Bruce approved. In addition to the ship's officers and a crew of twenty-five, on board Scotia were Robert Neal Rudmose Brown (botany), Robert Cockburn Mossman (meteorology and magnetics), Dr. John H. Harvey Pirie (physician, bacteriology, and geology), David W. Wilton (zoology), Alistair Ross (taxidermist), and William Cuthbertson (artist). One additional member of the party, who had been hired to maintain morale and act as laboratory assistant, was the bagpipe player G. Kerr, later famously photographed playing his pipes to a penguin strapped to his foot by a rope.

Scientifically, the expedition's prime objective was to conduct oceanographic studies in the Weddell Sea area, with observations also to be made in the rarely visited South Orkney Islands northeast of the Antarctic Peninsula. This region had been chosen after consultation with representatives of the contemporary British, German, and Swedish expeditions. The four expeditions together represented the most concerted effort to date at systematic exploration of Antarctica. Particularly close arrangements were reached with the Swedish expedition of Otto Nordenskjöld, which would be working quite near Bruce off the east coast of the Antarctic Peninsula. Plans were made so that each would come to the other's aid should need arise.

Scotia sailed from the Clyde River, Scotland, on 2 November 1902. After spending three weeks in the Falkland Islands, where a lighthouse was equipped to keep meteorological records, it then headed for the South Orkneys. On 4 February 1903 Bruce landed on Saddle Island, the first to do so since Jules Dumont d'Urville in 1838. Intent on reaching deep into the Weddell Sea, Bruce stayed there only a few hours. Farther south, heavy ice was encountered almost immediately, so that Scotia was unable to cross the Antarctic Circle until 18 February. Scotia was not alone in encountering thick ice in the Weddell Sea at this time. Unknown to Bruce, not far to his west,
Nordenskjöld's ship *Antarctic* had been abandoned on 12 February after being caught in heavy ice pressure. On 21 February, *Scotia* passed 70°S but found it impossible to sail much farther, despite every effort to do so. Bruce had decided that he would winter in the South Orkneys, which *Scotia* reached with some difficulty on 21 March. George Powell and Nathaniel Palmer, the discoverers of these islands, had found safe anchorage at Spence Harbor on the east coast of Coronation Island, but Bruce found this site too exposed. After searching for four days, they found a well-protected harbor on the south coast of Laurie Island, soon to be named Scotia Bay. Just three days later, the bay froze over.

After building a protective bank of snow round *Scotia* for insulation, they tackled their first task—to construct accommodation onshore. A 4.3-meter-square building was erected and named Omond House after R. T. Omond, an enthusiastic supporter of the expedition and first superintendent of the Ben Nevis Meteorological Observatory, where Bruce had worked for over a year. Some distance away, a prefabricated wooden hut was set up for magnetic observations. During its stay, the expedition conducted a detailed survey of Laurie Island, with virtually every part of it visited by sledging parties. The scientists were kept extremely busy. In addition to taking magnetic and meteorological observations, they bore holes through the bay ice so that marine invertebrates and fish could be hauled up for examination. Lichens and mosses were collected by the botanist Brown, and the first systematic observations made of a penguin colony. To facilitate the latter, Bruce gave orders that penguins should not be killed in the vicinity of Omond House so that they would not learn to avoid humans. The most significant findings, however, were those relating to geology. Like South Georgia, the South Orkneys were found to be composed mainly of sedimentary rocks. From this, the expedition's scientists correctly concluded that these islands once formed part of a large landmass, probably a ridge extending east from the tip of Tierra del Fuego through South Georgia, the South Sandwich Islands, and the South Orkneys to the South Shetland Islands and the Antarctic Peninsula. It came later to be named the Scotia Arc and represents the expedition's most important scientific discovery.

Although the expedition was efficient and largely without incident, one tragedy occurred when the chief engineer Allan G. Ramsay died from a heart condition on 6 August. He was buried on Laurie Island beside the mountain named for him.

On 26 November 1903, *Scotia* was again free from the ice. Leaving a party of six behind at Omond House led by Mossman, Bruce now sailed for the Falkland Islands, dredging on the way at the little-known Burdwood Bank, no scientific opportunity ever being wasted during this expedition. At the Falklands, Bruce learned for the first time of the sinking of *Antarctic* and what had happened to Nordenskjöld's expedition. By this time the Swedish expedition had been rescued; otherwise, Bruce would have felt obliged to abandon the remainder of his program and go to Nordenskjöld's aid.

From the Falklands, Bruce sailed to Buenos Aires, which he reached on 24 December after a scare when *Scotia* went aground in the river Plate. Remaining here until 21 January 1904, *Scotia* was placed in dry dock for minor repairs, and Bruce succeeded in persuading the Argentine government to take over operation of Omond House as a meteorological station after the Scottish expedition had departed. In return, Bruce undertook to transport the first party of Argentines to the South Orkneys.

*Scotia* returned to Laurie Island on 14 February 1904, where the wintering party consisting of Mossman, the cook Bill Smith, and the three Argentines—Lucien Valette, Hugo Acuña, and Edgar Szmula—was left behind when it sailed again seven days later. This party was to be relieved by *Uruguay* on 31 December, the first of what was to become annual Argentine supply and relief expeditions to the South Orkneys.

After first completing the survey of Laurie Island by fixing the position of some outlying rocks, Bruce now sailed for the second time into the Weddell Sea, where better ice conditions were found than in 1903. By 1 March, *Scotia* had passed its previous farthest south and was still in open water. The following day, at 72°18' S, 17°59' W, shallow soundings indicated the proximity of land, which was soon sighted from the masthead. From a distance of 2 miles, an ice shelf could be seen stretching far to the south. Bruce sailed for 150 miles along it but was unable to land. Guessing that this coast formed a southern extension to Enderby Land, Bruce named it Coats Land for the two brothers who had sponsored his expedition so generously. His belief that the land formed part of a continent rather than being a volcanic island was confirmed when the dredge brought up sedimentary and metamorphic rocks from the seafloor. Bruce had not expected to meet with land so far north in this region, so close to 68°32' S, 12°49' W, where James Clark Ross had reported finding no bottom at 4,000 fathoms (7,315 meters).

On 7 March 1904 *Scotia* was caught in a blizzard blowing from the northeast and was lucky to be lifted bodily out of the water by the ice rather than crushed within it. This gale continued for two days, leaving the ship wedged into an embayment in the ice shelf. Now at 74°01' S, it looked likely that they would have to winter where they were. Fortunately, on 12 March, the wind changed to the southwest, and, accompanied by a discernible rise in temperature, the ice began to break up. Two days later *Scotia* was free and heading north. One question remained unresolved. How could Coats Land be located so close to Ross's Deep when it had been calculated that no land would be found within 400 miles of it? Despite the lateness of the season, Bruce typically determined to repeat Ross's sounding, finding bottom at 2,660 fathoms (4,865 meters). Ross had been mistaken, probably misled by an undercurrent.
taking out the line. Sounding, trawling, and dredging continued throughout Scotia’s voyages in the Weddell Sea, almost regardless of conditions.

On 5 April, the last large icebergs were sighted as Scotia headed away from Antarctica, first to Gough Island, where a brief landing was made on 22 April, the first by a scientific party; then to the Cape of Good Hope for minor repairs; and finally north to Scotland and a triumphant welcome on 21 July 1904.

Later Expeditions to Svalbard, 1906–1920
Although the Scottish National Antarctic Expedition was undoubtedly Bruce’s greatest achievement, his contribution to polar exploration did not cease there. For the remainder of his life, he continued to edit the scientific results of the Scotia expedition, working at the Scottish Oceanographical Laboratory, which he had founded in 1907, and aided only by a small grant wrung out of the British government with extreme difficulty. With help from Albert I, Prince of Monaco, Bruce also continued to work in the polar regions, leading Scottish parties to Prince Charles Foreland in the Svalbard Archipelago in 1906, 1907, and 1909, during which a comprehensive topographic survey of this island was completed and extensive natural history collections were made. His 1909 expedition was partly sponsored by the Scottish Spitsbergen Syndicate, a mineral prospecting concern of which Bruce was the prime instigator and on whose behalf he asserted mineral rights to the island. This syndicate also funded expeditions in 1912, 1914, 1919, and 1920, during which Bruce surveyed the company’s claims on the Spitsbergen mainland as well as on Prince Charles Foreland.

Bruce never visited Antarctica again, but not for want of trying. In 1908, he published plans for a second Scottish Antarctic expedition, in which he ambitiously proposed crossing Antarctica via the South Pole. As with all his expeditions, much scientific work was to be conducted, but he hoped that such an eye-catching project would ensure public support sufficient to fund the less spectacular science. Feeling constrained, however, to limit himself to Scottish sources only, he never raised the necessary money, and it was left to Sir Ernest Shackleton to pursue an almost identical plan in his famous expedition in Endurance. Bruce died on 28 October 1921, the Scotia reports still incomplete.

See also: Bull, Henrik; Coats Land; Drygalski, Erich von; Dumont d’Urville, Jules; Dundee Antarctic Whaling Expedition; Jackson, Frederick (1894–1897); Laurie Island; Markham, Clements; Nordensköld, Otto; Palmer, Nathaniel (1821–1822); Powell, George; Prince Charles Foreland; Ross, James Clark (1839–1843); Scott, Robert Falcon (1901–1904); Shackleton, Ernest (1914–1916); South Orkney Islands; Weddell Sea

References and further reading:

Brunel chose instead to seek backing in the Netherlands from a consortium of merchants, in which the most prominent figure was Balthasar de Moucheron.

Although initial plans for the expedition were made in 1581, it was not until 1584 that Brunel was finally able to set out for northern Russia. In the meantime, he probably undertook an expedition to Greenland at the request of the Danish king, who was seeking to reestablish contact with his long-lost colonies. Because Norway was part of the Kingdom of Denmark, it was essential to maintain good relations with Denmark, which claimed territorial rights over the Dutch trading post at Kola, and whatever his voyage to Greenland may have achieved—almost certainly very little—it did result in Danish political and financial backing for his expedition.

Probably in the spring of 1584, Brunel was at last able to sail north from the Dutch port of Enkhuiizen. His ship was de Vliegende Draeck. As with much else concerning his life, we have no coherent account of this voyage, and its course must be construed on the basis of tantalizing references. Given his contacts with the Kola trading post, it is likely that he stopped here before sailing east to the straits on either side of Vaygach Island, which he knew to be navigable, having passed through them previously on his way to the Ob’ River. This time, it seems that they were blocked by ice or that his deeper-draft western vessel was unable to navigate the shallows in the same way as the Pomor lodyas. Whatever happened, according to one report, he is next recorded as succeeding in sailing some way into the Kara Sea, having effected the first passage by any ship—western or Russian—through Matochkin Strait, the narrow channel separating the northern and southern islands of Novaya Zemlya. This interpretation is controversial in that Brunel actually reports sailing through Kostin Strait, a name now given to a channel on the western coast of the southern island, which does not reach the Kara Sea. If indeed it was Matochkin Strait, his was a major achievement, not to be exceeded in completing such a voyage, and it was regarded as a matter of some dishonor that no Russian should yet have sailed through the Northeast Passage.

Brunel was not forgotten in the Netherlands. He had fired many with enthusiasm for the possibilities of the Arctic, and it was to be one of them, his principal sponsor de Moucheron, who campaigned effectively in the 1590s for the organization of further expeditions. These we associate with the name Willem Barents.

See also: Barents, Willem; Muscovy Company; Netherlands; Northeast Passage; Novaya Zemlya; Pomor Contribution to Arctic Exploration; Russia; Vaygach Island

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Brusilov, Georgiy
(1884–1914)

On the basis of two reconnaissance voyages as a junior officer on a powerful icebreaker, the Russian naval officer Lieutenant Georgiy Brusilov mistakenly decided that he was capable of making only the second transit of the Northeast Passage. Trapped in an ice floe, his ship drifted north toward the central Arctic Ocean, from where only his navigating officer, Valerian Al’banov and one seaman, eventually reached safety.

Adrift in the Arctic Ocean, 1912–1914

Georgiy L’vovich Brusilov was born into a wealthy and well-connected family. After graduating from the Naval College in 1905, he served in the Russian-Japanese War and then in the Baltic Sea before joining the Central Hydrographic Administration in 1909. Appointed to the new icebreaker Vaygach, he participated in two voyages through Bering Strait in 1910 and 1911, on the second of which (together with its companion icebreaker Taymyr) Vaygach sailed from Vladivostok to the mouth of the Kolyma River (see Vil’kitskiy, Boris). On neither voyage were any difficulties experienced with ice, giving Brusilov the unfortunate impression that ice would pose similarly few problems for his planned navigation of the length of Arctic Russia from Aleksandrovsk in the west—present-day Murmansk—to Vladivostok. At this date, only the Swedish explorer Adolf Erik Nordenskiöld had succeeded in completing such a voyage, and it was regarded as a matter of some dishonor that no Russian should yet have sailed through the Northeast Passage.

Brusilov’s expedition was a private one, funded by his uncle, Lieutenant General Boris Alekseyevich Brusilov, and he applied for leave from the Imperial Russian Navy, with typical optimism thinking that eleven months would be sufficient. He had hoped to purchase two vessels, but his uncle proved less generous than expected, and only one could be acquired, the 231-ton schooner St. Anna, equipped with a 41-horsepower engine. Having noted numerous walruses, bears, and whales during his voyages in Vaygach, Brusilov anticipated giving his uncle some return on his investment through hunting and to this end took with him two harpooners. As navigating officer, he appointed Valerian Ivanovich Al’banov (1881–1919), like Brusilov a graduate of the Naval College but from a less privileged background. Al’banov had paid his way through college by tutoring and selling model ships that he made himself. He had since acquired considerable experience of ice navigation on the estuary of the Yenisey River.
On 10 August 1912, St. Anna sailed from St. Petersburg to follow the Norwegian coast north to Aleksandrovsk, where final preparations were made. Brusilov had expected a medical officer to come aboard there, but when he failed to appear, he invited the nurse, Yermiya Aleksandrovna Zhdanko, to take his place, commenting that “she had completed first-aid courses and knew how to look after the sick” (Barr 1978, 5). Zhdanko was to be the first woman to take part in an expedition to the high Arctic. Departing from Aleksandrovsk on 28 August, they reached Yugor Strait on 15 September, and through it St. Anna entered the Kara Sea. For Brusilov, the extent and thickness of the ice now encountered was completely unexpected. Much worse than anything he had seen farther east, it formed a compact mass only occasionally opened up by the wind. Taking advantage of such opportunities as there were to work St. Anna farther north and east, by mid-October Brusilov was off the west coast of the Yamal Peninsula, and there he began preparations to winter some miles offshore, having gone much less far than he had hoped. Parties were landed to collect driftwood for fuel and investigate the possibilities of building a hut. By late October, however, it was clear that the floe in which St. Anna was embedded was drifting north and away from the coast.

Through the winter St. Anna continued its northerly drift. With coal in short supply and less timber on board than Brusilov had wished, arrangements were made to economize on fuel by quartering the seamen together in the forecastle and two adjacent cabins, while Brusilov, Zhdanko, Al’banov, and the two harpooners were housed in the deckhouse. For entertainment, there was a small library of novels—Fridtjof Nansen’s Farthest North was almost the only work of Arctic relevance—and skiing and skating competitions were held. Preparations were made for a Christmas play. By Christmas, however, the mood on board was bleaker, and a mysterious sickness had begun to spread. Brusilov was worst affected, and for four months, from January through April 1913, kept to his bed, unable even to turn over without assistance. Since it was feared that the illness might be contagious, the other sick were also kept isolated in a hut erected on the ice, which had previously served as a bathhouse. Several bears were killed in early February, and soon afterward the crew’s health began to improve. The sickness was scurvy, but without a doctor on board, no one recognized it as such.

By 22 February 1913, St. Anna was at 77°17’N, 78°15’E. Now north of Novaya Zemlya, Brusilov considered that at this point they had left the Kara Sea for the Arctic Ocean. As spring drew into summer, patches of open water were observed, but there was no sign of St. Anna being released from its floe, despite the crew’s energetic attempts to cut it free. By early September, preparations were being made for another winter, as temperatures dropped and the leads closed over. Many seals had been killed during the summer, so there was no immediate concern over food. More worrying, however, was the continued drift north and now, increasingly, to the west.

By 10 January 1914, St. Anna was at 82°43’N, 64°48’E, some way north of Franz Josef Land. For some time relations between Brusilov and the navigator Al’banov had been tense. Indeed, the two could barely be in the same room together without arguing. At his own request, Al’banov had been dismissed from his post and now approached Brusilov for permission to leave the ship and make his way over the ice to Franz Josef Land. When this request was granted, he began building a kayak and sledge. Thirteen others asked to accompany him, and since it would mean that the food on board would last longer, Brusilov was happy to let them go. He was sure that in time, St. Anna—like Nansen’s Fram—would drift right across the Arctic Ocean to emerge into the North Atlantic. The ten opting to remain would be quite sufficient to crew St. Anna.

Al’banov’s party set out with seven sledges and seven kayaks on 23 April 1914. At this point St. Anna was about 70 miles north of Cape Fligely, the northernmost point of Franz Josef Land. Far from providing a smooth surface for traveling, the ice was badly hummocked and cut across by pressure ridges. After ten days of painfully slow progress, much of which time the ship remained in view, the party was reduced to ten, as one elderly seaman was sent back as unfit and three more opted to return. Much depended on the direction of the wind. Initially, it blew largely from the south, causing the floes to drift faster to the north than the men could move south. Then followed a period of more northerly winds. The danger now was that the ice was drifting consistently to the west, while according to Al’banov’s reckoning—and he had only a map torn from Nansen’s Farthest North to guide him—Alexandra Land lay to his east. Farther west lay Svalbard, but there was no chance of reaching it across the Barents Sea. On 18 June, his suspicions were confirmed, when far to the southeast he saw land, a low rounded ice cap, which he assumed must be Alexandra Land. Not long afterward, two of his party abandoned their kayaks and sledges and attempted to reach land by ski. Al’banov led the remaining seven ashore on 8 July at Cape Mary Harmsworth, the westernmost point of Franz Josef Land, which had very nearly been missed in the strong westerly ice drift. Here they were rejoined by the two others, who had also managed to reach land.

After a few days rest, Al’banov led his men toward Cape Flora on Northbrook Island. It was there that Nansen had met Frederick Jackson in 1896, and Al’banov hoped to find food as well as shelter in Jackson’s hut. It was also the first place where relief ships might search for them. By this time, only two of the kayaks were seaworthy, so Al’banov divided his party, five traveling in the kayaks led by himself and the remaining five following the coast on ski. Only Al’banov and seaman Aleksandr Konrad reached Cape Flora, where they landed on 22 July 1914. In a severe gale the other kayak was blown out to sea, and the ski party failed to make an appointed rendezvous and could not afterward be found. Al’banov and Konrad now had no food
and one shotgun with just forty shells. Fortunately, Jackson’s hut was well-stocked, and Al’banov was already making preparations for the winter when, on 2 August, a ship anchored offshore. It was St. Foka, Georgiy Sedov’s expedition vessel, come to collect fuel by dismantling Jackson’s buildings for firewood.

Al’banov returned to Archangel on 14 September 1914, and Konrad followed soon afterward, the sole survivors out of twenty-four aboard St. Anna. Brusilov’s fate is unknown. Was his ship eventually crushed? Did scurvy or starvation lead to the deaths of all on board? Did they abandon their ship and then attempt to reach Svalbard over the ice? Perhaps signs of their shipwreck will be found someday on a remote coast of northern Svalbard or Greenland, but for now, nothing is known. As for the five missing men who went astray on the way to Cape Flora, a brief unsuccessful search was made by St. Foka and then another shortly afterward by the relief vessel Hertha, which had been sent out to search for Sedov and whose crew learned of the missing men from a note left behind by Al’banov. Although Brusilov had not sailed through the Northeast Passage or discovered any new land, St. Anna’s drift had taken it through “Petermann Land,” a landmass north of Franz Josef Land reported in 1873 by Julius Payer, and Al’banov had sledged across Payer’s “King Oscar Land.” Since no land had been seen in either location, it was conclusively proved that Payer had been mistaken. Today, Al’banov’s account of his journey across the ice is deservedly recognized as a classic.

See also: Alexandra Land; Franz Josef Land; Jackson, Frederick (1780–after 1838); Kara Sea; Nansen, Fridtjof (1893–1896); Nordenskiöld, Adolf Erik (1878–1880); Northbrook Island; Northeast Passage; Payer, Julius; Sedov, Georgiy; Vil’kitskiy, Boris

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Buchan, David (1780–after 1838)
Reports of ice-free seas in high northern latitudes led to the British naval officer David Buchan being sent with two vessels to attempt to reach the North Pole and beyond by sea. His mission was unsuccessful; he failed to penetrate the polar pack north of Spitsbergen.

An Attempt to Reach Bering Strait Via the North Pole, 1818
With the conclusion of the Napoleonic Wars in 1815, resources were available for further exploration of the Arctic. The key figure at the British Admiralty was John Barrow, whose role is described under his name. Barrow was successful in persuading the Admiralty to sponsor two expeditions in 1818: one, led by John Ross, resumed the search for the Northwest Passage; the other, led by David Buchan, sought a high-latitude route across the Arctic Ocean to Bering Strait and the Pacific Ocean. Encouraged by reports from whalers of unusual quantities of ice being released into the Atlantic Ocean during the previous three years, Barrow reasoned that conditions were highly propitious for a polar voyage, further confirmation being provided by the whaler scientist William Scoresby, who in 1817 had found the coast of East Greenland largely free of ice between 74° and 80°N. Barrow was prepared to believe reports that in the past some whalers had reached as far north as 84°N and might have gone farther, had exploration rather than whaling been their prime concern.

Although an attempt to sail directly across the Arctic Ocean might seem extraordinary from today’s perspective, Barrow— influenced by the ideas of Daines Barrington—believed in the existence of an “open polar sea.” This sea, however, was surrounded by a barrier of pack ice, which was especially dense near land, sea ice being believed to be primarily derived from land rather than forming in the open ocean. Thus the failure of Constantine Phipps to get beyond 80°31’N on an expedition with not dissimilar objectives in 1773 could be explained, in Barrow’s view, by Phipps’s entanglement in ice in shallow water off Spitsbergen in the late summer, at a time when open water could have been found farther from land.

Commander David Buchan, the chosen leader, had an unusual service history in that much of his time had been spent in Newfoundland, where he had led two expeditions deep into the interior to search for the Beothuk Indians, who were believed to be close to extinction, following many years of conflict with European settlers. On his first attempt, Buchan had succeeded in surprising a party of Indians asleep. Initially friendly relations were established, but they soon broke down, resulting in the death of two of his men. Although this experience was not immediately relevant to the task in hand, Buchan had proved himself a leader of resource and initiative, qualities that were likely to be in demand on the coming voyage.

Buchan was given command of two specially strengthened ships, the 370-ton barque HMS Dorothea and the 250-ton brig HMS Trent. Lieutenant John Franklin, subsequently a famous figure, was his second-in-command as captain of Trent. The complement of ninety-six men included Lieutenant Frederick William Beechey and Midshipman George Back, who, like Franklin, featured prominently in later expeditions. None of the naval officers had Arctic experience, so four ice pilots were hired from whalers familiar with the waters off Spitsbergen far north of Norway. No expense was spared in providing the vessels with the best navigation and scientific equipment, and since a long voyage was envisaged, supplies were loaded sufficient for two years.

Setting out from London on 25 April 1818, Dorothea and Trent were off Bear Island, the southernmost island in the Svalbard Archipelago, by 24 May. Four days later they were separated in a gale but met up again not long afterward off their prearranged rendezvous of Magdalena Fjord, northwestern
Spitsbergen. After spending several days surveying the harbor, Buchan set out again on 7 June, only to become beset in the ice. It was already apparent to all on board that Barrow's hopes of an easy passage through the pack ice to the open polar sea were optimistic in the extreme, and by 28 June Buchan was relieved to return to the safety of Fair Haven, just north of where he had set out. There he remained until 6 July hoping for a reduction in the ice. It seemed unlikely, however, since ice could be seen extending to the horizon from high ground. A further attempt would nevertheless have to be made, and having put to sea, Buchan was surprised and pleased to note signs of the pack breaking up, with channels opening up toward the north, into which he now directed his vessels. By evening, these channels were beginning to close, and Dorothea and Trent had to be warped through to their northernmost position of 80°34'N. Here, Buchan found himself completely surrounded by ice, which to his mortification drifted more rapidly to the south than his vessels could be warped in the opposite direction. By 19 July, it was clear that any attempt to get farther north was futile. Because the vessels had already suffered some damage from ice pressure, Buchan determined to turn back to seek the open sea some 30 miles away and make another attempt to the east of Spitsbergen. It took nine days before Dorothea and Trent could be extricated from the ice. Not long afterward, they were caught in a southwesterly gale that drove them among the furious breakers beating against the edge of the pack. With heavy slabs of ice heaving around them and battering their hulls, both vessels incurred serious damage before the winds moderated and they were able to make their way back to Fair Haven. Buchan's plans for further exploration were now abandoned. Dorothea and Trent were patched up as best they could be before setting out for London on 30 August, where they arrived on 22 October 1818.

After the expedition Buchan returned to Newfoundland, where he was involved in further attempts to establish friendly relations with the Beothuks, none of which met success. Hostility between the Indians and the Europeans was simply too deeply ingrained, and some time in the 1820s, the last Beothuk died, her people's numbers diminished beyond recovery by starvation and disease, with not a few murdered by European settlers.

Buchan's expedition was the last organized by the Royal Navy in the expectation of sailing across the Arctic Ocean. The next naval expedition to this region sought to reach the North Pole over the ice using boats and sledges and was led by Edward Parry in 1827.
Bulgaria
Bulgaria’s involvement in the exploration and scientific study of Antarctica began with ratification of the Antarctic Treaty on 11 September 1978. Consultative status was not achieved until 25 May 1998, following a decade of interest on the part of Bulgarian scientists. In 1987–1988, two Bulgarians investigated the possibility of establishing a station on Alexander Island. Maintaining a station so far south would have entailed considerable logistical difficulties and consequent expense, so instead a refuge hut was built at Johnsons Dock on Livingston Island in the South Shetland Islands, assisted by the Thirty-third Soviet Antarctic Expedition. Initially called Sofia University, the hut was later expanded into a summer station and renamed St. Kliment Ohridski. The national program is organized and coordinated by the Bulgarian Antarctic Institute (established in 1993), with logistical support for the annual expeditions provided by the Spanish Antarctic program.
See also: Alexander Island; Livingston Island; Russia; Spain

Bull, Henrik 
(1844–1930)
One of several Antarctic whaling expeditions sent in the 1890s to investigate reports by James Clark Ross of plentiful right whales in the Ross and Weddell Seas (see also Dundee Antarctic Whaling Expedition and Larsen, Carl Anton), Henrik Bull’s expedition is most noteworthy for a landing made at Cape Adare, which was claimed as the first on the Antarctic continent, and for introducing to polar exploration the figure of Carsten Egeberg Borchgrevink.

First Landing on the Antarctic Continent, 1893–1895?
Henrik Johan Bull, a Norwegian emigrant to Australia and businessman, campaigned tirelessly for an expedition to be mounted to Antarctica. Having appealed unsuccessfully to the Australian Antarctic Committee and Tasmanian government, he returned to Norway in 1893, where after a fifteen-minute conversation with the whaling entrepreneur Svend Foyhn, he obtained both funding and a ship. The latter was the 226-ton steam-whaler Kap Nor, now suitably renamed Antarctic, and was captained by Leonard Kristensen. Antarctic carried eleven harpoon guns and eight whale boats, for this expedition was intended to concern itself with whaling in the Southern Ocean, but also to make a brief sortie south to Antarctica. Foyhn appointed Bull “manager” and Kristensen “master,” but the lack of a clear division of responsibilities between the two subsequently led to difficulties.

Antarctic left Tønsberg, Norway, on 20 September 1893, bound for the Kerguelen Islands in the southern Indian Ocean via the Atlantic island of Tristan da Cunha. No right whales were seen off Kerguelen, where the expedition remained from 19 December 1893 to 3 February 1894, killing over 1,600 elephant seals for their oil and skins. Melbourne, Australia, was reached on 23 February. Bull now remained in Australia making preparations for the Antarctic leg of the voyage the following season, while Kristensen, intent on whaling, sailed for Tasmania and farther south on 12 April. On 21 August Antarctic returned, having caught only one whale, a failure that Bull attributed to Kristensen’s incompetence, though it is worth recalling that at the same time neither Carl Larsen nor the Dundee Antarctic Whaling Expedition succeeded in taking any whales at all. More serious was substantial damage to the ship, incurred when Kristensen had run aground at Campbell Island. The cost of repairing this damage and purchasing provisions for the Antarctic voyage used up most of the profits obtained from sealing at Kerguelen.

Two naturalists, William Speirs Bruce and Eivind Astrup, had applied to Foyhn for permission to accompany the expedition. In the event, neither could reach Melbourne in time to join the ship. With no naturalist on board, a Norwegian emigrant to Australia, Carsten Egeberg Borchgrevink, applied for the post. Borchgrevink had no scientific qualifications, but thinking that he would provide congenial company, Bull took him on as an ordinary seaman instead.

On 26 September, Antarctic sailed from Melbourne, visiting Tasmania and Macquarie and Campbell Islands on the way south and searching for the mythical “Emerald Island.” New land, “Svend Foyhn Island,” was discovered on 6 November, only to prove to be an iceberg. (That is also the most likely explanation for “Emerald Island” and many other “islands” reported but never seen again in these latitudes.) The next day, further progress was halted abruptly when the propeller was discovered to be loose, the result of Antarctic’s grounding on Campbell Island and a problem that had been reported to Kristensen at the time but ignored, at least according to Bull. The necessary repairs were made at Port Chalmers, New Zealand, where two members of the crew deserted and seven others resigned. Concerned that Foyhn, the expedition’s sponsor, would cancel the voyage when he heard about the fiasco, Bull managed to delay the release of news until after the ship had sailed. When Foyhn did hear, he reacted exactly as Bull had predicted. Had he not been on his deathbed, the expedition would most certainly have been ordered to return.

New Zealand was left behind on 30 November 1894. On 8 December, the thick belt of pack ice surrounding the Ross Sea was reached, and during a slow thirty-six-day passage through it, a dispute arose between Bull and Kristensen about whether...
they should continue south toward Antarctica (Bull) or simply hunt for seals in the pack ice and then head north (Kristensen). It was an argument finally won by Bull on the basis that Foy's instructions to proceed through the pack to assess the stocks of right whales in the Ross Sea must be obeyed. Open water was finally reached on 13 January 1895. Theirs was the first exploring expedition to enter the Ross Sea since that of James Clark Ross fifty-three years earlier. On 17 January, the mountainous coast of Victoria Land came into view. Bull hoped to effect a landing at Cape Adare, but close approach there was prevented by ice flowing out with the tide from Robertson Bay. Two days later, a landing was made on Possession Island, where Borchgrevink distinguished himself by finding a lichen growing among the rocks, the first plant found south of the Antarctic Circle. Farthest south at 74°00'S was achieved after another failed attempt to land on the mainland, this time at Cape Hallett. Finally, on 24 January, a boat with seven men managed to reach the shore at Cape Adare, soon to be claimed as “the first landing on the Antarctic continent,” although in fact it was long preceded by landings made in 1821 on the Antarctic Peninsula by the sealers John Davis and Andrew McFarlane and in the Ross Sea by Mercator Cooper. Who now was first out of the boat? Kristensen, Borchgrevink, and a seaman, Alexander H. F. von Tunzelman, all claimed to have been the first to land, and Borchgrevink in particular was to build a career for himself on his claim. Onshore for just two hours, they erected a pole crowned by a box inscribed with ship's name and date and painted in the national colors of Norway.

Heading north from Cape Adare, the zone of pack ice was negotiated this time with ease and course set for the Balleny Islands in the hope that, with no right whales to report from the Ross Sea, successful sealing off Balleny would redeem the voyage as a commercial venture. Threatening weather forced this plan to be abandoned. Attempts were next made to reach “Royal Company” and “Emerald” islands, both known now not to exist but that might have provided good sealing opportunities, had they been found. On 4 March the coast of Tasmania was sighted along with many sperm whales, but only one could be caught. They reached Melbourne on 12 March.

Initially in collaboration with Borchgrevink, Bull planned a second Antarctic expedition, but the two fell out as Bull became increasingly aware of the extent to which Borchgrevink was claiming credit for the expedition's achievements, as if he were leader rather than an ordinary seaman. The resulting acrimony also bedeviled Borchgrevink's attempts to organize his own expedition (see the entry under his name).

See also: Borchgrevink, Carsten; Cooper, Mercator; Davis, John (fl. 1820); Dundee Antarctic Whaling Expedition; Larsen, Carl Anton (1892–1893, 1893–1894); Ross, James Clark (1839–1843); Victoria Land; Whaling and Antarctic Exploration

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Button, Thomas (d. 1634)

The expedition of the Welsh seaman Thomas Button to Hudson Bay was organized in a frenzy of speculation following the supposed discovery of a long-sought seaway to the Far East. Button failed to find this seaway, but he did prove almost beyond doubt that Hudson Bay was an inland sea and that, if it connected with the Pacific Ocean at all, it did so only through some channel to its west.

Speculative Fever Survives Discovery of Hudson's Bay's West Coast, 1612–1613

Tremendous excitement was aroused in England by the return of eight survivors from an expedition to the Arctic in September 1611. Not only had they stories to tell of starvation, mutiny, and the casting adrift and presumed death of their leader, the well-known Henry Hudson, but, most dramatically of all, they brought news of the discovery of the Northwest Passage, which English navigators had sought in vain for 100 years. It now appeared that England would at last be able to trade directly with the rich lands of the Far East and that the fortunes of many would be made. Merchants and courtiers competed in a rush to invest in a new expedition, not long afterward forming themselves into the Company of the Merchant Discoverers of the North-West Passage (Northwest Company) with Henry, Prince of Wales, as “supreme protector.” The Welsh naval officer Thomas Button was appointed leader.

Prince Henry took a strong personal interest in the expedition and signed the letter of instructions on 5 April 1612. It made no reference to searching for Hudson, who was presumed dead, but expressed the clear hope that with the passage already found, all Button need do was sail through Hudson Strait and from there choose his course according to the direction of the tide. He was specifically informed not to attempt new discoveries but to concentrate on pursuing the passage to its end. Once he was sure he had reached it, he was to send back a pinnace with the news so that trading expeditions could be organized immediately.

On 14 April 1612, Button sailed from London with two ships, Resolution and Discovery. Those with him included the pilot Robert Bylot and Abacuk Pickett, both of whom had been with Hudson, as well as William Gibbons and William Hawkeridge, who, like Bylot, were later to lead expeditions to Hudson Bay. John Ingram captained Hudson's former ship Discovery. Having negotiated the congested ice and powerful cur-
rents of Hudson Strait, Button anchored at the Digges Islands, where four of the mutineers had been killed by Inuit. Five of his men were to suffer the same fate. This calamity may have made him anxious to leave this region as soon as possible, for, contrary to his instructions, he made only cursory tidal observations before setting off across Hudson Bay in a southwestern direction in every expectation of a long oceanic voyage ahead of him. It was not to be. After discovering Coats Island en route, the expedition was forced to halt abruptly when the west coast of Hudson Bay was encountered at 60°40′N. This land Button patriotically named “New Wales,” “Hopes Checked” being his name for the particular point at which the coast was met. At this stage, Button was by no means dismayed. He knew that in places Magellan Strait formed but a narrow, winding channel and yet provided a navigable route connecting the Atlantic and Pacific Oceans in the Southern Hemisphere; quite possibly the same was also true in the north. He now sailed south, looking for just such a channel leading west, eventually reaching the mouth of the Nelson River on 15 August. Realizing that he would need another season to pursue his explorations fully, Button selected this spot as his winter station.

At 57°N Button was no farther north than Aberdeen, Scotland, and he was ill-prepared for the severity of the North American continental winter. So many of his men died that he decided to abandon Resolution. Although cold and scurvy may have played their part, so may also have trichinosis, a parasitic disease caused by eating inadequately cooked polar bear meat.

Not until late June or early July 1613, when the ice finally released Discovery, was Button able to resume exploration. With the coast turning hard to the east beyond his winter station, there seemed little prospect of a passage in that direction, forcing him to sail back the way he had come and then beyond to reach his farthest north at 65°N. Here, he spent several days exploring what he eventually concluded to be a deep bay but was later proved a strait, Roes Welcome Sound. Believing that it was impossible to sail farther north, on 29 July Button turned southeast to follow the west and then southwest coast of Southampton Island, a course that led him via Coats and Mansel Islands back toward Hudson Strait. Before returning through the strait, he landed on Mansel Island to take on fresh water and to make observations on the tides, which he had failed to do before. These studies and those undertaken later on Nottingham Island showed strong tides coming from the northwest, the opposite direction to that he had investigated, a finding that revived his optimism in the existence of a passage, since such tides must surely emanate from the Pacific rather than the Atlantic Ocean. This then was the news that Button brought back in September to the enthusiastic speculators in London: no passage was to be found to the southwest of Hudson Strait; the next expedition must search to the northwest. It was most probable that the passage did exist.

Button was later knighted and rose to the rank of admiral. He did not, however, lead the next expedition to Hudson Bay. That job was given to William Gibbons, an experienced seaman and cousin of Button’s who had served on his expedition as a volunteer. What little there is to tell of his expedition may be told here. Gibbons was caught up in heavy ice off Hudson Strait. Unable even to enter, he was instead swept south to the Labrador Coast. Here at about 58°30′N, shelter was found in an inlet—“Gibbons his Hole” as it was named by his crew—until the ice finally released him ten weeks later. By then, it was too late in the year for exploration, and Gibbons was forced to make an ignominious return. The failure of this expedition, however, did nothing to dampen the enthusiasm of the speculators, and the next year another expedition was sent out, led by Robert Bylot.

See also: Bylot, Robert; Hudson Bay; Hudson, Henry (1610–1611); Munk, Jens; Northwest Passage

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Byam Martin Island (Canada)
Located at 75°20′N, 104°30′W, this member of the Parry Islands lies north of Melville Sound in Byam Martin Channel between Melville and Bathurst Islands. It has an area of 375 square miles. It was discovered on 27 August 1819 by Edward Parry, who named it for Vice Admiral Sir Thomas Byam Martin (1773–1854), comptroller of the Royal Navy. A landing was made the following day to make astronomical observations, and evidence was found of former occupation by Paleoeskimo peoples. There is no record of the Inuit inhabiting the island within historic times.

Byam Martin was next visited in 1851, when its coastline was searched for signs of Sir John Franklin by sledging parties from Horatio Austin’s expedition. Landing on 1 May 1851, Leopold McClintock surveyed the south coast. One of his party, the surgeon Dr. Abraham Bradford, completed a circuit of the island. It was claimed for Canada in 1906, when Joseph-Elzéar Bernier landed at Cape Gillman.

See also: Austin, Horatio; Bernier, Joseph-Elzéar; McClintock, Leopold; Parry, Edward (1819–1820); Parry Islands

References and further reading:

Bylot Island (Canada)
Located at 73°30′N, 79°00′W, this mountainous island of 4,273 square miles is separated from Baffin Island by Navy Board Inlet, Eclipse Sound, and Pond Inlet. Apart from the lowland occupying the southwest corner, it is rugged throughout and has mountains rising to 2,060 meters.

Long familiar to Pond Inlet’s Inuit inhabitants, Bylot Island was first seen by explorers when William Baffin and Robert Bylot discovered Lancaster Sound on 12 July 1616. The first landing was made by John Ross on 1 September 1818 on the northeast coast at Possession Bay. A flagstaff was erected on Possession Mount and the land claimed for Great Britain. Sited at the entrance to Lancaster Sound, Possession Bay was visited by many later expeditions. First to do so was Edward Parry, on 31 July 1819, shortly before discovering Navy Board Inlet. Returning south the next year, he noted that Pond Inlet extended far inland and considered it probable that it connected with Navy Board Inlet or else with Admiralty Inlet farther west. In either case, Possession Bay lay on an island, though it was not named for Baffin until insularity was confirmed in 1872 by the whaler William Adams.

Pond Inlet was first visited by whalers in 1819, who then extended their operations to Lancaster Sound in 1832. Their arrival came just in time for John Ross, who was rescued in 1833 from northwest Bylot Island by the whaler Isabella. Possession Bay was the first place searched by Sir James Clark Ross in 1848 for signs of Sir John Franklin. By 1850, it was clear that Franklin had succeeded in sailing through Lancaster Sound and must be looked for farther west. Two other expeditions visiting Possession Bay during the Franklin search were James Saunders (North Star) and Charles Forsyth (Prince Albert) in late August 1850, both on their way home. Bylot Island was formally claimed for Canada by Joseph-Elzéar Bernier on 21 July 1906, when he landed to take possession.

Bylot’s formidable interior has been explored by few. In 1939, Patrick Baird made the first attempted crossing on a solo dogsled journey. Starting out from the south coast, he was halted by soft snow on the north-flowing glaciers but did achieve the first ascent of Mount Thule, one of the island’s highest mountains. Katherine Scherman (1954) describes a three-person ornithological expedition to the island in 1954, during which another ascent was made of Mount Thule. The first crossing of the shorter north-south axis was made by Harold Tilman and Bruce Reid in 1963. Many mountains inland bear names given during Rob Kelly’s first west-east traverse in 1977, when a number of first ascents were made. Since 1999, Bylot has been part of Sirmilik National Park.

See also: Baffin Island; Baffin, William; Bernier, Joseph-Elzéar; Bylot, Robert; Lancaster Sound; Parry, Edward (1819–1820); Ross, James Clark (1848–1849); Ross, John (1818, 1829–1833); Whaling and Arctic Exploration

References and further reading:

Bylot, Robert
(fl. 1610–1616)
The English navigator Robert Bylot led two expeditions to the Northwest Passage and participated in three others, the first being the famous last voyage of Henry Hudson in 1610–1611. It is perhaps because of persistent doubts about his conduct during this expedition that Bylot’s own contribution to the exploration of the Canadian Arctic has been under regarded. On his own expeditions, he was fortunate in having to assist him the highly gifted pilot William Baffin. Whereas Baffin’s name is memorialized by Baffin Bay and Baffin Island, Bylot has only Bylot Island to commemorate him, and it might be argued that the sheer disparity in size between Baffin and Bylot Islands preserves a somewhat distorted perception of the significance of the two men.

Second-in-Command of a Mutinous Crew, 1610–1611
The story of Hudson’s famous voyage of 1610–1611 is told under his name and can only be repeated here insofar as it casts light on Bylot personally. Bylot was appointed mate
shortly after *Discovery* had entered Hudson Bay. As far as can be established, he performed creditably in this capacity. Shortly before leaving winter quarters in James Bay, however, he was mysteriously removed from this post and John King appointed in his place. We have no access to Hudson's reasoning, but we do know the reaction of the crew through the journal of Abacuk Prickett. John King is there referred to as “illiterate” and the opinion expressed that Hudson appointed him to ensure that he alone knew exactly where they were. With stocks of food almost exhausted, most of the crew were desperate to return to England, but it is probable that their captain was determined to continue exploration in the belief that the long-sought Northwest Passage was all but found. Bylot's reactions are unrecorded. He was not one of the core mutineers participating in the midnight oath, but neither apparently did he take any action on Hudson's behalf, once Bylot became aware of the mutiny. It is likely that he shared the view that Hudson's mania for discovery was placing all their lives in jeopardy. With Hudson and eight others cast adrift in the shallop, the first action of Henry Greene, leader of the mutineers, was to reappoint Bylot mate in the belief that he alone had the navigational skills to find their way back to Hudson Strait. Greene's confidence was repaid when Bylot insisted on sailing northeast, despite the contrary views of others. Across the Atlantic Ocean, with food so scarce that even candles were included in the rations, it was Bylot's dogged determination and good seamanship that alone got the survivors home. As second-in-command of a mutinous crew and the senior survivor, Bylot's position on arrival in England was clearly subject to intense suspicion, and he and the other survivors were repeatedly cross-examined. His trump card, however, was to proclaim that Hudson had discovered the Northwest Passage. With speculative fever rife in London and merchants and courtiers hurrying to invest in a new expedition, Bylot's presence on board was considered essential by all, and he thus escaped punishment.

**Following the Tides in Search of the Northwest Passage, 1615**

By 1615, Bylot's dubious role in the Hudson mutiny was largely behind him, and he had since served as pilot on two expeditions to Hudson Bay. On the first, Thomas Button had discovered the west coast of Hudson Bay, thus proving Hudson's supposed entrance to the Pacific Ocean to be an inland sea. Despite this setback, Button returned to England confident of the Northwest Passage's existence after tidal observations appeared to indicate that this passage lay to the north of where he had searched. Bylot participated in William Gibbons's expedition the following year, but it was prevented from investigating Button's tide when the ship got caught up in ice off Hudson Strait (see Button, Thomas). Despite these disappointments, hopes continued high among members of the Northwest Company that these initial problems would soon be overcome and a practical route for trading vessels established between London and the Far East. The now very experienced Bylot was charged with leading the next year's expedition, which, like that of Gibbons, was to investigate the source of Button's tide. He was assisted by the highly capable William Baffin, who compiled an excellent chart of their explorations and wrote the official account.

On 16 March 1615, Bylot and Baffin sailed from London in the 70-ton *Discovery*, crewed by fourteen men and two boys. By 6 May, they were within sight of Greenland, but not until 1 June were they able to anchor off Resolution Island at the mouth of Hudson Strait, after making slow passage through the great quantities of ice brought down through Davis Strait. Because Hudson and Button had both sailed along the southern side of Hudson Strait, Bylot chose a more northerly course, giving Baffin the opportunity to chart the south coast of Baffin Island for the first time. By early July, the customarily strong currents and heavy ice of the strait had been negotiated and its western termination reached. Mill Island was discovered, and several days were spent in the vicinity of Salisbury and Nottingham Islands, making careful observations of the tide. These observations continued as they headed west along the northeast coast of Southampton Island, until they reached what they took to be an ice-choked bay on 13 July. In fact, they had happened upon Frozen Strait, a channel rather than a bay, but one that was not sailed through until 1821 by Edward Parry, an explorer who subsequently confirmed the general accuracy of Baffin's coordinates and tidal observations. With no sign of a passage in this direction, *Discovery* was turned about to anchor soon afterward at Cape Comfort and Seahorse Point on Southampton Island and then between 17 and 27 July on Nottingham Island, where further tidal observations were undertaken. Together with a final set of observations made on the Digges Islands, they proved beyond doubt that Button's northwesterly tide was a local phenomenon and that the main source of tides was the Atlantic Ocean to the east rather than the hoped-for Pacific Ocean to the west. The direction of the tides thus provided no proof of a passage or any indication as to where it might be sought, though they implied that the Pacific Ocean, if reachable, was still some way off. On 30 July, Bylot set sail for England and reached Plymouth on 8 September.

Baffin concluded his official account with a strong recommendation to the expedition's sponsors, the Northwest Company, to seek the passage not through Hudson Strait but Davis Strait. This advice was acted on the following year. Although *Discovery* was again captained by Bylot, the great voyage of 1616 is so indelibly associated with Baffin that its description is treated here under his name.

See also: Baffin Island; Baffin, William; Button, Thomas; Hudson, Henry (1610–1611); Hudson Strait; Northwest Passage; Parry, Edward (1821–1823)
References and further reading:

Byrd, Richard (1888–1957)
The American naval officer and pioneer aviator Richard Evelyn Byrd is simultaneously one of the greatest and one of the most controversial figures in polar exploration. He is controversial because there are very real doubts about whether he did in fact reach the North Pole in 1926 as claimed, but he is also undoubtedly great because of his unparalleled contributions to the exploration of Antarctica in a series of expeditions from the late 1920s through the 1950s.

The Byrds are among the most influential of all Virginia families. Generations of Byrds dating back to the seventeenth-century colonel William Byrd have been prominent participants in state politics, and Richard’s elder brother Harry became one of the most powerful senators in Washington, D.C. Richard Byrd certainly benefited from such contacts, which often opened doors to him likely to have remained closed to others. Knowledge of his especially privileged position, however, also won him enemies, particularly among those jealous of his rapid promotion on the basis of his achievements as an explorer, despite his early retirement from active naval duty following a sporting injury. All this is part of the essential background to understanding Byrd’s polar career.

In 1924, Lieutenant Byrd was appointed navigator of the U.S. airship Shenandoah on a proposed flight across the Arctic Ocean from Alaska to Spitsbergen. Although this flight never took place, Byrd’s interest in the Arctic was sufficiently aroused for him to begin plans for an expedition of his own, which were eventually merged with those of Donald MacMillan, who was to lead an expedition to northwest Greenland. Byrd was given command of a U.S. naval flying unit equipped with three Loening biplane amphibians. On his own expedition he had planned to look for new land in the Arctic Ocean and possibly attempt a flight to the North Pole. Under MacMillan’s direction, he now conducted a series of reconnaissance flights designed to investigate the feasibility of establishing a base on Axel Heiberg Island north of Canada, which MacMillan planned to occupy next year so long as it could be supplied by air from Etah, northwest Greenland, the closest point reachable by ships. Despite bad weather, Byrd’s planes flew more than 5,000 miles, during which some 30,000 square miles of land were sighted from the air. Much of it had not been seen before, particularly in Ellesmere Island but also on the Greenland ice sheet, which Byrd was the first to overfly on 22 August 1925. Among the naval personnel assigned to his unit was Floyd Bennett, ostensibly a mechanic but also an excellent pilot, who soon became Byrd’s chosen flying partner.

First Flight to the North Pole, 1926
Having been thwarted in his plans to fly to the Pole in 1925, Byrd now sought sponsors for a private expedition. Point Barrow, Alaska, was too far from the Pole, and the beach at Etah was inadequate for takeoff by a heavily loaded plane, so Byrd decided to make his attempt from King’s Bay, Spitsbergen, which also had the advantage of being reachable by ship much earlier in the year, when flying conditions were better. He had funds for just one aircraft, a tri-motor Fokker VII-3m monoplane powered by Wright Whirlwind 220-horsepower engines. He named it Josephine Ford for the three-year-old daughter of Edsel Ford, one of his leading backers. Most of the fifty expedition members were unpaid volunteers, many of them drawn from the ranks of the U.S. Naval Reserve.

On 5 April 1926, the expedition sailed from Brooklyn, New York, in the steamer USS Chantier, leased from the Federal War Shipping Board. Reaching King’s Bay on 29 April, Byrd found Roald Amundsen and Lincoln Ellsworth already there waiting the arrival of their airship Norge. A tense situation developed in which the Norwegian gunboat Heimdahl refused Chantier
access to the coaling station, the only place where the plane could be landed. To the Americans, it seemed that the Norwegians were bent on ensuring that their man got a chance at the Pole first, but they were circumvented by the resourceful Byrd, who fashioned a raft out of the ship's boats on which *Josephine Ford* was floated to the shore in a risky maneuver through drifting ice. As the plane was finally hauled safely ashore, Amundsen's men lined up to applaud. Whatever the attitude of the Norwegians aboard *Heimdal*, Amundsen himself felt unthreatened by Byrd's expedition. His aim was to be first across the Arctic Ocean. Although he would naturally prefer to be also first to the Pole, it was not his primary objective.

The landing strip was 1 mile away from the ice foot where *Josephine Ford* was brought ashore, and it took several days of back-breaking labor to drag the ship there up a long slope. The first attempted takeoff went badly when *Josephine Ford* failed to get off the ground and plunged into a snowdrift. Byrd was exceptionally lucky to do no more than break a ski and damage the landing gear. Two more attempts ended in failure until Bernt Balchen, a Norwegian mechanic with Amundsen, showed Byrd's men how to fashion a ski sufficiently strong to enable the plane to get into the air and how to reduce friction by coating the ski with a special resin. A trial flight demonstrated that *Josephine Ford* had sufficient capacity to reach the North Pole in a single flight, causing Byrd to abandon his previous plan for an intermediate landing at Cape Morris Jesup, North Greenland. Now, he would head straight for the Pole. The first attempt was made on 8 May, but the plane was too heavy to get into the air. He planned to try again the next night after first reducing the fuel load and further smoothing and extending the runway.

At 12:50 A.M. on 9 May 1926, *Josephine Ford* finally took off for the Pole, with Bennett at the controls and Byrd navigating. Within an hour, they were out over the pack, flying at 600 meters. Visibility was excellent, and they could see 50 miles to either side. There was no sign of any land. About an hour from the Pole, Byrd noted a bad oil leak in the starboard engine. Bennett suggested that they land to fix it, but mindful of Amundsen's experience the previous year, Byrd considered it too risky. The ice beneath might look smooth from their present altitude, but close up, it was riddled with ridges and hummocks, not to mention cut through by leads of open water. According to Byrd's published account, at 9:02 A.M. they were over the Pole. To make certain of his prize, Byrd checked his calculations again, flew on a few more miles and then asked Bennett to fly in a large circle and then head back. Thirteen minutes later they were on their way to Spitsbergen, having abandoned the plan to return via Cape Morris Jesup because of the oil leak. Amazingly, the starboard motor continued to operate despite the leak, which eventually ceased. A tail wind now speeded their flight back. After they had been flying at 100 miles per hour for some hours, Spitsbergen came in view. *Josephine Ford* finally slid to a halt at King's Bay, fifteen hours, fifty-two minutes after takeoff. Among the first to congratulate Byrd were Amundsen and Ellsworth.

Almost immediately after the flight, rumors spread that, despite his claim, Byrd had not reached the Pole. At this stage, the only reason for doubting his word was the duration of the flight, which did not seem sufficient given knowledge of his plane's maximum speed. This, of course, Byrd explained by his good fortune in benefiting from a strong tailwind back from the Pole. One of those who had doubts was the Norwegian mechanic Balchen, without whose help Byrd might not have got airborne in the first place. Realizing his exceptional quality, Byrd soon afterward added Balchen to his team, and he was to spend many hours flying *Josephine Ford* with Bennett and to become thoroughly familiar with its capabilities. This knowledge increased his doubts, which were confirmed—at least according to Balchen—when Bennett in an unguarded moment let slip that he and Byrd had not in fact reached the Pole. In 1960, the Swedish meteorologist Gösta Liljequist published an analysis of weather conditions pertaining during Byrd's flight, raising serious doubts about whether they had been as favorable as Byrd had described. By now, some believed that so far from making a genuine attempt on the Pole, he had merely flown around in circles out of sight of Spitsbergen until it was time to return to King's Bay. Only in the 1990s was this last story disproved, when Byrd's original diary-record of his North Pole flight was discovered in the archives of Ohio State University (Goerler 1998). On the basis of detailed analysis of this document's calculations, erasures, and communications between Byrd and Bennett—written rather than spoken because the roar of the engine precluded conversation—Dennis Rawlins (2000) has argued that although Byrd certainly made a brave attempt to reach the Pole, he got no farther than 87°44'N before deciding to turn back when the oil leak threatened to stop the starboard motor. Although by no means accepted by all—see Raimund Goerler (1998)—until convincingly rebutted, this view is likely to be more widely believed than otherwise.

Whatever the truth, Byrd returned to New York, where he and Bennett were welcomed with a ticker-tape parade, the first of three for Byrd, who received his second the next year following a flight across the Atlantic.

**First Flight to the South Pole, 1928–1930**

Having claimed the first flight to the North Pole, Byrd immediately announced that his next objective was to reach the South Pole. Doing so would require an altogether larger and more ambitious expedition, and he threw himself into fundraising with his customary enthusiasm, accepting all offers of donated goods almost regardless of whether they would be needed. Indeed, such a quantity of provisions was accumulated that four ships were required to transport the expedition to Dunedin, New Zealand, which was reached by all ships by 26 November 1928. In addition to the 515-ton *City of New
York, a wooden vessel bought on Amundsen’s recommendation, they were the metal-hulled former minesweeper Eleanor Bolling, which Byrd also purchased, and two whaling factory ships, Sir James Clark Ross and C. A. Larsen, which took on board the ninety-five dogs together with other cargo and some personnel, including Byrd. Also taken south were over sixty men and four airplanes: a Ford tri-motor monoplane (Floyd Bennett), a Fokker Super-Universal (Virginia), a Fairchild 71 monoplane with folding wings (Stars and Stripes), and a small General Aircraft sport plane. Consolidating men, dogs, and equipment into his two expedition ships, on 2 December, Byrd left Dunedin behind. To ensure reasonable speed, Eleanor Bolling towed the heavily overloaded City of New York to the edge of the pack ice. Here, 100 tons of coal were transferred from Eleanor Bolling, which turned north for Dunedin, while the City of New York met up again with C. A. Larsen and followed it through the pack. On 25 December, the Ross Ice Shelf was reached, with a suitable site for the base found three days later in the Bay of Whales close to where Amundsen had wintered in 1911.

Shortly before landing, Byrd announced the appointment of Dr. Laurence Gould as his second-in-command and Captain Ashley C. McKinley as third-in-command. Gould’s first task was to set up the base at Little America, while McKinley took charge of unloading operations. By 15 January 1929, progress was sufficient for Byrd to make the first flight in Stars and Stripes, which was now tested repeatedly on short flights. The first major flight was made on 27 January, when Byrd and Balchen as pilot flew over Edward VII Land to discover a series of mountains arranged in a crescent and rising to 600 meters, inland of the coast first seen by Robert Falcon Scott in 1902. These he named for John D. Rockefeller, Jr., one of the expedition’s sponsors. On 18 February, two further flights were made, and an isolated high peak was spotted far beyond the Rockefeller Mountains. It marked the western margin of extensive new land, which Byrd was to name Marie Byrd Land for his wife and claim for the United States.

Although the Antarctic winter was approaching, Byrd was still intent on accomplishing what he could before battenning down the hatches at Little America. On 7 March 1929, four dog teams were sent out to begin laying depots south on a path to be followed by Gould’s geological party the next season. Shortly afterward, Gould, Balchen, and Harold I. June took off in Virginia to make a geological reconnaissance of the Rockefeller Mountains. The dramatic episode that followed, when Gould’s party ran into difficulties and had to be rescued by Byrd, is told under Gould’s name.

By 24 March, all were back at Little America. Less than one month later, the sun rose for the last time until 24 August. A long winter was spent buried in a warren of huts, ice caves, and linking passages, where preparations were made for the two major endeavors for the following season: Byrd’s flight to the South Pole and Gould’s sledge journey to the Queen Maud Mountains. These two objectives were designed to be mutually supporting: Gould’s party would provide vital weather information as well as insurance to Byrd should anything go wrong during his flight, and Byrd would establish by air Gould’s final mountain depot and supply him with air photographs to help his geological work. With temperatures descending to –53°C (–64°F), not until mid-October could they resume laying depots, with the intention of establishing them for Gould as far out as 200 miles. This work accomplished, Gould set out on 4 November, with all activity at Little America now focused on preparation for Byrd’s attempt to fly to the South Pole.

On 18 November 1929, Byrd, Dean C. Smith, June, and McKinley took off in Floyd Bennett on a flight to lay a depot 440 miles away, at the foot of the Axel Heiberg Glacier. There fuel was to be deposited for the return flight from the Pole, together with provisions for Gould’s geological party. Two hundred miles out from Little America, Gould could be seen making reasonable progress across the Ross Ice Shelf toward the high mountains, of which spectacular views could now be obtained from the plane together with excellent photographs. They later proved invaluable to Gould, after being dropped to him by parachute on the polar flight. Landing without difficulty at the foot of Mount Nansen to establish the depot, Byrd and his three companions were 95 miles out from Little America when a leaking tank caused the plane to run out of fuel. With three engines stopped, Smith still managed to land without damage to men or plane. They remained marooned for three days, until more fuel could be flown out to them.

All that was now needed for the polar flight was good weather. On 28 November 1929, a message was received from Gould stating that the mountains and plateau were cloud-free. Conditions at Little America were less good, but undeterred, Byrd took off at 3:29 p.m. in Floyd Bennett, accompanied by Balchen as pilot, June as radio operator, and McKinley to operate the surveying camera. Soon, they had climbed into a clear sky with the mountains visible far ahead, heading south along Amundsen’s route to the Pole and high above Gould’s sledging trail. Approaching 400 miles out, Gould’s party was spotted below. A parcel containing instructions, correspondence, cigarettes, and the air photographs was dropped by parachute.

With the weather good, Byrd’s greatest concern was whether they could get over “the hump,” the hump being the highest point of whichever pass they would have to negotiate through the mountains to reach the polar plateau. Byrd realized that the heavily loaded plane might not be able to climb sufficiently high without having to jettison some of its load. One thing he did not want to throw overboard was the 45-kilogram mapping camera, heavy certainly, but essential for the scientific value of the flight. Taking the camera also meant taking an extra man on board, since Byrd, Balchen, and June would have too much else to do to operate it. McKinley and his
camera, together with three months' food and polar equipment in case of an emergency landing, added a total of 270 kilograms to the load carried. Byrd's original plan was to follow Amundsen's route up the Axel Heiberg Glacier, the advantage there being that the altitude—3,200 meters—was known. However, as Floyd Bennett approached the mountains, Byrd and Balchen noted that the adjacent, rather broader Liv Glacier looked more promising. With fuel insufficient for a second choice, Byrd took the risk, hoping that there would be no mountains beyond the glacier blocking their flight onto the plateau.

Once within the glacier, high mountains rose on each side, scoured by ice with sheer rock walls above. The turbulence intensified, and Balchen at the controls struggled to make sufficient altitude. With June busy calculating the amount of fuel left, Balchen shouted that their weight must be reduced by 90 kilograms, or they must turn back while they still had room to do so. Making a choice between food and fuel, Byrd threw out two bags of food. They had only a few meters to spare as they finally climbed out above the glacier, to their joy finding no mountains ahead and a clear run across the high ice plateau to the Pole less than 300 miles away. They were over the hump.

The next difficulty was to find the Pole. Doing so depended upon extreme accuracy of navigation and exact knowledge of their airspeed, taking into account the effect of headwinds. Just after midnight, Byrd's sextant sun-sight showed them only 56 miles from the Pole, and at 1:14 A.M. on 29 November 1929, they were above it. Circling about it and flying 5–6 miles in each direction, Byrd was sure of his goal 11 minutes later and ready to turn back. At his best estimate of the Pole's position, he dropped the American flag, weighted with a stone from the grave of Floyd Bennett, his colleague on the North Pole flight, who had died in 1928.

Accurate navigation was just as critical on their return flight, for if they failed to locate their pass, the high encircling mountains might prevent them from finding any way down to the Ross Ice Shelf. The sudden onset of a storm bringing poor visibility was also an ever-present concern, but in any case, all was well. Finding the Axel Heiberg Glacier directly ahead, they flew down it just as clouds were forming on the mountain crests with worse clearly soon to follow. After a rough ride down the glacier, they landed a few minutes later at their depot at the foot of Mount Nansen, where 900 liters of gasoline were taken on and 160 kilograms of food and other supplies left for Gould's party. One hour afterward, they were in the air again and reached Little America just under nineteen hours after their departure, having flown 1,600 miles.

Completing the South Pole flight so early in the season meant that Byrd was able to make a number of further exploratory flights, during which his discoveries of the previous season were confirmed and extended, particularly to the east, where the coast of Marie Byrd Land was shown on 5 December to project some way to the north. That might account for the quantities of ice found by other explorers to obstruct approaches to the Ross Sea from the east.

The achievements of this expedition were considerable. Although the polar flight naturally attracted most attention, much useful science—particularly magnetic and meteorological—had been conducted at Little America. Gould's work in the Rockefeller and Queen Maud Mountains significantly extended geological understanding of the continent, and an estimated 150,000 square miles of new land were surveyed by aerial camera, with a much greater area seen from the air but not photographed. Byrd returned to the United States to enjoy his third ticker-tape New York parade, one of many similar parades in other cities across the United States. Congress voted his promotion to rear admiral. In six years, he had risen from lieutenant to admiral, an unprecedented achievement for a man not on the active list.

**Science and Mechanization Triumph on Byrd's Second Antarctic Expedition, 1933–1935**

Great as had been the success of his first Antarctic expedition, Byrd knew that there was much more to be learned about Antarctica, and as soon as he had discharged his expedition's debts, he began planning its successor. This time, the furtherance of scientific knowledge was his major objective. With the United States in the middle of the Great Depression, fund-raising was even more difficult than before. Byrd's main hoped-for revenue source was sale of radio transmissions from Little America. He was the first to appreciate the economic value of daily news bulletins sent from Antarctica. Thus, instead of headline treatment only on departure and return, regular bulletins could ensure good coverage—and good newspaper sales—throughout the expedition, as he had discovered during his previous expedition. Although President Franklin D. Roosevelt gave his personal backing, no government money was available. A number of private individuals gave generously, but Byrd still had to solicit most of his provisions and equipment as gifts. In all, he and his assistants wrote 30,000 letters to potential donors. Byrd was nothing if not astute in his dealings with the business world. Finding himself with no money to purchase even the cheapest ballast for his ships, he noted the mounting piles of coal dust with demand at rock-bottom because of the Depression and suggested that he store coal on board his ships for the duration of the expedition, thus obtaining ballast and coal in one deal.

A scientific expedition meant much greater expense than one simply concerned with adventure: Byrd estimated its cost at twenty times as much. He took four airplanes: a Curtiss-Wright Condor biplane (William Horlick), a Pilgrim single-engined monoplane (Miss American Airways), a Fokker single-engined monoplane (Blue Blade), and a Kellett autogiro. Byrd had high hopes that mechanized land transportation would also at last prove effective in Antarctica, taking with him a Cle
Barkentine by 12 December. Rather than heading straight for the Bay of land. Two further flights were made as William Horlick reached no farther than 67°09’S. From near here, investigated further with the aid of a seaplane operating from the penetrate the dense ice but that Byrd thought might be inves-
tigated by 12 December. Rather than heading straight for the Bay of 

coast east of the Ross Sea, where no ship had yet been able to 
ing land. Two further flights were made as William Horlick reached no farther than 67°09’S. From near here, 

sought to make its way as far south as possible, not an easy task 
in an iron-hulled ship in a sea infested by ice. No land was seen, 

and Byrd determined to return later in the more suitable 
in an iron-hulled ship in a sea infested by ice. No land was seen, 

in an iron-hulled ship in a sea infested by ice. No land was seen, 

and Byrd determined to return later in the more suitable wooden Barkentine by 12 December. Rather than heading straight for the Bay of 

Byrd obtained his two ships at bargain-basement prices. The 8,527-ton iron-hulled Jacob Ruppert, on loan from the U.S. government, cost nothing, and the veteran 703-ton wooden barkentine Bear of Oakland was purchased at auction on pre-

arranged generous terms for $1,050. The two ships sailed from 

Boston in the fall of 1933 to reach Wellington, New Zealand, 

by 12 December. Rather than heading straight for the Bay of 

Whales, Jacob Ruppert was first sent to examine the unknown 

coast east of the Ross Sea, where no ship had yet been able to 

penetrate the dense ice but that Byrd thought might be investig-
ted further with the aid of a seaplane operating from the 

ship. It was the region where in 1774 James Cook had achieved 

his farthest south of 71°10’S, 106°54’W. That latitude had not 

been approached since, nor was it to be bettered now, for Jacob 

Ruppert reached no farther than 67°09’S. From near here, 

William Horlick took off, flying 214 miles south without sight-

ing land. Two further flights were made as Jacob Ruppert 
sought to make its way as far south as possible, not an easy task 
in an iron-hulled ship in a sea infested by ice. No land was seen, 

and Byrd determined to return later in the more suitable wooden Bear of Oakland.

Reaching Little America on 17 January 1934, Byrd was 

relieved to discover the base still intact and inhabitable, though 
deply buried under snow. Apart from being somewhat aslant, 

the station was largely undamaged by the shifting ice shelf. The 

food left behind was still edible, the electricity functioned, and 

the signs of his expedition’s hurried departure were still evi-
dent in the disorderly piles of clothes and magazines. Byrd 
himself now boarded Bear of Oakland to continue Jacob Rup-
pert’s explorations of the coast farther east. He appointed Dr. 

Thomas C. Poulter to take charge of reopening Little America, 

and Commander George O. Noville, who had been with Byrd 
in Spitsbergen in 1926 and on his transatlantic flight in 1927, 

was made responsible for unloading the ship, a task much 

assisted by the four tractors, which performed splendidly 

throughout the expedition. Little America was now only half 
a mile from the Bay of Whales. In case it should break off into 

the sea, an emergency base—Retreat Camp—was built three-
quarters of a mile farther inland.

Bear of Oakland returned on 15 February 1934, having 

worked its way east to 75°6’S, 148°8’W. There it was only 100 
miles from the Ford Ranges of Marie Byrd Land. This voyage 

and that of Jacob Ruppert effectively established that no 

promontory or archipelago reached far north to the east of the 

Ross Sea. An alternative explanation would have to be found 

for the quantities of ice offshore. On 5 February Jacob Ruppert 

de parted for New Zealand, and on 26 February Bear of Oak-

land followed, but only after first sailing north to meet the 

British ship RRS Discovery II to collect the emergency replace-

ment doctor, Dr. Louis H. Potaka, whose predecessor had been 

sent home sick.

Because all previous winterings had occurred on the coast 
of Antarctica, Byrd was eager to obtain winter meteorological 

and auroral measurements from an inland site. The expedition 

had brought with it a hut designed for occupation by three 

men, but difficulties in unloading the ships had so delayed 
matters that there was now insufficient time to equip the base 

with sufficient provisions for three. Byrd felt that manning by 
two was too risky in terms of potential personal incompati-

bilities and therefore decided that if only one person was to be 

stationed there, that person would have to be himself. The deci-
sion was controversial, but no hazardous activities at Little 

America were planned during his absence, and he had a good 
team of deputies, with Poulter second-in-command, William 

Haines third-in-command, Harold June chief of staff, and 

Noville executive officer.

On 22 March 1934, Byrd flew to Bolling Advanced Weather 

Base, 123 miles inland at 80°08’S. The necessary stores and 
equipment had been brought from Little America by a nine-

man party led by June with the aid of dog teams and the four 

tractors. The hut itself was only 4 meters long by 2.7 wide 

and 2.4 meters high, and it had been erected in a pit with just 

the instrument shelter and radio antenna visible above the snow. 

Two tunnels 9 meters long and 1 meter wide had been dug 

adjoining it, for storage and to house the generator. In addi-
tion to Byrd’s bunk, the hut’s bare furnishings included a 

radio transmitter, an oil-burning stove, a gramophone, and 

bookshelves. Six days after his arrival, the tractor team 

headed north, watched by Byrd as they disappeared into the 
distance.

Initially, Byrd was very happy in his solitude. He enjoyed 

watching the stars and aurora, writing in his journal, and above 

all being relieved of his endless duties at the base. Life, how-

ever, was not without its scares. Once he walked beyond the 

bamboo poles marking his path back to his hut, which were 

now invisible. Fortunately, he had the presence of mind to 

build a tiny snow cairn where he was and to scratch an arrow 
on the ice showing the direction from which he had come. On 
his first attempt, he could find no trace of the hut but was able 
to return to the cairn. He found the hut on his second attempt. 
On another occasion he was caught in a blizzard and unable to 

reenter the hut. The door had frozen shut, and try what he 
might, he could not prize it open until he remembered that he 

had left a shovel outside a week earlier. With it, he was able to 

try the door open.

On 31 May 1934, the generator failed in the middle of a 

radio transmission to Little America. Byrd entered the tunnel 

where it was housed to find it filled with fumes, which caused 
him to fall unconscious. Recovering, he returned to sign off on 

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where it was housed to find it filled with fumes, which caused 
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the radio without saying what had happened. Clearly, Byrd had a real problem with the generator, but when he considered the speed with which he fell unconscious—much faster than would normally be anticipated with carbon monoxide poisoning—he came to the conclusion that he was also being poisoned more insidiously by his oil stove. From that time on, he used the generator and stove as little as possible—to fend off freezing and power up the radio, but that was all. He was not prepared to let Little America know of his situation since he wanted no lives being risked on what would be an intensely cold sledge journey. Expecting death at any moment, Byrd lay incapacitated through several days but slowly got better as the levels of carbon monoxide fell. He resumed reading the meteorological instruments and managed to keep up his regular radio transmissions with Little America without revealing his real situation. In mid-June, Poulter informed him that he was planning to set out soon since conditions seemed favorable and that he would leave in a month to establish a southern depot. Since he would be passing close to Byrd’s hut, Byrd suggested that he would return with Poulter’s party to Little America. Unfortunately, Poulter was delayed. He ran into bad weather on his initial departure on 20 July and afterward made slow progress, finding it difficult to pick up the flags marking the way. After losing the way altogether on 26 July, Poulter returned to Little America. On 4 August, Poulter set out again, at last aware that something was wrong with Byrd. This time the tractor clutch failed, and again he had to return. He set out once more on 8 August, accompanied by Pete Demas and Bud Waite on what clearly was no longer a scientific mission but a race to rescue Byrd from whatever fate had befallen him. Two days later, they arrived at Advance Base to be welcomed by Byrd with the words “Hello, fellows. Come on below. I have a bowl of soup waiting for you” (Byrd 1995, 293). Only on 12 October, two months later, was Byrd sufficiently recovered to return to Little America.

Back at Little America, the winter was an opportunity to pursue science as well as to prepare for the coming field season. The long winter night was ideal for auroral and meteor observations, meteors now being demonstrated to be much more abundant than previously thought. Magnetic, meteorological, and cosmic ray studies all continued through the winter. In all, twenty branches of science were studied during the expedition. Senior scientist Poulter had spent the previous two years planning a detailed scientific program, and his diligence yielded results that Byrd estimated as six to seven times greater than those achieved in 1928–1930, productive as that expedition, too, had been.

On 27 September 1934, the first sledging party set out to establish depots every 35 miles en route to Mount Grace McKinley, 230 miles to the east. So early in the season, temperatures were too cold for dogs but not for the Citroën tractor. It made the first successful journey of any length by a motor vehicle since their introduction to Antarctica by Ernest Shackleton in 1908. In addition to making the first ascent of Mount Grace McKinley, with a good view of undiscovered peaks to the east, June’s party discovered the Rockefeller Plateau, an extensive area of high ground occupying much of inland Marie Byrd Land. By 18 October, June was back at Little America after a journey of 525 miles. The depots laid by June’s team were in support of the Marie Byrd Land party, led by Paul Siple and including Alton E. Wade, Stevenson Corey, and Olin D. Stanciff. Departing on 14 October, this party carried out significant geological survey work far to the east and discovered surprisingly abundant indications of plant and animal life. Two days later, two other parties set out south along the trail followed by Laurence Gould on the 1928–1930 expedition: A geological party led by Quin A. Blackburn and including Stu- art D. Paine and Richard S. Russell departed for the Queen Maud Mountains to extend Gould’s work farther to the east; and Dr. Ervin Bramhall, Charles G. Morgan, Demas, and Waite headed for the polar plateau to conduct seismic studies to measure the ice thickness there. South of 81°S, they reached the zone of heavy crevassing that had impeded Gould’s way. Finding no route through with the tractors, the plateau party diverted east to carry out their seismic studies instead on the newly discovered Rockefeller Plateau, and the Queen Maud party continued on, strengthened by the addition of dog drivers Finn Ronne and Albert Eilefson, who had been assisting the plateau party. Both parties conducted good work and survived numerous perilous encounters with crevasses. In all, Blackburn’s party sledged 1,380 miles, and Bramhall and Morgan’s tractor party traveled 920 miles.

Once the field parties had left, attention was focused on the airplanes. With June as pilot, Byrd made the first flight on 15 November 1934, flying eastward on a triangular route over Marie Byrd Land. The next flight was made three days later, but Byrd remained behind at Little America, realizing that his fragile health made him too much of a liability. June now flew over the Ford Ranges, establishing that these mountains were much more extensive than previously thought and trended east-west rather than north-south. At the farthest point out at 83°05′S, 119°W, during a third flight on 22 November, an extension of the Queen Maud Mountains was sighted some 200 miles farther east—the Horlick Mountains. This was an important discovery since it added significantly to mounting evidence that there was no strait linking the Weddell and Ross Seas, a question that had exercised generations of explorers, not least Shackleton, whose Imperial Trans-Antarctic Expedition had sought unsuccessfully to resolve just this question. The issue was finally to be settled the next day, when Byrd joined June to prove beyond doubt the existence of a high plateau occupying the only possible area where a strait might be. There was no strait, and Antarctica was thus proved to be a single, united continent.

In all respects it was a most successful expedition, both in terms of pioneering new logistical techniques and for the
excellence of its scientific work. Inevitably, however, these achievements were to be somewhat overshadowed by headline attention devoted instead to Byrd's solitary wintering at the Advance Base, an episode that Byrd was to describe evocatively in *Alone*, one of the two books he published about this expedition. In total, more than 450,000 square miles of continent and surrounding waters had been explored or mapped.

**U.S. Antarctic Service Expedition, 1939–1941**

Byrd was making preparations for his third privately funded expedition to Antarctica when he learned of plans for a U.S. government–sponsored expedition, the first since that of Charles Wilkes in 1838–1842. Considerable public interest in the continent had been generated by Byrd's previous two expeditions, as well as by those of Lincoln Ellsworth and Sir Hubert Wilkins. President Roosevelt was also persuaded that important U.S. interests were to be served by an Antarctic expedition. Indeed, it was his intention that the U.S. Antarctic Service, established by Congress on 30 June 1939, should maintain a permanent presence on Antarctica, but Congress refused to vote further funds when World War II broke out. Suspending his own plans, Byrd was appointed leader of the government expedition, which was the largest Antarctic expedition to date.

The expedition's principal publicly announced objectives were to delineate the continental coast between 72° and 148°W and to consolidate previous discoveries made in Marie Byrd Land, James W. Ellsworth Land, and Heston Land by Byrd, Ellsworth, and Wilkins, respectively. To achieve this objective, stations were to be established at either end of the large area to be investigated. Geographical exploration and science were not, however, the only goals, and President Roosevelt's instructions to Byrd included the following: "Members of the Service may take appropriate steps such as dropping written claims from airplanes, depositing such claims in cairns et cetera which might assist in supporting a sovereign claim by the United States Government. Careful records shall be kept. . . . No public announcement of such act shall, however, be made" (quoted in Bertrand 1969, 473). These covert instructions resembled those given to Ellsworth on his 1938–1939 expedition and formed a coherent but undeclared policy on the part of the U.S. government to lay a firm basis for future territorial claims while in public still pursuing the policy announced in 1924 of refusing to recognize any national claims to Antarctic territory.

The expedition sailed south in two ships: the 1,434-ton USNS *North Star*, a wooden ship built in 1932, designed for ice work and used by the Department of the Interior to transport supplies to Alaska, and USS *Bear*. The latter was Byrd's *Bear of Oakland*, chartered for $1 per year, extensively recommissioned, and equipped with a diesel engine. Of the 125 men participating, most were servicemen from the U.S. Army, Navy, and Marine Corps, with only the scientists and dog drivers exclusively civilian.

Sailing from Boston in November 1939 via the Panama Canal and New Zealand, they reached the Ross Ice Shelf on 11 January 1940. Byrd hoped to locate the base as far east as possible, but when he found neither Kainan Bay nor Okuma Bay suitable, he had no alternative but to return once more to the Bay of Whales, where West Base was constructed some 3 miles northeast of Little America. Thirty-three men led by Dr. Paul Siple manned this station, an account of whose proceedings may be found under their leader's name.

On 24 January, *North Star* sailed north to Valparaiso, Chile, to take on new stores and equipment needed for the establishment of East Base. Having been unable to locate West Base to minimize the range of flights needed to survey the 1,700 miles of unknown coastline of West Antarctica between the Ross Sea and the Antarctic Peninsula, Byrd now attached even greater importance to whatever results could be obtained by *Bear*, as it struggled to find open water close to the coast in this very inaccessible region. Experience gained during his second expedition had demonstrated that the belt of pack ice was too thick for a plane to fly across from a ship sailing north of the pack, but Byrd believed that late in the season, open water might be found closer to the coast. Setting out from the Bay of Whales on 19 January, *Bear* initially met quite favorable ice conditions, achieving a farthest east of 74°43'S, 143°52'W on 25 January before returning to the Bay of Whales five days later, when conditions worsened. With pilot Ashley C. Snow and radio operator Earl B. Perce, Byrd was able to make four flights in the twin-engined Barkley-Grow seaplane, in the process discovering 300 miles of new coastline, including the Hobbs Coast.

Staying just one day in the Bay of Whales, *Bear* next turned west to support an abortive attempt to fly to the South Magnetic Pole from the Drygalski Ice Tongue, before heading north out of the Ross Sea and then east toward the Antarctic Peninsula, sailing now outside rather than within the zone of pack ice. With the ship at 70°44'S, 108°26'W, on 24 February, Byrd, Snow, and Perce took off in good visibility. Flying 190 miles south, they sighted two extensive mountain ranges 100 miles long and rising to 2,300 meters, with a high, ice-covered plateau behind. Additional flights the next day and three days later also reported land, demarcating new coastline extending in all for 800 miles—the Walgreen Coast, Thurston Island, and Eights Coast.

Byrd's next task was to locate a suitable site for East Base. As with West Base, the aim was to find a location as close as possible to the area of unexplored coast. For East Base, the preferred locations were Charcot or Alexander Islands. Thick ice prevented *Bear* from approaching either, and instead Byrd proceeded on to the third choice, Marguerite Bay. Here, on 5 March 1940, *Bear* met up again with *North Star*, now heavily burdened with stores and equipment for the new base. Finding a good site proved difficult, but on 8 March a promising location was spotted during a reconnaissance flight made by Byrd with Richard Black, the commander of East Base. They had noticed
a small islet in front of the apparently quiescent Neny Glacier, offering relatively easy access to the peninsula's inland plateau as well as possible landing sites on both glacier and sea ice. Unloading of supplies was completed by 21 March, when Byrd sailed north in Bear. For the remainder of the expedition, he directed operations from the United States. A detailed account of activities on this expedition is given under Paul Siple for West Base and Richard Black for East Base.

Later Expeditions
Byrd took a prominent role in two further expeditions to Antarctica, Operation Highjump (1946–1947) and Operation Deep Freeze I (1955–1956), on both of which he was appointed officer in charge. These large-scale exercises mounted by the U.S. Navy are described in detail under their names. Byrd was by no means popular among regular naval officers, many of whom resented his fast-track, "political" promotions while he was not even on the active list. Byrd's brother, Senator Harry Byrd, was chairman of the Senate Finance Committee, a man who had considerable influence over government appropriations to the navy, which were never enough in the view of most serving officers. However, for the American public, Admiral Byrd was the personification of the Antarctic explorer. Making him officer in charge but—significantly—not commanding officer gave these naval operations an identifiable personality on which public and media attention could focus, while real power was exercised by the commanding officers, admirals Richard Cruzen on Highjump and George Dufek on Deep Freeze I, both of whom had been with Byrd in Bear during the U.S. government expedition in 1940.

Doubts over Byrd's flight to the North Pole inevitably cast a shadow over his reputation. Personal integrity is a critical factor when achievements cannot always be proved, and the explorer's word must be accepted as a true record of what has been accomplished. Byrd's career as a polar explorer was built upon his claim to have been first to fly to the North Pole. Even with his genius for fund-raising, it is difficult to imagine that he would have managed to raise money for his two great Antarctic expeditions without this success behind him. Even if the North Pole claim most likely cannot withstand scrutiny—though it is still accepted by some—his Antarctic achievements were unquestionably exceptional, and they laid the foundations for the U.S. Antarctic Program of today.

See also: Airplanes; Amundsen, Roald; Axel Heiberg Island; Cook, James; Ellesmere Island; Ellsworth, Lincoln; Gould, Laurence; Greenland, Inland Ice; Greenland, North; MacMillan, Donald (1925); Marie Byrd Land; North Pole; Operation Deep Freeze; Operation Highjump; Ross Ice Shelf; Scott, Robert Falcon; Shackleton, Ernest; Siple, Paul; South Pole; United States; Wilkes, Charles; Wilkins, George Hubert

References and further reading:
Many books have been written about Byrd's expeditions, including more than a few by participants. The following list includes some of the more significant publications.
Cabot, John  
(ca. 1450–ca. 1498)

Although it is probable that John Cabot did not sail sufficiently far north to reach the Arctic Ocean during either of his two voyages, as the first expeditions to seek a Northwest Passage to China and Japan, some account of them here is essential. Cabot’s discovery of “new found land” in 1497 was not the first European landing on northern North America, since he was long preceded by the Norse, but it did inaugurate exploration of the Canadian Arctic by a long succession of expeditions from Great Britain. Despite its significant place in North American and Arctic discovery, very little is known about Cabot’s first voyage and almost nothing about his second. Indeed, for 300 years it was possible for these expeditions to be attributed not to John Cabot but to his son Sebastian.

The Northern Columbus, 1497

Born Giovanni Caboto in Genoa, the birthplace also of Christopher Columbus, and later a citizen of Venice, John Cabot most likely came to England to settle in the West Country port of Bristol in 1495. By this date, he had been long engaged in the spice trade, traveling widely in the Levant region of the Middle East and probably visiting Mecca, one of very few non-Muslims to do so. He was also an expert navigator and cartographer, who kept himself well-informed of Spanish and Portuguese discoveries. It is likely that he was the “Johan Caboto” of Venice reported as living in the Spanish city of Valencia between 1490 and 1493, in which case he may have been present when Columbus passed through this city on his way to Barcelona in April 1493 to report news of his discoveries. Because he was familiar with Marco Polo’s descriptions of “Cipango,” it would have been immediately clear to Cabot that, despite what Columbus himself might think, he had not in fact reached Japan.

Cabot himself believed that Japan and China would best be reached by a more northerly route, which would both avoid the contrary trade winds that had impeded Columbus and be significantly shorter. Only after first applying for support without success to Spain and Portugal did Cabot decide to try his chances in England. England offered certain advantages. Spices were essential to flavor food and to disguise the taste of spoiled meat. They were, however, expensive commodities, many being obtainable only from the Far East. Because England was at the end of the spice trading chain, prices there were especially high, and the prospect of cutting out intervening middlemen was thus particularly attractive. Furthermore, it is almost certain that well-informed as he was, Cabot was aware that since the 1480s, ships from Bristol had been engaged in long exploring voyages looking for new fishing grounds across the North Atlantic. There is evidence that by 1494, they had discovered a land that they called the “Isle of Brasil.” Clearly, in Bristol he would find ships and sailors sufficiently capable for his purpose.

That the English king Henry VII was known to be committed to the encouragement of trade would have been another inducement, and on 5 March 1496 a patent was granted to Cabot and his three sons, authorizing them to sail with five ships “to all parts, regions and coasts of the eastern, of western and northern sea” (Williamson 1962, 204). Although these instructions excluded Cabot from exploring regions already reached by the Spanish, should he be successful, they would involve him in claiming for England lands ascribed to Spain under the 1494 Treaty of Tordesillas. The Spanish ambassador in consequence was instructed to protest but did so without effect.

Six contrary accounts of Cabot’s first voyage are preserved by Richard Hakluyt. They are helpfully supplemented by a letter discovered in a Spanish archive only in 1956, which was written by the Bristol merchant John Day, most probably to Columbus.

Cabot made his first attempt in 1496, when he was forced by his crew to turn back after encountering contrary winds and finding himself without sufficient provisions for an extended voyage. In the following year he tried again, setting out from Bristol about 20 May in Matthew, a tiny vessel crewed by perhaps eighteen men, and sailing west for thirty-five days before coming within sight of land. Some authors have suggested that he followed the route taken by the Norse, island-hopping from Iceland across to Greenland and then to Labrador and Newfoundland. It is more likely, however, that he emulated Columbus in following a more direct course west. (Certainly, that is the route that he took on his return voyage, when he crossed the Atlantic in just fifteen days with the prevailing westerly winds behind him.) Land was first seen on 24 June 1497. He then sailed southwest, turning about to coast along the shore for several hundred miles, where he reported large shoals of fish. Just one landing was made, when Cabot went ashore accompanied by a priest to claim his discovery for the English king. Signs of habitation were seen, but no natives. They did not dare explore any distance inland. The exact location of Cabot’s first landfall is still in doubt, though it may have been as far north as Labrador. Others place it off either Newfoundland or Nova Scotia, and there is little in the way of evidence to decide the issue. By 10 August, Cabot had returned to England and was able to inform Henry VII of his discoveries, which were to cause a sensation in the English Court.
**Cabot Disappears into the West, 1498**

In the following year Cabot was provided with five ships, one by the king and four by Bristol and London merchants. The fleet left Bristol in early May. Cabot himself was never heard of again. Since his fate was unknown in England, it seemed certain that at some time during this voyage he lost his life. The last that was heard of his expedition was that one ship was reported as putting into an Irish port after being damaged in a storm, afterward resuming the voyage. It has been suggested that this may have been Cabot’s vessel. We do not know whether he reached North America, where he planned to explore farther to the south and west of his discoveries the previous year. Whatever may have happened to Cabot himself, information incorporated in the world map of Juan de la Cosa (ca. 1500–1508) suggests that at least some of his ships explored this region and did manage to return. Certainly, Sebastian Cabot survived to usurp his father’s credit, but then we do not know for certain whether Sebastian participated in either of the expeditions.

Sebastian was later to tell tales of reaching 67°30’N and of discovering a great strait between 61° and 64°N. Since, like his father, he wrote no account of any expedition in which he participated, we are forced to rely on the garbled accounts of those who heard him speak, most of whom seemed to have confused Sebastian’s expedition of 1508–1509 with John’s expeditions of 1497 and 1498, a confusion that the son seems to have confessed to having been content to leave unclarified. If either Cabot reached as far north as 67°30’N, it is most likely to have been the son since the father had no reason for believing that a passage would have to be sought so far north.

See also: Cabot, Sebastian; Northwest Passage

References and further reading:

**Cabot, Sebastian**

(ca. 1484–1557)

On his one surviving likeness may be found the following characteristic inscription: “Portrait of Sebastian Cabot, Englishman, son of John Cabot, knight of Venice, First Discoverer of Newfoundland under Henry VII King of England.” Not only did Sebastian’s father possess no such knighthood, but, more significantly, just who here is being credited as “First Discoverer of Newfoundland”—father or son? Sebastian Cabot was just the man to encourage such ambiguities.

No doubt Sebastian Cabot was excellent company. Accounts of him suggest a great storyteller with a sense of humor, not above improving his tales with improbably detailed inventions by himself. He was certainly exceedingly well informed on the progress of geographical exploration and possessed great expertise in the use of navigational instruments. In the sixteenth century, such knowledge was highly prized as nations states sought through exploration to forge new trade links, the ultimate goal being to reach China and Japan via a northern route not controlled by Spain or Portugal. In later life, Cabot would make a good living from his reputation as the greatest authority on the world’s northern regions. As the inscription on his portrait suggests, he was also not above claiming credit for his father’s discoveries. Quite exactly what Cabot himself discovered on his expeditions and whether, indeed, any of them even took place is another matter.

A native of Venice who came to England some time during his childhood, Sebastian Cabot was the second son of the explorer John Cabot, who led two pioneering expeditions from England in 1497 and 1498 to discover “New found land”—not necessarily the same as Newfoundland—and sail south along the eastern seaboard of North America. Sebastian may have accompanied his father on these voyages and in 1505 received an annuity from Henry VII made out to “our welbeloved Sebastian Caboot . . . in consideration of the diligent service and attendance that . . . [he] hath doon unto us and aboute the fyndynge of the new founde landes” (quoted in Ruddock 1974, p.99). Clearly, the English king, too, found Cabot charming, though whether this payment was made in belated recognition of services rendered on his father’s voyages—his father by then being dead—or whether for assistance on a voyage made from Bristol in 1504 is unclear. Later in life, Cabot encouraged—or at least, did not disavow—the popular belief that it was he rather than his father who had led the expeditions during which “Newfoundland” was discovered, according to one chronicler even stating that his father had died before the voyages took place. Certainly his father’s achievements were soon forgotten, and credit was generally accorded to Sebastian until the nineteenth century. How a boy, aged perhaps thirteen, could have been thought capable of leading such an expedition may seem incredible, but Cabot was extremely cagey about admitting when exactly he was born and at different times is recorded as putting forward dates ranging from 1479 to 1488. Even if born in 1479, he would have been only eighteen in 1497. No doubt he did not encourage too close scrutiny of such details.

**The Discovery of Hudson Strait and Hudson Bay . . . or Not, 1508–1509**

Cabot himself wrote nothing about his voyages. What we know is preserved solely through others’ reports of what he said. Some scholars deny evidence of him leading any expeditions apart from an unsuccessful Spanish venture to South America in 1526–1528, but others hold that he did indeed make a little-known voyage in search of the Northwest Passage in 1508–1509, details of which are preserved by chroniclers who appear to have conflated accounts of this voyage with information relating to his father’s expeditions.
According to this interpretation, Cabot sailed in two ships, with 300 men on board—an improbably high number—heading west-northwest via Iceland and southern Greenland to the coast of North America and then up the coast of Labrador to 67°30’N. Here, he found an open sea and would have continued had he not been forced to turn back by his crew. Between 61° and 64°N, a broad strait was sighted leading to the west, into which Cabot entered and sailed for 10° longitude, until it opened into a broad expanse of water. This Cabot presumed to be the Pacific Ocean. Assuming that this is to be believed—and some eminent authorities are inclined to do so—what he had in fact discovered was not the Northwest Passage but Hudson Strait, which he then followed into Hudson Bay; both were highly significant discoveries and not to be further investigated until Henry Hudson explored that area in 1610.

Cabot did not follow up this expedition. Henry VIII did not share his father’s interest in mercantile expansion. With little prospect of being employed on further voyages, Cabot left England for Spain in 1512, where he was employed as pilot major of the Casa de Contratación in Seville, with responsibilities for instruction in navigation and in the making of navigational instruments, undertaking just one expedition to South America. Only in 1548 was he to return permanently to England, when he was invited back by members of Edward VI’s Council, who granted him a liberal pension and the title of grand pilot of England. In 1551, he was appointed “Governour of the mysterie and companie of marchants adventurers for the discoverie of regions, dominions, islands and places unknown.” and as such played a major role in organizing Sir Hugh Willoughby’s voyage to search for the Northeast Passage. Although Willoughby himself perished when attempting to winter in northern Lapland, Richard Chancellor succeeded in establishing trading links with the Russian tsar Ivan IV, leading in 1555 to the formation of the Muscovy Company, of which Cabot was appointed governor for life. In this capacity, he organized Stephen Borough’s expedition to continue the search for the Northeast Passage. He is last recorded as visiting Borough at Gravesend just prior to the expedition’s departure, when he boarded the ship accompanied by a large number of gentlemen and ladies. Cabot generously distributed alms to the poor, banqueted in the local hostelry, and made merry, even joining in the dancing despite his very great age. Some time in 1557 payment of his annuity ceased, presumably at the time of his death.

Clearly, Cabot prospered greatly in later life, but what evidence is there to support his claim to have discovered Hudson Strait and Hudson Bay, which he himself only publicly announced when he came to England in 1521 to solicit leadership of an expedition planned by Henry VIII and his chief minister, Cardinal Thomas Wolsey? Williamson (1962) has argued that Cabot’s discoveries were the origins of “Fretum Trium Fratrum” (Strait of the Three Brothers), depicted in 1537 on the globe of the Flemish cartographer Gemma Frisius. Attributed by others on the basis of its name to the three Portuguese Corte-Real brothers, this strait was shown as a broad channel to the north of North America, with its eastern entrance between 61° and 64°N, corresponding to Cabot’s latitudes for entry to Hudson Strait. If so, it is most surprising, given Cabot’s later influential position, that his “discoveries” were not followed up until Martin Frobisher’s first voyage of 1576, and that he exerted his considerable influence instead in organizing expeditions seeking the rival Northeast Passage (though here his desires may have been overridden by those of the merchants commissioning the voyage).

Sebastian Cabot is likely to remain a controversial figure. Part mountebank, part magus, he was very much a man of his time, and the great heights to which he was eventually to be elevated in England reflect that country’s intense desire to acquire the means to expand trade through maritime exploration. Cabot’s early education in Venice and later employment in Spain meant that he was uniquely well placed to instruct English seamen in the secrets of navigation and map making. That he also loved to tell tall tales does not mean that his contribution to northern exploration was negligible.
Caird Coast (Antarctica)

Caird Coast is now generally the name given to the northeast coast of Coats Land lying between 28°20' and 20°00'W, with Luitpold Coast to its west and Queen Maud Land to its east. This name does not quite reflect the process by which this region forming the east coast of the Weddell Sea was explored. West of 23°00'W, the coast was first seen by William Speirs Bruce in March 1904, who named his discovery Coats Land. “Caird Coast” was Sir Ernest Shackleton’s name for the area immediately to the south of Bruce’s discoveries and east of the Luitpold Coast discovered by Wilhelm Filchner, which Shackleton was first to see in January 1915 and named for the ship owner and jute manufacturer Sir James Caird (1864–1954), the major sponsor of his 1914–1916 expedition. Further charting of the coast was conducted during the Commonwealth Trans-Antarctic Expedition led by Vivian Fuchs.

The British base Halley Bay (75°31'S, 26°45'W) was established in January 1956 on the Brunt Ice Shelf by the advance party of the Royal Society International Geophysical Year (IGY) Expedition. In January 1959, at the conclusion of the IGY, its operation was taken over by the Falkland Islands Dependencies Survey, and it is now one of two all-year stations operated on the continent by the British Antarctic Survey (the other is Rothera; see Adelaide Island). It was on the basis of ozone measurements recorded since 1957 at this station and in the Argentine Islands that British scientists were able to demonstrate the existence of the Antarctic “ozone hole” in 1985. In addition to the comprehensive geophysical program carried out at the station itself, extensive surveys have also been conducted of the surrounding region, particularly of the adjacent ice shelf and nearest areas of exposed rock. It was thus from Halley Bay that British survey and geological parties were sent out to the Heimfront Range in western Queen Maud Land and southward to the Theron Mountains and Shackleton Range in Coats Land.

See also: Argentine Islands; British Antarctic Survey; Bruce, William Speirs (1902–1940); Coats Land; Filchner, Wilhelm; Fuchs, Vivian; Shackleton, Ernest (1914–1916); Weddell Sea

References and further reading:

Campbell Island (Sub-Antarctic)

Located at 52°33'S, 169°09'E south of New Zealand, Campbell Island represents the eastern part of a heavily dissected volcanic cone, occupying 44 square miles, of which the western part has all but disappeared. Campbell Island was discovered on 4 January 1810 by Frederick Hasselburg and named by him for Robert Campbell of Sydney, the owner of his vessel Perseverance. Hasselburg was determined to keep knowledge of his discovery secret when he left behind a shore party of six men supplied for six months to hunt the large population of fur seals. In the course of his subsequent discovery of Macquarie Island, Hasselburg was unable to return to Campbell before 22 October, by which time he found that his men had run out of supplies four months earlier but had managed to survive by killing birds, this being a prime breeding site for albatrosses in particular. Shortly afterward, Hasselburg was drowned in Perseverance Harbour on 4 November 1810. Following public disclosure of its existence in January 1811, the island was visited by numerous sealing vessels, until the fur seals were exterminated everywhere except on the least accessible islands.

Only a few exploring expeditions have visited Campbell Island. In January 1839, John Ballyen stopped briefly before heading south toward Antarctica. Here, coincidentally, he met another British sealer-explorer, John Biscoe, now engaged simply in sealing. James Clark Ross spent four days on the island from 13 to 17 December 1840, anchored in Perseverance Harbour and, like Ballyen, on his way to Antarctica. Assistant surgeon Joseph Hooker was kept busy making as comprehensive a botanical survey as the limited time available allowed. Rather more extensive results were obtained by a French expedition on Vire sent here to observe the Transit of Venus on 9 December 1874. Characteristically poor weather prevented any satisfactory observation of the transit, but during the expedition’s stay it was able to make the first topographic survey, while naturalist Dr. Henri Filhol collected natural history specimens and later wrote reports on the island’s geology, zoology, and botany. On the expedition led by Henrik Bull, Antarctic ran aground on Terror Shoal in Perseverance Harbour on 14 May 1894 while engaged in a rather ineffectual attempt to find southern right whales. Antarctic was similarly unsuccessful when it returned to Campbell on 27 October to seal, only to find that the season for fur sealing was due to close on 1 November. No scientific work was undertaken. Despite the lack of success of Bull’s expedition, right whales were found off Campbell, and whaling stations operated here from 1909 to 1914. Sheep farming commenced in 1895, and sheep numbers peaked at 8,500 in 1910. This enterprise, however, soon proved uneconomical and ceased in 1931.

See also: Borough, Stephen; Cabot, John; Chancellor, Richard; Corte-Real Brothers; Frobisher, Martin; Hudson Bay; Hudson, Henry; Hudson Strait; Muscovy Company; Northeast Passage; Northwest Passage; Willoughby, Hugh

References and further reading:
From 1882 until 1920, annual voyages were organized by the New Zealand government to search for castaways and to check the relief depots on this and other islands where shipwrecks were common. These voyages provided an opportunity for occasional visits by naturalists, the most significant being an expedition organized by the Philosophical Institute of Canterbury. On 17 November 1907, ten scientists were landed from Hinemoa, remaining on the island for eight days to make geophysical, geological, botanical, and zoological studies.

A period of neglect followed the cessation of these annual voyages, when radio was judged sufficiently advanced to provide an adequate substitute. This period ended when the outbreak of World War II drew attention to Campbell's strategic importance. Aware that its harbors could well attract unwelcome use by German raiding vessels, the New Zealand government organized the Cape Expedition to establish manned stations here and on the Auckland Islands to monitor shipping activity. On Campbell Island, the site chosen was Tucker Cove at the inland end of Perseverance Harbour, where a station was opened in 1941. In addition to coastal watching duties, significant scientific work was conducted here and on the other islands to justify publication in a series of twenty-seven reports. After the war, Tucker Cove continued in operation as a civilian meteorological station until 1958, when it was replaced by a station in nearby Beeman Cove. This station was closed on 15 October 1995 and replaced by an automatic weather station. The Campbell Islands Nature Reserve today is administered by the New Zealand Department of Conservation. Landing is by permit only.

See also: Auckland Islands; Bull, Henrik; France; Hasselburg, Frederick; Macquarie Island; New Zealand; Sealing and Antarctic Exploration; Sub-Antarctic Islands; Whaling and Antarctic Exploration

References and further reading:

**Campbell, Victor**

(1875–1956)

How the six-man Northern Party of Captain Robert Falcon Scott's second Antarctic expedition endured winter in an ice cave with just six weeks' sledging rations is one of the great survival stories of polar exploration. Lieutenant Victor Lindsey Arbuthnot Campbell was the party's leader.

**The Ice Cave on Inexpressible Island, 1911–1912**

Scott's Northern Party was originally intended to be his Eastern Party. As such, its objective was to explore Edward VII Land, the eastern limit of the Ross Ice Shelf, which had been discovered by Scott during his first Antarctic expedition in 1902. Finding no suitable landing place there, Terra Nova, with Campbell's party on board, next sailed back west along the face of the ice shelf with the intention of landing the group in the Bay of Whales. There, however, on 3 February 1911 they found Fram and the Norwegian explorer Roald Amundsen, Scott's competitor for the South Pole. Campbell was unwilling to establish his base so close to the Norwegians and decided instead to fall back on his second option of carrying out further studies of Victoria Land farther west. Terra Nova therefore sailed back to Cape Evans, where Amundsen's presence in the Bay of Whales was reported, before heading north along the coast of Victoria Land. Again, they were unfortunate, being caught in a gale on 12 February and swept far to the north of Victoria Land. Campbell's options now were limited. With the ship short of coal, he could either be landed at Cape Adare, where Carsten Borchgrevink had wintered in 1899, or else could attempt to land farther south but with the risk that, if unsuccessful, no landing at all might be made, and he would be forced to sail back with Terra Nova to New Zealand.

With considerable reluctance, Campbell opted for Cape Adare, where he and his party disembarked on 17 February.

In addition to Campbell, the Northern Party consisted of Raymond Priestley (geologist and meteorologist), naval surgeon Murray Levick, and three seamen: petty officers George Abbott and Frank Browning and able seaman Harry Dickason.

Patching up the two huts left behind by Borchgrevink, they lived in them until their own hut was ready for occupation. For Campbell, Cape Adare was a disappointing place to have to winter. Although Borchgrevink was not held in great esteem in British geographical circles, it was likely that whatever could be done there, he had already achieved. That proved to be the case. Campbell found possibilities for survey work severely circumscribed by the surrounding mountains, and scouring by icebergs offshore ensured that relatively few interesting marine organisms were found. However, meteorological records were diligently maintained through a typically stormy winter, and Priestley was able to do useful geological work in the vicinity of Robertson Bay.

On 4 January 1912, Terra Nova returned. Campbell's party was now taken farther south to Terra Nova Bay, where they disembarked at Evans' Coves on 8 January with six weeks' sledging rations. Having conducted a survey and made geological studies of the area around Mount Melbourne, they returned to Terra Nova Bay on 17 February for their expected rendezvous with Terra Nova. Despite the sea being open to the horizon, there was no sign of the ship. Initially, they were unconcerned, but as time passed it became apparent that they would have to winter where they were. Terra Nova had in fact made repeated attempts to reach them but was unable to penetrate a belt of ice 30 miles out.

Shelter and food were the two priorities. Both of their tents had been severely damaged in a gale on 21 February 1912 but in any case would not have provided adequate protection for
the winter. The only possibility was to dig a cave into the snow. A suitably deep snowdrift in a sheltered spot was found on "Inexpressible Island," and with one group digging while the others hunted for penguins and seals, by 17 March they were ready to move in. To best preserve heat, the cave was kept as small as possible, a mere 4 meters by 2.7, with the ceiling 1.7 meters at its highest. Since they had only their summer sledding clothes to wear, they were confined to the cave, except when they went out to hunt for seals. Inside the cave, no one could stand upright, and they developed "igloo back" from the constant bending. To preserve what little warmth there was, sealskins were hung across the entrance. The floor was covered by tent floor-cloths supplemented by seaweed, gravel, and pebbles, while the walls were lined with snow blocks. For entertainment during nearly seven very long months, they had a few novels, a Bible, and Priestley’s journal from the previous year, read out aloud by the light of four blubber lamps, each emitting some light, a little warmth, and a quantity of oily smoke that soon stained both clothes and cave black.

Food was their other great concern. Fortunately, they were by the sea and could supplement the little they had brought with them by killing seals and penguins, providing meat for food and blubber for fuel. While the ice cave was being prepared for occupation, a store of eleven seals and 120 penguins was acquired by 15 March, after which a succession of gales kept them in or near the cave. Biscuits were in very short supply, the daily ration being cut progressively from eight to two and then to one. On a typical day, they had one mug of pemmican and seal hoosh for breakfast, nothing for lunch, and one biscuit, a mug and a half of seal hoosh, and three-quarters of a pint of cocoa for supper. To preserve supplies, the cocoa was served very thin, and the tea drunk on Sundays was reboiled on Mondays and smoked as tobacco on Tuesdays.

Diarrhea added to the nightmare of their last weeks. Conditions were unspeakable. On 30 September 1912, with Browning and Dickason both still weak from enteritis, Campbell decided that they could wait no longer and must make their way as best they could to Cape Evans. Their route lay south along the sea ice, just off the coast, where the going was easier than on the land itself. Food here was not a problem; penguins and seals were plentiful. On 29 October, at Cape Roberts, they found a food cache and fresh clothes left by the Western Party the previous year (see Taylor, Thomas Griffith). With a few biscuits inside him, Browning in particular was a new man, and a now strengthened party took just three days to make the next depot at Butter Point, 40 miles away. On 6 November they reached Hut Point, where they learned of the loss of Scott and his five-man Polar Party from a note addressed by Surgeon Edward Atkinson to the commanding officer of Terra Nova. They arrived the next day at Cape Evans, where they were welcomed by Frank Debenham and W. W. Archer, who cooked them a sumptuous meal.

Campbell was promoted to commander for his very considerable achievement in bringing his party intact through their ordeal. After serving during World War I in the Dardanelles, he settled in Newfoundland in 1922, where, in the
words of his former colleague Debenham, he lived out the remainder of his life “growing potatoes and hair” (Quartermain 1981, 147).

See also: Amundsen, Roald (1910–1912); Atkinson, Edward; Borchgrevink, Carsten; Scott, Robert Falcon; Taylor, Thomas Griffith; Victoria Land

References and further reading:

Canada

Canada acquired its high Arctic territories in 1880, when title and ownership of all British possessions to its north were transferred to the Dominion by Imperial Order in Council. Little was done to assert sovereignty until 1897, when William Wakeham was sent to inspect stations maintained by American whalers on Baffin Island and to inform them that they were subject to Canadian regulation. The discovery and ownership of all British possessions to its north were primarily concerned with their relief and resupply.

The Canadian government did not generally have the resources to sponsor expensive exploring expeditions, but an exception was made for Vilhjalmur Stefansson's Canadian Arctic Expedition of 1913–1918, during which the last remaining islands of the Canadian Arctic were discovered. Although there is frequent confusion about his nationality, Stefansson was an American citizen, and it was to ensure that all discoveries made by him could be claimed for Canada and not the United States that the Canadian prime minister was persuaded to take over its organization. It was a continuing source of embarrassment that so much of the Canadian Arctic had in fact been explored by nonnationals, not just Sverdrup but also a succession of Americans on Ellesmere Island. Particular concern arose in 1925, when Donald MacMillan proposed to explore for new land from a base on Axel Heiberg Island, one of the islands not yet reached by any Canadian. MacMillan’s refusal to apply for a permit resulted in the establishment in 1926 of a new RCMP post in Ellesmere Island on the Bache Peninsula and the organization of long-distance RCMP patrols to visit islands not previously reached, especially the Sverdrup group. On the first patrol in 1927, Staff-Sergeant A. H. Joy set out from Bache Peninsula across Ellesmere Island to visit Axel Heiberg, Amund Ringnes, King Christian, Cornwall, and Graham Islands on a journey of 1,300 miles. On the second, in 1929, Joy, now an inspector, led a patrol of 1,800 miles from Dundas Harbour, Devon Island, during which he visited Cornwallis, Bathurst, Melville, Lougheed, King Christian, Ellef Ringnes, Amund Ringnes, Cornwall, Axel Heiberg, and Ellesmere Islands. Norway never sought to pursue Sverdrup’s claim and in 1931 concluded an agreement recognizing Canadian sovereignty of the Sverdrup Islands.

Although U.S. interest in the High Arctic has sometimes aroused Canadian concern, the two countries have generally managed to collaborate in matters of common interest. Thus, U.S. Naval Task Force 68 was charged in 1946 with identifying suitable sites for a network of meteorological stations in the Canadian Arctic during Operation Nanook. Five stations were opened at Eureka (79°59’N, 85°56’W) and Alert (82°30’N, 62°20’W) on Ellesmere Island in 1947 and 1950; at Resolute Bay (74°43’N, 94°59’W), Cornwallis Island, in 1947; and at Mould Bay (76°14’N, 119°02’W), Prince Patrick Island, and Isachsen (78°47’N, 103°32’W), Ellef Ringnes Island, in 1948. Until 1972, these stations were staffed jointly by Canadians and Americans but since then have been manned by Canadians only. Canada and the United States similarly cooperated in the construction of the distant early warning (DEW-line) radar stations, and when preparations were being made to launch the first U.S. satellite, Canada established the Polar Continental Shelf Project (PCSP) in 1958 to ensure that the necessary studies were made to determine gravitational pull in the Arctic. PCSP was originally founded to conduct science and provide logistical support—airplanes, equipment, radio—to other scientists working on the Arctic islands and immediately offshore, but since 1986 it has been dedicated to logistical support, maintaining base camps at Resolute and Tuktoyaktuk on the mainland. Other organizations conducting extensive work in the Canadian Arctic include the Geological Survey of Canada; the Defence Research Board, which sponsored, among others, the expeditions of Thomas Manning to Banks Island and Geoffrey Hattersley-Smith to Ellesmere Island; and the Geographical Branch of the Department of Energy, Mines, and Resources, which conducted a major program of research on Baffin Island in the 1960s. Scientists from many universities participate in northern research, as do those from the national museums and a range of government research institutes. Since 1991, these activities have been coordinated by the Canadian
Polar Commission, which has also sought to promote studies in Antarctica following Canada’s ratification of the Antarctic Treaty on 4 May 1988.

See also: Bernier, Joseph-Elzéar; Larsen, Henry; Low, Albert; MacMillan, Donald (1925); Manning, Thomas; Stefansson, Vilhjalmur (1913–1918); Sverdrup Islands; Sverdrup, Otto

References and further reading:

Candlemas Island (South Sandwich Islands)
Located at 57°04’S, 26°41’W, this small island—3.6 miles by 2—lies toward the northern end of the volcanic arc forming the South Sandwich Islands in the southern South Atlantic Ocean. It was first seen on 2 February 1775 by James Cook, who named it and the adjacent island, known today as Vindication, for Candlemas Day, the day of their discovery. In January 1820, it was recharted by Fabian von Bellingshausen. Following the 1930 survey by RRS Discovery II, the name “Candlemas” was reserved specifically for this island; though along with Vindication Island, these islands are sometimes referred together as the Candlemas Islands. The first recorded landing was made by Carl Anton Larsen in 1908, though spars and a shafted blubber hook found in 1964 indicate that sealers may have been ashore here sometime during the nineteenth century. Further landings were made in 1961 from R/V Endurance and in 1962 and 1964 by helicopter from HMS Protector. During this last visit, a British Antarctic Survey party established a camp on Candlemas Island during a comprehensive topographical and scientific survey of the South Sandwich Islands, staying here from 6 to 22 March. The most recent scientific visits were made by a British party in 1997 from HMS Endurance and in 1998 by a German party from R/V Polarstern.

See also: Bellingshausen, Fabian von; British Antarctic Survey; Cook, James (1772–1775); Discovery Investigations; Great Britain; Larsen, Carl Anton; Sealing and Antarctic Exploration; South Sandwich Islands; Vindication Island; Whaling and Antarctic Exploration

References and further reading:

Cartography of the Arctic
This was a subject of speculation since antiquity, and the immense difficulties involved in reaching and exploring the polar regions meant that the true nature of their geography and therefore their cartography was only finally resolved during the twentieth century.

The earliest maps including reference to the Arctic are of the type known as “zonal maps.” They represent attempts made during late classical times to organize strictly limited knowledge of the world. Zonal maps were hardly more than diagrams in which the global disc was divided into habitable temperate regions and uninhabitable regions, including frigid zones in the far north, which they knew existed, and the far south, the existence of which they inferred.

The developing medieval worldview was quite different from the modern one and is exemplified by the type of world map known as mappae mundi. In effect, they were compendia of current information based on classical knowledge, the Bible, travelers’ tales, and some natural history, all set within a Christian context that placed Jerusalem at the center of the map, which was often oriented to the east. This worldview only just included the Arctic, as can be seen in the famous Hereford mappa mundi (ca.1290), which depicts a small Norwegian figure on a ski at the very edge of the known world, just inside the encircling ocean.

In about 1360, an English friar, Nicholas of Lynn, reputedly sailed from Norway to a coast where the sea froze in winter, which may have been Greenland. He reported that the North Pole was a magnetic rock in the middle of a whirlpool surrounded by mountainous lands and channels through which the sea was drawn in. It may be that the magnetic rock owed something to the workings of the magnetic compass and the whirlpool was perhaps connected to the maelstrom believed to lie off the Arctic coast of Norway. Whatever the truth, Nicholas’s account had a great effect on Arctic cartography. The earliest extant globe, for example, made by Martin Behaim in Nuremburg in 1492, clearly followed Nicholas’s concept though, with Greenland depicted as an extension of Norway, and as late as 1595 Gerard Mercator considered it appropriate to reproduce the same concept in even greater detail in his atlas.

The persistence of such concepts was assisted in 1558 by the publication of an account of an Arctic voyage reputedly made about 1380 by two Venetian brothers, Niccolo and Antonio Zeno. As well as describing their visit to Greenland and the mythical island of Frisland, the account included a map showing Greenland as extending in a great arc north of Iceland and joining Norway. The Zeno map, possibly originating in the medieval concept that all lands must be united since all civilization originated from a common center, served to confuse generations of future Arctic cartographers and explorers.

The medieval image of the world began to undergo radical change in the late fourteenth century, when Turkish pressure on Constantinople resulted in the emigration of Byzantine scholars to Italy. They took with them Greek manuscripts, including Ptolemy’s Geographia. By 1427, less than twenty years after the first Latin translation, a copy of the Geographia was made in France to which was appended a map of the northern lands by the Danish geographer Claudius Clavus—the first “modern” map to be added to a Ptolemaic manuscript. All the early editions of the Geographia were copied by hand, text and maps alike, and various changes were introduced. In 1466, a copy of the world map showed Greenland west of Norway; by 1468, it had been moved to the
north. The first printed edition was published in Bologna in 1477; by the famous Ulm edition of 1482, a northern extension representing Scandinavia had been added. The sea beyond is simply mare glaciale, and there is no Siberian coast. Much geography at this time was hypothetical, and cartographical progress was in consequence uneven. Martin Waldseemüller’s 1507 world map, for example, depicts the Arctic coast of Eurasia joining Scandinavia with the Far East. In about 1504, a chart of the North Atlantic by Pedro Reinel appeared, the first to show the direction of the North Magnetic Pole. In 1569, Mercator showed two magnetic poles—one on an island in the “Strait of Anian” (roughly Bering Strait) and the other farther to the northwest, stating in an explanatory note that he believed the true magnetic pole lay somewhere between these two positions.

Actual exploration of the Arctic began in the mid-sixteenth century, when English and Dutch navigators began to search for the Northeast and Northwest Passages to Cathay and the Spice Islands. There was by now general agreement among cartographers that northeastern Asia and northwestern America were not connected and that the polar lands were separated by sea from both. The Arctic Ocean was believed to be largely ice-free and appeared to offer a short route to the Far East and its luxury products. It may have been this concern that led cartographers at an early date to draw maps on a polar projection—a bird’s eye view of the circumpolar lands centered on the Pole itself, for example John Dee’s map of about 1582.

One of the earlier English expeditions to investigate the Northeast Passage was that of Stephen Borough in 1556–1557, whose brother William compiled a chart depicting the route from North Cape to the Kara Sea. By the time Abraham Ortelius’s world map was published in Amsterdam in 1587, the Siberian coast was depicted and Novaya Zemlya had appeared. However, beyond Iceland and Greenland—now roughly in the right positions—and stretching right across the world lies a vast polar continent, Terra Septentrionalis Incognita, mirroring the con-
temporary concept of a great southern continent (*Terra Australis Incognita*). The Dutch also explored the Northeast Passage, and the map compiled by Willem Barents on the basis of his voyages in the 1590s was published posthumously by Cornelius Claesz in 1598 in a polar projection that combined Barents’s discoveries of Spitsbergen and Bear Island with existing knowledge of the Arctic, including Davis Strait, the northwest coast of Novaya Zemlya, and the supposed position of the magnetic pole in the “Strait of Anian.” Later Dutch cartographers improved upon mapping of the Svalbard Archipelago on the basis of discoveries, particularly to the north and east, reported in the seventeenth and eighteenth centuries by Dutch whalers.

A landmark event in Arctic cartography was the Great Northern Expedition of 1733–1743, launched by Tsar Peter the Great and led by Vitus Bering. Seven detachments, almost 1,000 men in all, set out by ship and dogsledge to explore and map a possible Northeast Passage, the Eurasian Arctic coast, the Bering Strait, and Alaska—which was a Russian possession until 1867. By the time these surveys were completed, often in conditions of the greatest hardship, almost the entire Arctic coastline of mainland Russia had been explored. Maps compiled in the field were sent back to the St. Petersburg Academy of Sciences to be collated, redrawn, and engraved. Initially, efforts were made to keep these maps secret, but doing so
proved impossible, and they were published in the great Russian atlas of 1745, to be revised as further surveys were carried out subsequently.

The mapping of the North American Arctic, with its labyrinth of islands and straits, proceeded more slowly. Charting of the Hudson Bay region began with the seventeenth-century English voyages in search of the Northwest Passage. The Arctic coast was first depicted in 1772 on Samuel Hearne’s map showing the Coppermine River to the Arctic Ocean (published in 1795). Between 1818 and 1838, British naval and Hudson’s Bay Company expeditions continued the process, the pace accelerating during the period of the search for Sir John Franklin’s lost expedition (1847–1859), when many of the islands were surveyed for the first time. Vilhjalmur Stefansson’s discovery and survey of the last unknown islands between 1913 and 1918 concluded outline mapping of the region.

The first recorded European—as opposed to Inuit—maps of Greenland were those compiled in 1605 by James Hall, pilot of John Cunningham’s Danish expedition. Hans Egede’s map of southern Greenland in 1737 significantly omitted “Frobisher’s Strait,” which earlier cartographers show cutting across south Greenland as a result of circumstances described in the entry for Martin Frobisher. Despite Egede’s insisting that it did not exist, “Frobisher’s Strait” continued to be depicted there rather than on Baffin Island by many maps into the nineteenth century.

Arctic cartography has continued to develop into modern times, as the more inaccessible regions were finally reached by explorers: Severnaya Zemlya, for example, discovered in 1913 and not surveyed until 1930–1932 by Georgiy Ushakov; and East Greenland, mapped by a succession of Danish expeditions from 1884, when Ammassalik was first reached by Gustav Holm. Aircraft and, more recently, satellites have led to significant improvements in accuracy, particularly in the portrayal of interior detail. Advances in surveying methods are described in the entry “Surveying and Mapping.”

David Clammer

See also: Barents, Willem; Bering, Vitus (1733–1743); Borough, Stephen; Cunningham, John; Egede, Hans; Franklin Search Expeditions; Frobisher, Martin; Hall, James; Holm, Gustav; Magnetic Poles; Nicholas Zeno map. (Nordensköld, A. E., 1887. Facsimile–Atlas till kartografiens äldsta historia. Stockholm: P. A. Norstedt & Söhner Kungl. Boktryckeriet, p. 53.
of Lynn; Northeast Passage; Northwest Passage; Open Polar Sea; Stefansson, Vilhjalmur (1913–1918); Surveying and Mapping; Terra Australis Incognita; Ushakov, Georgi (1930–1932)

References and further reading:

**Chancellor, Richard**
(d. 1556)

In terms of their consequences for trade, the two voyages of the English navigator Richard Chancellor along the Northeast Passage were of the greatest significance. They were both attended by disaster, however, when first Sir Hugh Willoughby and then Chancellor himself were lost, together with most of those accompanying them.

**Explorers Meet the Tsar, 1553–1554**

Appointed pilot major of the fleet and captain of the 160-ton *Edward Bonaventure*, the largest of three ships sent out to seek the Northeast Passage under the leadership of the English nobleman Sir Hugh Willoughby, Richard Chancellor was one of the few experienced seamen under Willoughby's command. When these ships were scattered in a storm off northern Norway in early August 1553, Chancellor alone managed to reach the appointed rendezvous at Vardo, in whose sheltered harbor he remained seven days. There, he met several Scotsmen, who warned him against the considerable dangers of proceeding farther and advised him to turn back. Chancellor was not to be dissuaded. Clearly the Scots had already established trading links in this area and were trying to discourage English competition. Deciding that he could wait no longer for Willoughby, Chancellor set sail again to the east, following the coast of the Kola Peninsula and then going south into the White Sea. There he made contact with Russian fishermen, who told him that he had reached the land of Muscovy, or Russia. Chancellor anchored near the mouth of the Northern Dvina River, where he met the local governor.

The chief purpose of Willoughby's expedition was to develop new trading links. To this end, the complement of *Edward Bonaventure* included several merchants and had been entrusted with a letter from King Edward VI spelling out the favorable terms under which trade would be offered to any ruling potentates encountered during the voyage. This message was now passed to the governor, who communicated secretly with Tsar Ivan IV in Moscow. Ivan, who on this occasion at least did not live up to his sobriquet “the Terrible,” was eager to meet the merchants and made arrangements for them to be brought the 1,500 miles to Moscow at his own expense. Only at the second grand banquet they attended were the Englishmen allowed to approach the tsar and sit at his table, a great honor. To each of them he gave a drinking cup and expressed particular admiration for the beard of the leading merchant, George Killingworth. This he passed for blessing to the Metropolitan of the Russian Orthodox Church, saying, “This is God's gift.” The beard was thick, broad, and yellow, and over 1.5 meters long! Killingworth's beard clearly did much to foster good relations, and Chancellor's party was escorted back to their ship with a letter to Edward VI granting permission to begin a trading relationship.

Chancellor reached England in the summer of 1554. There was no news of Willoughby, but his own success in Russia was sufficient to lead to the formation of the Muscovy Company, which was set up by royal charter on 26 February 1555. Because Edward VI by then was dead, Chancellor, Killingworth, and Richard Gray were given a letter by Queen Mary granting them powers to negotiate commercial privileges with the tsar.

**A Second Expedition Meets Disaster, 1555–1556**

We do not know when Chancellor set out on his second voyage, which was organized by the newly incorporated Muscovy Company. Again, he sailed in *Edward Bonaventure*, but he was accompanied for the first part of his journey by Philip and Mary, which was carrying trading goods to Vardo, no doubt much to the displeasure of the Scots whom Chancellor had encountered the previous year. Having reached the White Sea, Chancellor and his companions again traveled overland to Moscow, where they arrived in October 1555. There they succeeded in obtaining new commercial privileges from the tsar and endeavored to discover all that they could concerning how China might be reached from Russia, either by land or sea. For the English, Russia was merely a stop on the way. True riches would be theirs only if they could follow the Northeast Passage to the Far East.

While Chancellor and his companions remained through the winter in Moscow, *Edward Bonaventure* returned to England. While at anchor in the White Sea, rumors had reached the crew of the discovery of two ships on the coast of Lapland. All on board were dead. *Edward Bonaventure* visited the site of the tragedy and found the ships to be *Bona Esperanza* and *Bona Confidentia*, Willoughby's missing vessels. Few indications could be found as to what had happened, and it was presumed that the expedition had simply been unable to survive the intense cold. What cargo remained was taken on board, and *Edward Bonaventure* continued on its voyage back to London.

On 20 July 1556, Chancellor's party was also ready to depart, this time accompanied by the Russian ambassador Osep Napea. The Muscovy Company had sent out *Edward Bonaventure* and *Philip and Mary* to transport them home, as
well as to recover Willoughby’s two ships. Now they too were to experience disaster. First, the recovered Bona Confidentia was wrecked on the Norwegian coast, and then Edward Bonaventure sank off Scotland on 10 November. The Russian ambassador was rescued, but Chancellor was lost. Bona Esperanza was forced to winter in Norway and was never heard of again. Only Philip and Mary arrived safely, and then only in April 1557, after a very extended voyage.

See also: Muscovy Company; Northeast Passage; Russia; Willoughby, Hugh

References and further reading:

Charcot Island (Antarctic Peninsula)
Located at 69°55'S, 75°15'W, this island, 30 miles long and 25 miles wide, lies 55 miles west of Alexander Island at the base of the Antarctic Peninsula. It is completely ice-covered. It was discovered by Jean-Baptiste Charcot on 11 January 1910, and named at his request not for himself but for his father, the distinguished neuropsychologist Dr. Jean-Martin Charcot. Its insularity was proved from the air by Sir Hubert Wilkins, who followed its coastline around in a circle on 29 December 1929. With Alexander Island, it was the preferred location for East Base during the U.S. Antarctic Service Expedition. USS Bear, however, was prevented by ice from making a close approach, and the station was set up instead on Stonington Island in Marguerite Bay. The first air photographs were obtained by the Eastern Group of Operation Highjump, whose commander, Lieutenant-Commander George Dufek, attempted to make the first landing on 10 February 1947. He got within 500 meters of the shore in a motorboat before being turned back by the continuously shifting pack ice. The first landing was subsequently made during the Ronne Antarctic Research Expedition, when a plane landed on 23 December 1947. In 1959, the island was mapped by the Falkland Islands Dependencies Survey on the basis of aerial photographs. The first ground survey was made by a Chilean party in 1982, which also established a temporary landing strip and station at 69°43'S, 75°00'W. The latter does not appear to have been operated since, no doubt because of the considerable logistical difficulties involved in gaining access to Charcot Island.

See also: Black, Richard; British Antarctic Survey; Byrd, Richard (1939–1941); Charcot, Jean-Baptiste (1908–1910); Chile; Operation Highjump; Ronne, Finn (1947–1948); Wilkins, George Hubert (1929–1930)

Charcot, Jean-Baptiste
(1867–1936)
“The gentleman of the poles,” Robert Falcon Scott called him, and indeed perhaps no polar explorer was ever more attractive in his modesty, unfailing courtesy, and consideration for all who sailed with him than Jean-Baptiste Charcot. Above everything else, Charcot was an enthusiast: for sailing, for France, but perhaps most of all for the polar regions, both north and south, where his achievements were great indeed.

Jean-Baptiste Etienne August Charcot was the son of the internationally renowned neuropsychologist Professor Jean-Martin Charcot, on whose death in 1893 he inherited a large fortune. Although deference to his father’s wishes had led him to obtain medical qualifications and practice as a doctor, his heart was elsewhere. As a child, he had attempted to sail a soap box on a lake at Neully-sur-Seine, this his first boat bearing the same name as his last, Pourquoi-pas? (Why not?). No name could have been more apt.

A Relief Expedition Becomes a Voyage of Discovery, 1903–1905
Prepared by voyages to the British Isles and Faroe Islands, in 1902 Charcot sailed in Rose-Marine to Jan Mayen, Norway, the first of many Arctic voyages and one that inspired him with an enduring love for the polar regions. Realizing that travel in these regions needed a larger, specially equipped vessel, he paid for the construction of the 250-ton Français, which was built entirely of oak and finished to the highest standards, its design benefiting from advice from the Belgian Antarctic explorer Adrien de Gerlache. Even Charcot’s wealth was not inexhaustible, and to fund fitting out of a laboratory suitably supplied with scientific instruments, he had to sell his most prized possession, a painting by the eighteenth-century master Jean-Honoré Fragonard. Insufficient money remained for the engine, with the result that Français was equipped with a second-hand and underpowered 125-horsepower engine. It caused problems later.

Charcot had originally intended Français’s maiden voyage to be to Greenland. On hearing, however, that the Swedish Antarctic Expedition’s ship Antarctic and its leader Otto Nordenskjöld were missing, he decided to sail south instead to assist in the search effort. Informing his volunteer staff of the change of plans, one of them—Paul Pléneau—memorably replied by telegram, “Where you like. When you like. For as long as you like!” After Charcot obtained the backing of French president Émile Loubet and the Académie des Sciences, 150,000 francs was raised by a public appeal organized by the Parisian newspaper Le Matin, whose proprietor was Charcot’s brother-in-law.

Français’s departure from Le Havre on 15 August 1903 was marred by tragedy when the sailor Maignan was struck dead when the tow rope broke loose of its cleat. Charcot had been talking with Maignan immediately before the incident and insisted on personally taking the body to Maignan’s widow. Français sailed again on 27 August.

With the exception of two naval officers, Lieutenant André Matha and Sub-Lieutenant Joseph-J. Rey, the expedition was staffed entirely by volunteers. Gerlache, whose advice had been so helpful in designing a ship capable of making its way
through ice, was on board, and Charcot expected to benefit greatly from his previous Antarctic experience. Gerlache, however, became increasingly disaffected, feeling that Charcot’s plans were too vague and inadequately communicated to his crew—criticisms that could with more justice have been made of his own expedition. Using the excuse of his recent engagement, Gerlache now insisted on disembarking at Pernambuco, Brazil, accompanied by two of the scientists, Bonnier and Perez. Without Gerlache’s expertise, Charcot doubted whether he could fulfill his planned program, but receiving full support from the remaining officers and crew, he continued on to Buenos Aires, Argentina which was reached on 16 November. There Charcot learned of Nordenskjöld’s rescue by an Argentine relief expedition led by Julián Irízar. Nordenskjöld himself was invited on board, where he generously presented five Greenland huskies. Two replacement scientists, J. Turquet and Ernest Gourdon, joined the expedition, whose full Antarctic complement consisted of the following scientific staff: Charcot (physician, bacteriology), Gourdon (geology, glaciology), Matha (astronomy, hydrography, gravitation), Pléneau (photography), Rey (meteorology, magnetics, atmospheric electricity), and Turquet (zoology, botany). In addition to Charcot’s long-serving steward Robert Paumelle, also in the party was the Italian alpine guide Pierre Dayné, the first professional mountaineer to go to Antarctica. Among the twelve crew was the naval apprentice Raymond Rallier du Baty, later to lead two expeditions to the Kerguelen Islands.

Français left Buenos Aires on 23 December 1903, reaching Tierra del Fuego on 26 January 1904 and sailing for Antarctica the following day. Charcot now called the expedition members together, stating frankly his lack of disciplinary powers and appealing to everyone’s goodwill and patriotism to ensure good conduct in what at times might be trying circumstances. Charcot’s aim was to visit areas not explored previously by Gerlache and Nordenskjöld: the northwestern parts of the Palmer Archipelago, the Bismarck Strait and the southwestern entry to the Gerlache Strait, and farther south to Alexander Island.

Passing near but not landing on Smith and Low Islands, the westernmost members of the South Shetland Islands, Français proceeded past Hoseason Island and around the poorly
On 5 February 1904, while the ship was off Anvers, pipes leading to the boiler began to leak, causing a drastic loss in engine pressure. With the propeller turning sporadically, Charcot sought shelter first in Biscoe Bay and then farther east in Flinders Bay, where he remained for eleven days to patch the leaks. On 19 February, an excellent natural harbor was discovered on the southwest coast of Wiencke Island and named Port Lockroy after the minister of marine for his help to the expedition. A British base was later sited there. Finding the Lemaire Channel blocked by ice at its southern end, Charcot sailed west of Booth Island, where he noted a likely place to winter, and south to the Biscoe Islands. The season being now late and conditions evidently worsening, Charcot decided to turn about on 26 February, reaching Port Charcot, his chosen winter station on Booth Island, on 3 March. They were at 65°5'S, 1 degree farther south than Nordenskjöld had wintered on the other side of the Antarctic Peninsula.

Here in a sheltered anchorage, a quiet if monotonous winter was spent, made more tolerable by excellent food provided by Rozo, the cook who had boarded at Buenos Aires. Throughout the winter, Rozo baked fresh bread every other day and made cakes and croissants on Sundays. Huts were erected on the island for scientific purposes, but the expedition slept on board Français.

On 24 November 1904, with the Antarctic spring quite far advanced, Charcot set out with Pléneau, Gourdon, and two sailors in the whaleboat provisioned for twenty days and including a collapsible sledge. His aim was to reach Petermann Island, 10 miles to their south, and to cross from there to the Antarctic Peninsula. Petermann was reached without incident, but it took another four days to cross the narrow strait separating the island from the mainland, since the ice was packed too tightly to sail the boat but insufficiently solid to support the weight of the sledge. Once across, they climbed to the top of Cape Tuxen (880 meters) and surveyed the coast south to the Biscoe Islands.

With Français freed from the ice, on 25 December Charcot again sailed south. Sighting high mountains south of the Biscoe Islands, he believed that he had discovered a new coast, which he named Loubet after the French president. However, as he realized during his next expedition, what he saw was in fact John Biscoe's Adelaide Island, but unrecognizably larger than Biscoe had reported. On 13 January 1905 Alexander Island was seen in the distance, but Charcot was unable to approach within 60 miles. Disaster struck on 15 January when Français hit a submerged rock at full speed. Water poured in, but the underpowered engine was unable to operate the pumps. They would have to be worked by hand but could only be reached by smashing through the watertight compartments sealing them from the rest of the ship. For the remainder of the expedition, Français was only kept afloat by hand pumping for forty-five minutes in every hour. Charcot desperately headed north as fast as possible, by 30 January reaching Port Lockroy and remaining there for ten days to patch up Français as best as he could. By 15 February, he had passed through the South Shetland Islands and out into the Drake Passage. Safety was finally reached on 5 March at Puerto Madryn, Argentina, where Charcot learned of mounting concern about his expedition following the failure of the Argentine relief ship Uruguay to find a message reporting all well, which he had left on his first visit to Wiencke Island. Plans to launch a relief expedition in France could now be halted, and on 15 March the expedition reached Buenos Aires. There Français was placed in dry dock, where it was discovered that seven meters of its false keel had been torn away. They had been lucky indeed.

Having taken over operation of a meteorological station from William Speirs Bruce's expedition and with plans for setting up additional Antarctic meteorological stations, Argentina bought Français from Charcot for use as a supply vessel to these stations. Charcot's party therefore sailed back to France on a liner accompanied by seventy-five boxes of specimens, equipment, and journals. In total, over 600 miles of coastline had been charted, and the scientific results were sufficient to fill eighteen volumes published at the expense of the French government, now fully appreciative of Charcot's status as a national hero.

**Charcot Completes His Exploration of the Antarctic Peninsula, 1908–1910**

The success of his previous expedition guaranteed Charcot generous government support with sufficient funding to build a new ship, the three-masted barque Pourquoi-Pas?, considerably larger than Français and equipped with a powerful new 450-horsepower engine. On 15 August 1908, Pourquoi-Pas? sailed from Le Havre, France, manned by a crew of twenty-two, of whom eight had been previously in Français, with three naval officers to assist Charcot: sub-lieutenants Maurice Bongrain (second-in-command), Jules Alfred Pierre Rouch, and René E. Godfroy. All three were to enjoy distinguished subsequent careers, as were many of the scientific staff, who included only Gourdon from Charcot's first expedition. With Charcot again as physician and bacteriologist, scientific responsibilities were shared out as follows: Bongrain (astronomy, hydrography, seismography, gravitation), Louis Gain (zoology, botany), Godfroy (tides, atmospheric chemistry), Gourdon (geology, glaciology), Dr. Jacques Liouville (assistant physician, zoology), Rouch (meteorology, atmospheric electricity, physical oceanography), and A. Senouque (magnetics). To assist the scientists, Pourquoi-Pas? had no fewer than three well-equipped laboratories and a library—not exclusively scientific—of nearly 3,000 books. Also on board were no fewer than three motor vehicles, though they were to receive minimal use.

Following a brief visit to Rio de Janeiro, Brazil, Pourquoi-
Charcot, Jean-Baptiste

Pas? reached Buenos Aires, where Charcot was saddened to see Français stranded on a sandbank in the river Plate. It had been wrecked in December 1907 while setting out on a voyage to establish an Argentine meteorological station at Charcot’s old winter quarters on Booth Island. The Argentine government voted unlimited credit to the new expedition, enabling Charcot to place Pourquoi-Pas? in dry-dock and make all the improvements he desired. Reaching Punta Arenas on 1 December, they received equal generosity from the Chileans. On 16 December 1908, Pourquoi-Pas? finally sailed for Antarctica, leaving Madame Charcot behind on the quay-side. Showing a very different attitude toward her husband’s expeditions than his previous wife, who had divorced him for desertion, she had insisted on accompanying the expedition as far south as she could.

By 22 December Pourquoi-Pas? was at Deception Island, where Charcot was greeted warmsly by Chilean and Norwegian whalers. Thanks to maps drawn on his first expedition, the whalers had been able to extend their operations farther south along the Antarctic Peninsula, with Port Lockroy identified as a particularly suitable future base. On 25 December, leaving the whalers’ festivities behind, Charcot set course south for Booth Island where he reached his old winter quarters on 29 December. On 1 January 1909, a fine natural anchorage on Petermann Island was identified as a potential winter station, and from there, three days later, Charcot, Gourdon, and Godfroy set out in the launch to cross the narrow strait to Cape Tuxen on the Antarctic mainland. Anticipating a short trip only, they took neither change of clothes nor emergency rations. For entertainment, they had recourse to the very extensive library, and Charcot had thought to bring with him daily. Rouch was writing a novel—The Typist’s Lover—from which he read installments. They were particularly enjoyed.

Drama continued the next day, when the ship ran hard aground off Cape Tuxen. It was clear that considerable damage had been sustained: much of the false keel was torn away, and many planks were floating on the surface. Charcot must have feared that his second expedition would share the same fate as his first. After they moved as much weight aft as possible, Pourquoi-Pas?’s powerful engine eventually succeeded in pulling it off the rock as the tide rose. Fortunately, it was exceedingly well-built and apparently needed little repair, with only a slight leak easily dealt with by pumping.

On 12 January 1909, Pourquoi-Pas? sailed south from Petermann Island to compile a rough sketch of the coast south to Adelaide Island, which Charcot was now able to identify from Biscoe’s report, despite the latter’s gross underestimation of its extent. South of Adelaide, on 15 January, a great gulf was found stretching to the east, which Charcot named Marguerite Bay for his wife. There, a landing was made on Jenny Island—named after Bongrain’s wife—and an ascent made to 450 meters, from where good views could be obtained of Adelaide Island and the adjacent mainland. Having mistakenly named Adelaide the “Loubet Coast” during his previous expedition, Charcot now transferred this name to the mainland to its east, calling the coast farther south “Fallières” for the French president succeeding Loubet.

In magnificent weather, Pourquoi-Pas? sailed within 15 miles of the ice cliffs fringing Alexander Island before being forced back to Marguerite Bay, where Charcot continued to search for a suitable wintering site. Coal was running short, but with the weather improving once more, Charcot determined to make one last attempt to reach Alexander Island, coming this time within 2 miles of its ice cliffs, by far the closest approach yet and with excellent views. After the ship returned once more to Jenny Island, a party led by Bongrain proved Adelaide to indeed be an island rather than a peninsula attached to the mainland. With icebergs crashing through the pack worryingly close to Pourquoi-Pas? and no sheltering cove within reach, on 30 January 1909 Charcot reluctantly decided to head north to winter at Petermann Island.

At 65°10’S, 64°10’W, Petermann Island was disappointingly only 10 miles south of where Charcot had wintered during his previous expedition, but in all other respects, the season had been enormously successful. After enclosing the harbor with a system of chains to direct encroaching icebergs away from the ship, they made Pourquoi-Pas? ready for winter and built no fewer than four huts on the island as scientific observatories, each linked by wires to the ship’s generator for electricity. For entertainment, they had recourse to the very extensive library, and Charcot had thought to bring with him back copies of the newspaper Le Matin, which he released daily.

With Pourquoi-Pas? ready to sail, Charcot’s first priority was to replenish his coal stocks from the whalers at Deception Island. Leaving Petermann on 25 November 1909, two days later he was at Deception. While his scientists surveyed the island, a diver was sent down to inspect Pourquoi-Pas?’s hull. Extensive damage was seen, and the diver strongly recommended that no more exploration be attempted since one more blow could send it to the bottom. Charcot, however, decided to keep this information to himself, feeling that national honor could not bear another ignominious retreat. Having been resupplied with coal on generous terms, Charcot sailed from Deception on 23 December with the intention of picking up fossil collections left at Hope Bay by Gunnar Andersson of Nor-
denskjøld’s expedition and of repaying the kindness of the whalers by investigating for them possible anchorages on Joinville Island. Ice prevented him from accomplishing either of these objectives, but Gourdon, Godfroy, and two crew were landed on the active volcano Bridgeman Island, the first documented landing. Returning toward Deception, they paid a brief visit to Admiralty Bay, King George Island, where further studies were carried out before they returned to Deception on 31 December.

On 6 January 1910 Pourquoi-Pas? set out again, this time sailing far out from the peninsula coast on a direct course for Alexander Island. Five days later, having made rapid progress in a northeast gale but with little visibility, Charcot heaved his ship to in expectation that the weather would clear to give him an interesting view of Alexander Island. From his position high in the crow’s nest, he was surprised to see signs of land to the west at 70°S, 76°W. Without divulging his suspicions, he now ordered course to be changed, enjoying the mutterings of his mystified crew. Soon all became clear, quite literally, as land unmistakably appeared ahead of them. Charcot Island, named at Charcot’s insistence for his father and not himself, was one of his most significant discoveries but not one that he was able to approach more closely.

Charcot’s final task was to investigate the possibility of land linking his newly discovered Fallières Coast on the Antarctic Peninsula with Robert Falcon Scott’s Edward VII Land. Following the pack ice west, they saw Peter I Island on 14 January, the first time it had been seen since Fabian von Bellingshausen’s discovery in 1821. Sailing consistently at 69° and 70°S, Charcot reached 124°W before finally deciding to turn north on 22 January. Although no more land had been seen, he was convinced that the number of icebergs, relatively shallow soundings, and many seabirds all indicated that land was not far off. Many of his crew, however, were evidently reaching the end of their endurance, and with farther progress to the west blocked by ice, it seemed best to head home.

On 11 February 1910, Pourquoi-Pas? reached Punta Arenas and on 5 June Rouen, France, following extensive repairs in Montevideo, Uruguay. In all, 1,250 miles of new coastline had been charted, and twenty-eight volumes were necessary to report all the scientific observations.

Later Expeditions to Iceland, Jan Mayen, and Greenland, 1912–1936

Although best known for his two Antarctic expeditions, Charcot continued to work regularly in the polar regions for the rest of his life, though he never again went to Antarctica. In 1912, in his much-beloved Pourquoi-Pas?, he took Gourdon and a party of naval apprentices to Jan Mayen Island, where the volcanic crater Eggøya was examined for signs of recent activity. With Gourdon and more apprentices, he visited Jan Mayen again the following year, making six landings. These expeditions were largely funded by the French Mercantile Marine in return for Charcot’s training of the apprentices.

Charcot resumed his Arctic voyages after World War I, during which he had commanded two Q-boats hunting German submarines on behalf of the British navy. For the next sixteen years, he took command of Pourquoi-Pas? for three months each summer, usually—but not always—sailing to the Arctic. He visited Iceland and the Faroes most years and Jan Mayen Island and Greenland as often as he could. Charcot first visited Greenland in 1925, when he had heard at Jan Mayen of a Danish expedition at Scoresby Sound with whom contact had been lost. Charcot sailed to East Greenland to find the expedition leader Bjerring Petersen dead and the other members unable to communicate with the outside world since none knew Morse code. In 1928, Charcot assisted in the search for Roald Amundsen, lost when he went to the aid of Umberto Nobile, whose airship Italia had crashed into the ice on its return from the North Pole. Charcot spent days searching the edge of the pack ice as instructed, knowing that he had a minimal chance of finding Amundsen there. On later voyages to Greenland, Charcot landed and supplied many expeditions to East Greenland until 1936, which he was officially informed was to be his last voyage in Pourquoi-Pas?. In a year with remarkably little ice, much was accomplished, but on his return voyage to Iceland, the ship’s boiler was badly damaged by an explosion. It was repaired as best it could be at Reykjavik, from where Charcot sailed on 15 September. The ship was almost immediately caught up in a savage storm and wrecked on southwest Iceland’s rocky coast. Just one man survived. His last sight of Charcot was on the bridge, releasing his tame seagull from its cage.

See also: Amundsen, Roald; Antarctic Peninsula; Bellingshausen, Fabian von; Bisceo, John; Booth Island; Bruce, William Speirs (1902–1904); Charcot Island; Gerlache, Adrien de; Greenland, East; Irízar, Julian; Marguerite Bay; Nobile, Umberto; Nordenskjöld, Otto

References and further reading:

Chichagov, Vasily
(1726–1809)

The Russian expedition of Vasily Chichagov resumed the search for a high-latitude route across the Arctic Ocean from Europe to the Far East that had been initiated in the 1590s by Willem Barents and sought subsequently by Henry Hudson in 1607 and 1608 and by John Wood in 1676. Chichagov’s expedition was inspired by the ideas of Mikhail Lomonosov, whose pioneering work on Arctic oceanography suggested
that open water might be found in the central Arctic Basin, if only it could be reached.

The High-Latitude Route to the Pacific, 1764–1766

Mikhail Vasil’evich Lomonosov (1711–1765) was the most distinguished Russian scientist of the eighteenth century. Born in humble circumstances, he was the son of a fisherman who lived on the shores of the White Sea in northern Russia. Like generations of Pomors before him, from early childhood he participated in the annual fishing and hunting expeditions that set out each spring. Later, his father built a two-masted vessel in which he and his son ferried cargo between small settlements as far distant as the Kola Peninsula. Although Lomonosov left home for Moscow in 1730, he maintained contact with his White Sea family and friends and never forgot his early schooling in Arctic navigation. His personal experience of the northern seas informed his wide-ranging research into the formation of icebergs and the different types of ice and into the relation between winds and currents and between salinity and ice formation. In particular, he studied heat exchange within and between the atmosphere and the ocean, suggesting that the Earth was warmed not just by the sun but also by its molten interior. Beneath the Arctic Ocean, he speculated that heat derived from the ocean floor and submarine volcanoes warmed the bottom water, leaving only the surface water subject to freezing and that it would thaw in summer in the heat from the sun, causing open water to be found near the Pole.

After being appointed chief of the Geographic Department of the St. Petersburg Academy of Sciences in 1758, Lomonosov was in a position to promote his ideas for the exploration of the Northeast Passage, first outlined in a paper published in 1755 and expanded in 1763. This latter document was brought to the attention of Tsarina Catherine the Great, who wished to emulate her predecessor Peter the Great’s program of Arctic exploration, which had fallen into abeyance following the termination of Vitus Bering’s Great Northern Expedition in 1743. Lomonosov’s initial plan was to follow a high-latitude route north of Novaya Zemlya, east of Spitsbergen, but he was persuaded to modify this course to start west of the latter archipelago on the basis of advice from Pomor seamen long familiar with these waters. There indeed were reports of whalers reaching very high latitudes. Much secrecy surrounded both Lomonosov’s paper and the expedition itself, not so much for the attempt to sail across the Arctic Ocean as for their implications for a strengthened Russian presence in the North Pacific, a highly sensitive subject with several European powers. Lomonosov played an active role in the expedition’s planning and fitting out, preparing scientific instructions and ensuring that it was supplied with the best navigational and scientific instruments. He died on 15 April 1765, however, shortly before the main expedition embarked.

The expedition was placed under the command of Captain First Rank Vasily Yakovlevich Chichagov. Before he set out, in August 1764 an advance party of five vessels under Lieutenant Mikhail Nemintov constructed a station consisting of five houses, a storehouse, and a steam bathhouse at Recherche Bay in Bell Sound, southern Spitsbergen. Sixteen men led by Lieutenant Moisey Ryndin were left behind to look after these facilities through the winter.

Meanwhile, three vessels were built at Archangel. These were named for their respective captains—Chichagov, Panov (Nikifor Panov), and Babayev (Vasily Babayev)—and their crews, numbering 178, were carefully selected from Pomor seamen familiar with voyages to Svalbard and Novaya Zemlya, where they conducted annual hunting expeditions. On 9 May 1765, Chichagov set out to Kildin Island off the Kola Peninsula, where he was to open his sealed orders. They instructed him to make for the Kamchatka Peninsula in the Russian Far East, following a course east of Greenland and west of Spitsbergen. Recherche Bay was reached on 16 June, where ice forced Chichagov to remain until 3 July. That was a harbinger of what was to come as repeated attempts were made to penetrate as far north as possible, until at 80°26’N on 23 July the vessels were surrounded by ice in all directions. They were 3 nautical miles beyond Hudson’s previous record of 80°23’N, which had stood since 1607, though a number of whalers had made unconfirmed claims of reaching farther. Six days later, Chichagov convened a meeting of his senior officers, who agreed that they must turn back. Because it was now late in the season, Chichagov decided to return to Archangel without visiting Recherche Bay, arriving at his home port on 20 August. Unfortunately, Nemintov’s supply vessel had also failed to reach Recherche Bay, being forced by dense ice to give up the attempt on 15 August. Nemintov tried again early the following year but was unable to reach the station before 16 July. When he arrived, he found that half the wintering party had died from scurvy and the remainder owed their lives to help from Pomor hunters wintering some 20 miles away in Bell Sound.

Chichagov’s failure to reach the anticipated high latitudes west of Spitsbergen was greeted with dismay by the Admiralty College in St. Petersburg. There it was believed that he had greatly exaggerated the difficulties, and his career was only saved when detailed inspection of his logbooks revealed them to be in good order and provided sound cause for all decisions taken. Nevertheless, it was presumed that the high-latitude passage would be attainable in a more favorable year, and the decision was made to organize another attempt. Thus, Chichagov and his three vessels set out once more on 19 May 1766, reaching Recherche Bay on 24 June to learn of the many fatalities among the wintering party and then heading north to repeat the futile struggle against the ice. Conditions were no better than before, though on 16 July, 80°28’N was achieved, 2 nautical miles north of his previous record. Chichagov now made a point of consulting not just his officers but all seamen
with Arctic experience, who agreed unanimously that he should turn back to Recherche Bay, pick up the wintering party, and return to Archangel, which was reached on 7 August.

Although great care had been taken to keep Chichagov’s expedition secret, while off Spitsbergen his fleet had been seen and visited by whalers, and news of it inevitably reached Great Britain. Seven years later, the British naval officer Constantine Phipps led an expedition to the same region in an attempt to navigate near the North Pole. Although Phipps’s voyage was generally regarded as a purely scientific undertaking, knowledge of Chichagov’s expedition was likely to have been a significant factor in its organization.

See also: Barents, Willem; Bering, Vitus (1733–1743); Farthest North; Hudson, Henry (1607, 1608); Northeast Passage; Open Polar Sea; Phipps, Constantine; Pomor Contribution to Arctic Exploration; Spitsbergen; Wood, John

References and further reading:

Chile

Separated from Antarctica by the Drake Passage and possessing in Cape Horn land closer to the Antarctic continent than that of any other country, citizens of Chile not unnaturally feel themselves to have close connections with the southern continent. Geographic proximity and the evident continuation of the Andes—Chile’s backbone—in the mountains of the Antarctic Peninsula are significant factors in the Chilean claim to the peninsula and its offlying islands, a region also claimed by Argentina and Great Britain (see Chilean Antarctic Territory).

Although unanalyzed archives in obscure repositories may perhaps eventually prove otherwise, there appears to be no evidence for Chilean activity in the Antarctic before 1906, when whaling at Deception Island in the South Shetland Islands was initiated by the Chilean-based company Sociedad Ballenera de Magallanes. This company had been established in southern Chile in 1905 by the Norwegian Amandus Andresen, who brought with him the improved whaling techniques developed by Svend Foyn, by which alone the fast-swimming rorqual whales could be caught.

In 1916, the British explorer Sir Ernest Shackleton appealed for help to the Chilean government after the failure of his three previous attempts to reach Elephant Island, where twenty-two of his men were marooned. He was generously supplied with the lighthouse service steamer Yelcho, captained by Commander Luis Alberto Pardo Villalón. Although steel-hulled and completely without ice protection, Yelcho was piloted skillfully through the ice floes to reach Elephant Island on 30 August, where a very hurried evacuation was made, bringing to a conclusion one of the most famous episodes in polar exploration when Yelcho returned in triumph to the southern Chilean port of Punta Arenas on 3 September.

The first Chilean Antarctic expedition was organized in 1947 in response to the establishment within the sector claimed by Chile of a network of British stations during and immediately after World War II (see Operation Tabarin). This expedition was led by Commodore Federico Guesalaga Toro and explored the west coast of the Antarctic Peninsula south to Stonington Island in Marguerite Bay before opening the first Chilean station on Greenwich Island. In the following year, a second station was set up on the Trinity Peninsula. These stations were soon followed by others, most of which still operate, though some now only as summer stations. The dates given below refer to their operation as all-year stations. In addition to Capitán Arturo Prat (1947–) on Greenwich Island, Chile has operated the following permanent stations in the South Shetland Islands: Presidente Eduardo Frei Montalva (1969–) and Teniente Rodolfo Marsh Martín (1979–), located together on the Fildes Peninsula of King George Island, and Presidente Pedro Aguirre Cerda (1955–1967) on Deception Island. On or near the west coast of the Antarctic Peninsula, Chile has operated General Bernardo O’Higgins (1948–), near Cape Legoupil on the Trinity Peninsula, and Presidente Gabriel González Videla (1951–) on the Danco Coast. The two largest facilities are Presidente Eduardo Frei Montalva and Teniente Rodolfo Marsh Martín. Summer stations are currently maintained at Spring Point on the Danco Coast, on Doumer Island in the Neumayer Channel, and on Adelaide Island.

In addition to extensive research programs at and in the vicinity of these stations, staff have conducted surveys in many other locations along the Antarctic Peninsula and offlying islands. Two seldom-visited islands where Chilean parties have worked are Peter I Island, where the possibility of establishing a meteorological station was investigated in 1956, and Charcot Island, where the first ground survey was made and a temporary station and landing strip were established in 1982. Chilean scientists based on Greenwich Island have also been active on adjacent Livingston and Robert Islands. Much farther south, surveys and mountaineering have been conducted from a refuge hut at 80°S, erected in 1987 by the Chilean Air Force in the Ellsworth Mountains, Ellsworth Land.

As a claimant state, Chile was naturally one of the twelve signatories to the Antarctic Treaty, which has proved remarkably successful in its primary aim of defusing tensions between countries with overlapping claims, particularly among Chile, Argentina, and Great Britain. The national Antarctic program is coordinated and executed by Instituto Antártico Chileno (established in 1964).

See also: Adelaide Island; Antarctic Peninsula; Charcot Island; Chilean Antarctic Territory; Danco Coast; Deception Island; Elephant Island; Ellsworth Land; Greenwich Island; Livingston Island; Neumayer
and whaling activity from 1906 in the South Shetlands. Mountains of the Andes and those of the Antarctic Peninsula, graphical propinquity, geologic al continuity between the this meridian to Portugal. Chile's claim also derives from geo-
ered lands west of approximately 43°W to Spain and east of
wherein Pope Alexander VI awarded rights over all undiscover-
ed, and their respective territorial waters, in the sector between longitudes 53° and 90° West.” This claim overlaps with those of Argentina (between 25° and 74°W) and Great Britain (between 20° and 80°W) and, together with those claims, is suspended but not abrogated under the terms of the Antarctic Treaty.

Not being based primarily on priority of exploration, the Chilean claim cannot be treated in detail here. For a full study, the reader is referred to references given in the bibliography below. In brief, Chile—like Argentina—claims inheritance of the Spanish claim going back to the Treaty of Tordesillas, wherein Pope Alexander VI awarded rights over all undiscovered lands west of approximately 43°W to Spain and east of this meridian to Portugal. Chile’s claim also derives from geographical propinquity, geological continuity between the mountains of the Andes and those of the Antarctic Peninsula, and whaling activity from 1906 in the South Shetlands.

See also: Antarctic Peninsula; Argentina; Chile; Great Britain; South Shetland Islands

References and further reading:

Chilean Antarctic Territory

Officially known as Territorio Chileno Antártico, this is the sector of the Antarctic continent and offshore islands claimed by Chile. Established by the Presidential Decree of 6 November 1940, this territory was defined as “All lands, islands, reefs of rocks, glaciers (pack-ice), already known, or to be discovered, and their respective territorial waters, in the sector between longitudes 53° and 90° West.” This claim overlaps with those of Argentina (between 25° and 74°W) and Great Britain (between 20° and 80°W) and, together with those claims, is suspended but not abrogated under the terms of the Antarctic Treaty.

See also: Antarctic Peninsula; Argentina; Chile; Great Britain; South Shetland Islands

References and further reading:

Chhalov, Valeriy (1904–1938)

At 15:44 on 20 June 1937, a strange single-engine monoplane with a 34-meter wingspan touched down on the provincial airport in Vancouver, Washington. The aircraft was a Tupolev ANT-25 piloted by Valeriy Chkalov and had flown from Moscow over the North Pole.

Valeriy Pavlovich Chkalov was born in Vasilevo (now Chkalovsk) on the Volga. At age fifteen, he volunteered as an airplane mechanic during the Russian Civil War, becoming a qualified pilot before his seventeenth birthday. Winning first prize in a Soviet Union fighter-pilot competition in 1923, he soon established a reputation as a daredevil flier with little respect for red tape, on one famous occasion flying under one of the low bridges across the Neva River in Leningrad. His many misdemeanors eventually led to his dismissal from the air force in 1929 and, although he was reinstated the next year as a test pilot, he was clearly temperamentally unsuited to the discipline of the armed forces. From 1933, he worked as a test pilot for the airplane designer Nikolay Polikarpov. Like many other pilots in the Soviet Union, Chkalov became caught up in the craze to establish long-distance flying records and in July 1936 achieved the longest uninterrupted flight in history by flying 5,600 miles from Moscow to the Udd Gulf, Kamchatka Peninsula. His companions in the Tupolev ANT-25 monoplane were copilot Georgiy Baydukov and navigator Aleksandr Beliyakov.

The First Aircraft across the North Pole, 1937

In the Soviet Union of Joseph Stalin (1879–1953), records such as Chkalov’s were valued not merely as demonstrations of advances made by the aircraft industry but, more generally, as symbols of industrial and military progress. Soviet achievements in the Arctic had a similar propaganda value, and to combine the two in the first transpolar flight by an aircraft was a natural ambition. In fact, a first attempt to fly
over the North Pole to North America had been made in July 1935 by Sigismund Levanevskiy, one of the Chelyushkin “hero pilots” (see Shmidt, Otto [1933–1934]). He, however, had been forced by an oil leak to turn back not long after setting out. Early in 1937, the Soviet leadership decided that three flights would be made that year over the Pole and that the first of these would be undertaken by Chkalov. Next would come Mikhail Gromov and then Levanevskiy. Their course across the Pole was named the “Stalin Route.”

Chkalov, Baydukov, and Belyakov flew in the same ANT-25 used on their previous record-breaking flight. Equipped with advanced flight control and navigational instrumentation, as well as an essential anti-icing system, the ANT-25 had a 12-cylinder power plant with a maximum takeoff power of 900 horsepower. Since the undercarriage was designed to sustain a total normal landing weight of not more than 7.5 tons and the payload on takeoff was 11 tons, it was essential that Chkalov get the plane into the air at the first attempt. This he achieved from Moscow at 01:04 hours Greenwich Mean Time (GMT) on 18 June 1937. Because the flight would take many hours, a routine was adopted whereby Chkalov would pilot the plane for eight hours and then rest for four. Baydukov would then take over the controls, as well as navigating for four hours, to give Belyakov time to rest. Assisting them on their course were key radio beacons at Cape Zhelaniya (Novaya Zemlya) and Rudolf Island (Franz Josef Land). Meteorological reports were available from these and other polar stations, as well as from North Pole–1 (NP-1), a drifting ice station not far from the Pole itself (see Papanin, Ivan).

Early on during the flight, Belyakov discovered an oil leak, which he and Baydukov decided to keep secret from Chkalov, since the latter would have had no option but to turn back if informed. Fortunately, the leak did not get worse, and eventually the cause was found, with the feed tank still more than half full. Flying at 4,100 meters, after nineteen hours they were over Franz Josef Land, where the Rudolf Island radio beacon enabled them to establish that they were on the correct meridian—58°E—along which they should now keep to the North Pole. At 04:15 hours GMT on 19 June 1937, they were over NP-1 but were unable to make visual contact. Soon afterward, they picked up a tail wind, which would help them make up time, since it had taken them twenty-seven hours to reach the Pole rather than the planned twenty-one hours. Four hours later Belyakov sent his last message to Moscow, announcing that he would now attempt to make contact with stations in North America. Doing so proved far from straightforward. Seeing high clouds ahead, Chkalov sought to climb above them but found them to extend far above the aircraft’s ceiling of 5,600 meters. To get around the clouds, it was necessary to turn back to the north. When Belyakov was next able to check their position, they were over Banks Island, and by 16:15 they had crossed the continental coastline at Cape Parry. Contact was at last now made with local radio stations. Clouds along the Rocky Mountains forced Chkalov to climb to 5,700 meters and then higher. At such an altitude, the lack of oxygen caused acute discomfort and made concentration difficult; thus it was to everyone’s relief when they were across the range and able to descend. As they flew south along the west coast of Canada at an altitude of 3,500 meters, they had just 1,000 liters of fuel, sufficient for 930 to 1,250 miles. The ANT-25 finally touched down at 15:44 GMT on 20 June 1937 at Vancouver, Washington, sixty hours, sixteen minutes after taking off from Moscow, having flown 5,288 miles. The flight was an international media sensation.

Less than one month later, on 12 July, Mikhail Gromov took off from Moscow in another ANT-25, accompanied by copilot Andrey Yumashev and navigator Sergey Danilin. They flew even farther than Chkalov and, by reaching San Jacinto, California, established a new world record of 6,305 miles. Levanevskiy was not to be so fortunate. On 12 August, he took off from Moscow with a five-man crew. After his unfortunate experience with an ANT-25 in 1935, he chose to use the large, four-engine ANT-6. His last radio contact was made from near the Pole. Despite an international search lasting eight months, no survivors and no trace of any wreck were ever found.

Chkalov, the “Soviet Lindberg,” died on 15 December 1938 testing a new fighter, the Polikarpov I-180. He was given a grand funeral and buried on the Kremlin wall, but rumors persisted that his death was not an accident but had been arranged by Stalin, who was angered by Chkalov’s typically outspoken comment that the senior politician Nikolay Bukharin had been innocent of the crimes of which he was convicted at his famous show trial earlier that year. Chkalov’s status as an authentic Soviet hero was immortalized in Mikhail Kalatozov’s film Valeri Chkalov (1941).

References and further reading:

Christensen, Lars (1884–1965)
The Norwegian whaling entrepreneur Lars Christensen funded and organized no fewer than nine expeditions to Antarctica between 1927 and 1937. It is largely as a result of these expeditions that Norway is the only country to claim territory in both polar regions: Svalbard and Jan Mayen Island in the Arctic and Queen Maud Land, Bouvet Island, and Peter I Island in the Antarctic. The controversial story of how they were discovered, rediscovered, and claimed provides a fascinating
Lars Christensen was the son of shipowner Christen Christensen, the man who had sent Carl Anton Larsen south to look for right whales in 1892–1893 and 1893–1894. From 1908 onward, Lars was involved in companies active in Southern Ocean whaling, but he also inherited an interest in exploration from his father. In 1911, he formed a consortium with the Belgian explorer Adrien de Gerlache to build the wooden sailing ship Polaris, equipping it with an auxiliary steam engine to take tourists on "polar safaris" to East Greenland and Spitsbergen. When Gerlache proved unable to pay his share, Odd I, to investigate Peter I Island. Captained by Ant. A. Anderssen, Odd I reached Peter I Island on 4 January 1927 and spent two weeks steaming around it to investigate its possibilities as a whaling base. All in all, its potential seemed limited. No landing could be made, there was no suitable harbor, and no whales were seen either near the island or during the voyage to it.

**Bouvet Island Controversially Claimed for Norway, 1927–1928**

Undeterred by these disappointing results, Christensen decided to examine Bouvet Island in the following season. Realizing that this expedition would require a specially equipped expeditionary vessel, he purchased the 291-ton whaling and sealing ship Vesleper, renaming it Norvegia. In all, Norvegia conducted four expeditions, during which many important discoveries were made. Working closely in conjunction with Christensen's fleet of whaling factory ships, Norvegia had the great advantage of not having to carry sufficient coal on board for an entire expedition; instead, it could periodically take on new stocks from a nearby "mother ship." Christensen's strategy now was to search for new lands and acquire them for Norway. He was no longer prepared to apply for concessions to Great Britain or any other country to operate in waters that he considered effectively still unexplored.

On 26 September 1927, Norvegia sailed from its home port of Sandefjord. In addition to investigating whale stocks in the vicinity of Bouvet Island and between that island and Enderby Land on the Antarctic mainland, the crew erected a meteorological station on Bouvet and claimed the island for Norway. On 1 December, Captain Harald Horntvedt landed on Bouvet and took possession in the name of the Norwegian king. A small depot hut was built, but establishment of a meteorological station proved impossible. The Norwegian claim provoked a dispute with Great Britain on the basis of the island's original discovery by the French explorer Jean Bouvet de Lozier in 1739 and subsequent rediscovery by British nationals in 1808. Indeed, in the 1920s, there was considerable sensitivity about what could be held to constitute a legitimate claim to territory in Antarctica, and Norway's claim to Bouvet precipitated a scramble to establish sovereignty claims only brought to an end by the outbreak of World War II. In any case, Britain and Norway soon reached an understanding that in return for recognizing Norway's claim to Bouvet, Norway
would recognize British claims to all territories listed by an Imperial Conference in 1926. This agreement had major implications for Norvegia’s third expedition, led by Hjalmar Riiser-Larsen.

Norwegian Claims Extended to Peter I Island, 1928–1929
Unlike the expedition of Odd I, Norvegia’s first expedition had been a great success, not simply in relation to the annexation of Bouvet Island to Norway, but, more significantly from Christensen’s perspective, because of the large numbers of whales found nearby. For that reason, Christensen sent his whaling fleet to Bouvet Island in the 1928–1929 season. Norvegia was to sail with other ships until it reached Bouvet, where another attempt would be made to establish a meteorological station. Then it would search for “Thompson Island” and “the Chimneys,” which the British sealer Captain Norris had reported lying close by but no recent expedition had been able to locate. Finally, it was to sail westward to annex Peter I Island, to which Great Britain was now understood to make no claim, nor had any other country pursued sovereignty since its discovery by the Russian explorer Fabian von Bellinghausen in 1821.

Norvegia had been laid up through the winter at South Georgia. Its second expedition began on 8 December 1928, when it met the factory ship Thorshammer, from which expeditionary members and staff were now transferred, including three who were to winter on Bouvet once the meteorological station was established. Again, however, doing so proved impossible. No source of fresh water could be found, nor any site sufficiently sheltered to ensure that the station would not be destroyed by strong winds, as had indeed happened to the hut built the previous year. On 21 December, Captain Nils Larsen decided to give up the attempt. Norvegia spent a week searching for “Thompson Island” and “the Chimneys,” but without success. These islands are known now not to exist, but they may indeed have existed when reported by Captain George Norris in 1825. Bouvet Island is sited over one of the Earth’s hot spots. It is volcanic, and the name of the second nonexistent island, “the Chimneys,” is strongly suggestive of volcanic activity. One day, perhaps these islands will reappear.

Leaving Bouvet on 21 December 1928, Norvegia took on more coal from Thorshammer and then headed westward for Deception Island, where more coal was taken on. The ship was now fully prepared for its long voyage south to Peter I Land, where Larsen and Dr. Ola Olstad landed on 2 February 1929, claiming the island for Norway. Theirs was the first landing on Peter I. A hut was built and a rough survey carried out. By 30 March, Norvegia was back at Godthull, South Georgia, having concluded another successful season.

The Discovery of Queen Maud Land, 1929–1930
Successful as Norvegia’s two previous expeditions had been, its third expedition under the command of Hjalmar Riiser-Larsen proved more successful yet. Controversy attended it in equal proportion, since again land was claimed for Norway in disregard of long prior claims made by its discoverer. The discoverer of Enderby Land, the land in dispute, was British, and his claim was not one that Great Britain was prepared to have overlooked. For the full story of this expedition and its happy climax in the discovery of an enormous swathe of land, Queen Maud Land, which, unlike Enderby Land, no one had previously seen, see the entry for Riiser-Larsen.

Antarctic Circumnavigation and the Discovery of the Princess Ragnhild Coast, 1930–1931
For several seasons Christensen had been eager for Norvegia to carry out a circumnavigation of Antarctica, the first since James Clark Ross’s expedition in 1839–1843. It was the major task of the fourth expedition, on which the ship was commanded by Major Gunnar Isachsen, a veteran of Otto Sverdrup’s expedition to the Canadian Arctic in 1898–1902 and leader of several expeditions to Svalbard, apart from a brief period when Riiser-Larsen could be seconded from his naval duties, during which he was to seek to extend his discoveries of the previous year. Nils Larsen remained as Norvegia’s captain.

Norvegia left Cape Town, South Africa, on 4 October 1930. Passing Bouvet Island on 14 October, the ship began the circumnavigation three days later from 57°40’S, 0°28’E. Isachsen sailed eastward in latitudes generally in the high fifties and low sixties, searching on the way for “Truls Island,” the “Nimrod Islands,” and “Dougherty’s Island,” none of which could be found. (None of them exist.) The voyage was essentially uneventful with no new lands to discover in these latitudes, but much was learned about oceanography, fisheries, and the distribution of whales. Completing the circumnavigation on 29 January 1931, Norvegia joined the factory ship Thorshavn on 9 February. Isachsen now left for Cape Town, handing over command to Riiser-Larsen, who came aboard along with two airplanes. Riiser-Larsen’s subsequent investigations leading to the discovery of Princess Ragnhild Coast are described under his name. After Riiser-Larsen’s departure on 24 February, Norvegia continued under Larsen’s captaincy, searching in vain for “Pagoda Rock,” which Thomas Moore had reported in 1845, before making a brief visit to Bouvet Island, where conditions were so bad that the only person able to land during their nine-day stay was a thoroughly drenched Larsen. Norvegia now headed north to its home port of Sandefjord, which it reached on 15 May. Soon afterwards it was sold, meeting its end just two years later hunting seals in the White Sea, north Russia.

Christensen Himself Circumnavigates Antarctica, 1933–1934
Christensen’s interest in Antarctic exploration did not end with the sale of his expeditionary vessel Norvegia. He himself
coordinated important further explorations from Thorshavn, a recently built 11,000-ton pelagic factory ship. Thorshavn was too large to approach land closely and was not equipped to negotiate pack ice, but with all the sea and air resources of a large whaling fleet at his command, Christensen was in a position to do much to extend knowledge of Antarctica. Indeed, Christensen did more than conduct his own explorations; he was also prepared to land Riiser-Larsen's private expedition free of charge on the sea ice off Queen Maud Land for a highly ambitious but abortive attempt to sledge along the coast toward the Weddell Sea.

Although Thorshavn's first two expeditions were primarily concerned with whaling, the third expedition of 1933–1934 included major exploring objectives. That season, with Klarius Mikkelsen as ship's captain and Nils Larsen as first mate, Christensen planned to circumnavigate Antarctica himself, taking with him a seaplane—piloted by First Lieutenant Alf Gűnnesstad—and a large motorboat, both for the purpose of making closer examination of any land found. By 10 January 1934, Thorshavn was off the Lars Christensen Coast, which had been discovered by Norwegian whalers in the 1930–1931 season and named in Christensen's honor by Mikkelsen. In magnificent weather, Gűnnesstad and Larsen took off to report what could be seen from high above the ship. From above 1,000 meters, a mountainous coast stretched from 60°E eastward, but Gűnnesstad was not allowed to explore further, since the plane was single-engined and without radio and therefore confined to remaining in sight of Thorshavn. Gűnnesstad and Larsen took off again on 18 January, this time discovering the Leopold and Astrid Coast. Continuing eastward, Christensen next wished to appraise possibilities for extending whaling to the vast area between the Ross Sea and the South Shetland Islands. His conclusion was that there were insufficient numbers of whales to make it worthwhile. At 71°44'S, 134°11'W on 10 February, Thorshavn had reached farther south in these waters than any previous ship. From there, Gűnnesstad and Larsen flew due south to come within sight of ice shelves off the coast of Marie Byrd Land, an area of coast never before seen. With its circumnavigation completed, Thorshavn headed north to Montevideo, Uruguay, which was reached on 27 February, and then Sandefjord, reached on 28 March. It had been another successful season.

Christensen's Last, 1936–1937

Christensen's intention was that his circumnavigation of Antarctica would be his last expedition, but he found that he could not resist the opportunity of going south again in 1936–1937. On 20 February 1935, Thorshavn's captain Mikkelsen had discovered Ingrid Christensen's Coast at about 68°25'S, 78°30'E. There he had landed, and his wife, Karoline, had controversially raised the Norwegian flag; controversially, since this was far to the east of 45°E and thus well within the Australian Antarctic Territory as defined by the British Order in Council of 1933. (Although it occurred on an island just off the Antarctic mainland, Karoline Mikkelsen's landing is generally viewed as the first landing by a woman on Antarctica.) With discoveries clearly still to be made, Christensen again joined Thorshavn on its voyage south, the major objective for this season being to photograph from the air as much as possible of the regions discovered for Norway on Christensen's many previous expeditions. A Stinson monoplane was hired, to be piloted by Viggo Wilderøe, that had a range of 750 miles and was equipped with both long- and short-wave transmitters, together with a radio compass. Thorshavn initially acted as "mother ship" to the expedition, with the plane operating from the whale catcher Firerm. A good series of overlapping photographs was obtained for 250 miles of coast from 59°E to 45°E; that is, from the West Ice Shelf east through Enderby Land. All of this area lies within the Australian Antarctic Territory, though much of it was discovered by Norwegian whalers, particularly by Christensen's own expeditions. On 4 February 1937, the Prince Harald Coast was discovered between Prince Olav Coast and Princess Ragnhild Coast by Ingrid Christensen, Lars's wife, on board the Stinson as a passenger. It was the first time land in Antarctica had been discovered by a woman. On the expedition's very last flight on 6 February, one important further discovery was made more than 100 miles inland: the Sør-Rondane Mountains, some 100 miles long with peaks rising to over 3,000 meters. The 1936–1937 expedition provided a fitting summation to Christensen's lifework.

Of his Antarctic expeditions and discoveries, Christensen himself wrote, “Every step we have taken has been based on one special motive: We were out to get whales” (1935, 214). Certainly, as a businessman, he could not afford to be philanthropic, but this quotation oversimplifies his motives. Although the economic motive was primary, the political was hardly less important. Norway in the 1930s was a young country, only newly independent. Its leading role in polar exploration gave Norway’s claim to East Greenland was rejected by the International Court of Justice, an affront to national prestige that Christensen's Antarctic discoveries also came at a time when Norway's claim to East Greenland was rejected by the International Court of Justice, an affront to national prestige that Christensen's discoveries did much to assuage. Finally, the claim of these expeditions to be “scientific” was not just a façade. Although most of the science carried out was directly or indirectly related to the needs of the whaling industry, in this it was no different from the contemporary British Discovery Investigations. Certainly, knowledge of the Antarctic would have been much poorer without the thirty-eight substantial reports comprising the Scientific Results of the Norwegian Antarctic Expeditions, 1927–38 (Oslo, 1935–1961).

See also: Bellingshausen, Fabian von; Bouvet de Lozier, Jean; Bouvet Island; Discovery Investigations; Gerlache, Adrien de; Larsen, Carl Anton (1892–1893); Moore, Thomas (1845); Morrell, Benjamin; Norway; Peter I Island; Prince Harald Coast; Princess Ragnhild Coast; Queen Maud Land; Riiser-Larsen, Hjalmar; Ross, James Clark (1839–1843); Shackleton, Ernest (1914–1916); Whaling and Antarctic Exploration
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Chukchi Sea (Arctic Ocean)
This marginal sea of the Arctic Ocean extends north of the Chukotka Peninsula and Alaska to the continental slope, where the continental shelf descends steeply into the Arctic Basin. Wrangell Island, Russia, and Point Barrow, Alaska, mark its western and eastern limits. It is strongly influenced by warmer waters from the Pacific Ocean spreading out in a fan from Bering Strait, the majority along the Alaskan coast toward Point Barrow but also west to Herald Island north of Russia's Chukotka Peninsula. From the north, the sea is open to the cold waters of the Arctic Ocean, and through much of the year, heavy ice predominates, particularly in the west near Long Strait. Ice clears from Bering Strait in June and generally proceeds rapidly to the north. Much of the sea is navigable until late September.

The Chukchi Sea was first sailed through by Semen Dezhnev in 1648. Vitus Bering reached 67°18'N in 1728 and James Cook 70°44'N in 1778. The southern parts of the sea were further explored by Otto von Kotzebue (1815–1818), Mikhail Vasil’yev (1819–1822), and Frederick Beechey (1825–1828). The possibility of a land bridge extending between Asia and North America through the northern part of the sea was effectively disproved by Ferdinand von Wrangel (1820–1824).

Cook and Beechey reported seeing whales north of Bering Strait, but it was from a Russian naval officer at Petropavlovsk that the American whaler Thomas Roys learned of the many strange whales inhabiting the Chukchi Sea. To Roys, they sounded like the "Greenland" whales hunted to near extinction in the North Atlantic. Equipped with a set of Russian charts, he ventured 250 miles north of Bering Strait in 1848, the first whaler to do so, only turning back when he had taken eleven whales and filled his hold with all the blubber and baleen it could take. The whales were bowheads (Balaena mysticetus). Not only were they slow and easy to catch, but they were also rich in blubber and had the longest baleen plates of all cetaceans. Baleen being the plastic of its day and required for corsets, umbrellas, buggy whips, and so on, Roys's fortune was made, as were those of many of the whalers who followed him. Some, however, were less fortunate. Conditions in the Chukchi Sea can be treacherous, particularly off northwestern Alaska, where a change in wind direction can suddenly bring in the ice. In 1871, thirty-three ships were lost when they were pinned between the pack and the shore.

In 1849, Henry Kellett discovered Herald Island in the western Chukchi Sea, at the same time probably also making the first nonnative sighting of Wrangell Island. George De Long entered the polar pack near Herald Island in 1879, believing that warm water flowing through Bering Strait would create a "thermometric gateway" to the North Pole. In a bad ice year, Bob Bartlett's Karluk was beset in the Beaufort Sea and drifted west until it was crushed off Herald Island. Roald Amundsen's Maud finally succeeded in entering the polar pack off Herald Island in 1922. As with other polar seas, conditions vary considerably from year to year: where one ship encountered open water, another met impenetrable ice. Otto Schmidt's difficulties in 1933–1934 reflected not so much a bad ice year as the lateness of the season when Chelyuskin approached Bering Strait after passing through the Northeast Passage. At one stage through the strait, the ship drifted back and was eventually crushed off Cape Serdste-Kamen.

The Chukchi is a shallow sea, and during the Cold War much attention was devoted by the U.S. Navy to discovering deepwater routes, by means of which nuclear submarines could safely enter the Arctic Basin.

See also: Bartlett, Bob (1913–1914); Beechey, Frederick; Bering Strait; Bering, Vitus (1725–1730); Cook, James (1776–1780); De Long, George; Dezhnev, Semen; Herald Island; Kellett, Henry (1848–1850); Kotzebue, Otto von; Schmidt, Otto (1933–1934); Submarines; Vasil’yev, Mikhail; Whaling and Arctic Exploration; Wrangell, Ferdinand von; Wrangell Island

Chun, Carl
(1852–1914)
Although primarily oceanographic in intent, Chun's German Deep-Sea Expedition made one major contribution to Antarctic exploration by finally discovering the true position of Bouvet, the world's most elusive island. Sailing for a while in high southern latitudes, this expedition also confirmed the findings of the Challenger expedition, indicating that land lying farther south formed a continent rather than a series of island archipelagoes (see Nares, George).

Elusive Bouvet Island Is Rediscovered, 1898–1899
Professor Carl Chun of Leipzig University persuaded the imperial German government to fund an expedition to follow up the work of the British oceanographic research vessel HMS Challenger (1872–1876), focusing particularly on studying marine life and geological specimens to be obtained from deep beneath the ocean's surface. Chun was supplied with the 2,600-ton steamer Valdivia of the Hamburg-American Line, an exceptionally comfortable expedition ship. It was captained by Adalbert Kretch, who
took his orders from Chun as overall leader, since there was to be no division of authority between expedition leader and ship’s captain. The voyage attracted a distinguished scientific staff, including the zoologist Dr. Ernst Vanhoffen of Kiel University, who had accompanied Professor Erich von Drygalski during his 1892–1893 expedition to Greenland and was also to be with him on his 1901–1903 expedition to Antarctica.

Valdivia sailed from Hamburg on 1 August 1898, making a brief stop at Granton to allow the scientists to visit the doyen of British oceanographic and Antarctic studies, Sir John Murray, at the offices in Edinburgh where he had for many years been engaged in editing the voluminous scientific reports of the Challenger expedition. After carrying out measurements and collecting samples at a series of observation stations in the Atlantic, on 13 November Valdivia sailed from the Cape of Good Hope. Chun’s next objective was to find Bouvet Island, which had been discovered by the French explorer Jean Bouvet de Lozier in 1739 and seen again in 1808 and 1825 but not otherwise, despite numerous subsequent attempts to find it. Reaching the reported latitude, Valdivia sailed slowly westward. On 25 November a sounding of 1,890 fathoms indicated that land might be nearby, as did the very large number of birds. At 3:00 P.M., land was seen some 7 miles ahead by the lookout. Chun was now able to fix Bouvet’s position accurately at 54°26’S, 3°24’E, finding it to be a small volcanic island, some 6 miles by 5 miles and almost completely covered by ice.

From Bouvet, Valdivia sailed south close to the edge of the pack ice but kept some distance from it, a wise precaution given that it was steel-hulled and entirely without ice-strengthening. Measurements and samples were obtained at a series of observation stations as the ship worked its way east from 8°E to 58°E, during the course of which it reached its farthest south. Accurate maps depend upon accurate knowledge of the boundary between the zone of predominantly easterly winds close to the Antarctic continent, first reported by John Biscoe in the 1830s, and the westerlies found farther north. Valdivia returned to Hamburg on 30 April 1899.

References and further reading:

Clarence Island (South Shetland Islands)
Located at 61°12’S, 54°05’W, Clarence Island is 12 miles long and rises to 1,924 meters at Mount Irving. The easternmost of the South Shetland Islands, off the Antarctic Peninsula, it was discovered on 4 February 1820 by Edward Bransfield, who landed at Cape Bowles and compiled a rough chart. He named the island for Prince William, Duke of Clarence, lord high admiral of England, and later William IV. It was further charted in February 1821 by Fabian von Bellinghausen, who called it “Shishkov Island,” for Vice Admiral Aleksander Shishkov of the Imperial Russian Navy. Even during the sealing period, landings were rare since seals were not plentiful. Sir Ernest Shackleton chose Elephant Island in preference to the yet more precipitous Clarence when seeking refuge after the loss of Endurance. The first ascent of Mount Irving was achieved by a British Joint Services Expedition led by Malcolm Burley on 6 December 1970. Further ascents were made by a second Joint Services Expedition led by Chris Furse from 12 December 1976 to 8 February 1977. In addition to mountaineering, this latter expedition conducted a topographic and ornithological survey. Other, more recent landings have been made to study outcrops of the Scotia metamorphic complex, which is well-exposed near Cape Bowles.

See also: Bellingshausen, Fabian von; Bransfield, Edward; Elephant Island; South Shetland Islands

References and further reading:

Clavering, Douglas (1794–1827)
Conducting an exact survey of the shape of the Earth provided the British naval officer Douglas Clavering with the opportunity to discover an extensive area of coast far north on the east coast of Greenland.

New Discoveries in Northeast Greenland, 1823
Accurate maps depend upon accurate knowledge of the Earth’s shape. It is far from evenly spherical, being in particular relatively enlarged about the Equator by centrifugal forces and somewhat reduced near the Poles. The closer one is to the Earth’s center, the greater the gravitational pull. It is therefore possible, by making gravimetric measurements around the globe with a seconds pendulum, to conduct an exact survey of the Earth’s shape. Such a program was initiated by the British Admiralty in 1818, beginning with the Atlantic Ocean.
Suitably trained scientists were added to the complement of naval vessels to make the necessary studies, one of whom was the Royal Artillery officer Captain Edward Sabine. Sailing with John Ross in 1818, Sabine visited Davis Strait and Baffin Bay, where he had made extensive observations. These he subsequently extended westward through Lancaster Sound to Melville Island with Edward Parry in 1819–1820. In 1822, he continued this work off the west coast of Africa on board HMS Pheasant, captained by Commander Douglas Clavering. At the request of the Board of Longitude, which was coordinating the survey, in 1823 Clavering was instructed to undertake a voyage to northern Norway, Spitsbergen, and East Greenland to enable Sabine to make further observations in those places.

The Scottish naval officer Douglas Charles Clavering had obtained early promotion after distinguishing himself in the famous engagement between HMS Shannon and USS Chesapeake during the War of 1812. Appointed captain of Pheasant in 1821, he had established a good working relationship with Sabine, taking an interest in his scientific studies and demonstrating great navigational skills in tracing the origin of the Gulf Stream in the Equatorial Current flowing into the Gulf of Mexico. For his 1823 voyage, he was given command of the 180-ton sloop HMS Griper, which had been ice-strengthened but was a generally unhandy vessel whose sailing qualities led Edward Parry to complain in 1819–1820 and caused no end of tribulation to George Lyon in 1824. Although Sabine's survey was the expedition's primary objective, Clavering was also instructed to conduct such geographical exploration as he could.

Departing from London on 3 May 1823, Sabine was landed at the northern Norwegian port of Hammerfest on 2 June to set up his first observatory. Remaining there until 23 June, he then made quick passage to Svalbard and on 30 June was left behind to continue his measurements on the Norwegian Islands off the north coast of Spitsbergen. Meanwhile, Clavering sought to sail as far north as possible, in the event reaching no farther than 80°25'N on 6 July, when he met solid ice and caused no end of tribulation to George Lyon in 1824. Although Sabine's survey was the expedition's primary objective, Clavering was also instructed to conduct such geographical exploration as he could.

Returning to Sabine Island on 29 August, Clavering found Sabine's observations almost completed. He had hoped to explore the coast farther north seen briefly before landing Sabine. With the season now late, however, he decided that the risk of becoming beset and of being forced to winter was unacceptable and therefore opted instead to sail south, coasting past Hold with Hope—first sighted by Henry Hudson in 1607—to Cape Parry, the northernmost point charted by William Scoresby in 1822. After Clavering had united his discoveries with those of Scoresby, Griper was forced by ice away from the coast and out into the dense pack. Here the ship received a considerable battering in a gale before Clavering was able to extricate it and head southeast to Trondheim, Norway, where Sabine made the last of his observations. Griper arrived back at London on 19 December 1823.

Although Sabine himself undertook no more polar voyages, going on to lead a scientific career of the utmost distinction culminating in appointment as president of the Royal Society, he had during this voyage found a most adept pupil in Midshipman Henry Foster. Foster later extended the pendulum survey to Prince Regent Inlet with Parry in 1824–1825 and to Antarctica in HMS Chanticleer in 1828–1831. Clavering died in 1828, when his ship HMS Redwing was lost off the west coast of Africa. His discoveries in East Greenland were not visited again until Karl Koldewey's expedition in 1869.

See also:
Foster, Henry; Greenland, East; Hudson, Henry (1607); King Christian X Land; Koldewey, Karl; Lyon, George; Parry, Edward; Ross, John (1818); Scoresby, William; Spitsbergen

References and further reading:
Sabine, E. 1825. An account of experiments to determine the figure of the Earth, by means of the pendulum vibrating sounds in different latitudes. London: John Murray.

Coats Land (Antarctica)
Forming the east coast of the Weddell Sea, Coats Land lies to the west of Queen Maud Land, between 20° and 36°W. The large Filchner-Ronne Ice Shelf lies to its west. Coats Land was first seen by the Scottish explorer William Speirs Bruce in March 1904, who named it for his two major sponsors, the brothers James and Andrew Coats. Bruce's discovery was sub-
Colbeck, William
(1871–1930)

Concerned to ensure no repeat of the disaster befalling Sir John Franklin's Arctic expedition in the 1860s, when more speedy relief might have saved at least some of the 129 men on board when Franklin's ships became locked in the ice, Sir Clements Markham began preparations to send out a relief expedition in support of Robert Falcon Scott's first Antarctic expedition (1901–1904) soon after Scott's departure from England. In the event, Discovery was indeed beset, and two relief expeditions had to be sent before it could be freed. William Colbeck led both as captain of Morning.

Searching for Discovery, 1902–1903

Although Scott's instructions did not require him to winter his ship in Antarctica, they made that prospect likely since he was led to understand that more would be accomplished by wintering his entire ship's complement rather than just a small scientific landing party. This had been a major point of issue between the Royal Geographical Society and the Royal Society in preparations for the expedition and had indeed determined the nature of the command to be exercised by Scott, who, as ship's captain and overall expedition leader, would thus retain effective control throughout without yielding independent command to the leader of a separate landing party.

Having placed Scott in a position in which his expedition might be exposed to dangers similar to those that had brought disaster to Franklin, the president of the Royal Geographical Society, Sir Clements Markham, felt obliged to ensure the expedition's safety by sending out a relief expedition the following year. Raising funds for it proved difficult, with the British government unwilling to bear costs additional to those already incurred in dispatching the original expedition. Eventually, however, the money was found, a ship purchased—the Norwegian 227-ton steam-whaler Morning—and William Colbeck chosen as captain. Colbeck had previous Antarctic experience with Carsten Borchgrevink and proved to be an excellent choice. The ship was less well chosen, however, being memorably described by Scott's second-in-command, Albert Armitage, as "so underpowered, it had to stop the engine to blow the whistle." The ship's officers were Rupert England, Edward R. G. R. Evans, George Arthur Francis Mulock, and Gerald S. Doorly. Doorly later wrote the standard account of the relief expedition, Mulock joined Scott, and England and Evans figured prominently in the later expeditions of Ernest Shackleton (1907–1909) and Scott (1910–1912), respectively. The crew consisted chiefly of experienced seamen from Hull, Colbeck's home port.

On 9 July 1902, Morning sailed from London to reach Lyttleton, New Zealand, on 16 November, where eight months of supplies were taken on for Discovery and twenty months of provisions for Morning itself, lest it too be forced to winter in the Antarctic. Receiving customary generous support from the New Zealanders, Colbeck was ready to depart for Antarctica by 6 December.

On 25 December, the same day that Morning crossed the Antarctic Circle, Evans discovered a previously uncharted island, about 1 mile in diameter, where a brief landing was made. Initially called Markham Island, the island was later appropriately named for Scott, who had named a magnificent mountain for Markham while allowing no feature to be named for himself.

Taking only five days to get through the pack, they sighted Victoria Land on 3 January 1903 and landed at Cape Adare five days later. To avoid repetition of the Franklin disaster, Scott had been instructed to leave messages describing his movements at a number of places where he was likely to be able to land. They included Cape Adare, Coulman Island, and Cape Crozier, at all of which Scott had left messages. As he searched for Discovery's whereabouts, Colbeck found Scott's message at Cape

sequently extended to the south and west by Wilhelm Filchner's discovery of the Luitpold Coast in January 1912 and by Sir Ernest Shackleton's discovery of the Caird Coast in January 1915. The major British base Halley (75°31'S, 26°45'E) is located on the Brunt Ice Shelf on the Caird Coast. Deep in interior Coats Land near the Whichaway Nunataks, South Ice (81°40'S, 29°00'W) was operated by Sir Vivian Fuchs's Commonwealth Trans-Antarctic Expedition (CTAE) from 4 February 1957 to 4 January 1958.

Two significant mountain ranges lie farther south in Coats Land, both probably first seen in 1955, but left unnamed, by pilots flying from the Argentine station General Belgrano on the Filchner Ice Shelf. The Theron Mountains (79°02'S, 28°05'W) were certainly seen on 6 February 1956 by a CTAE flight from Shackleton Base and were named for the ship that had brought the expedition's advance party south in 1955–1956. The first ground survey was carried out from Halley in December 1956, with further studies conducted from Halley and by Soviet scientists flown here from Druzhnaya on the Filchner Ice Shelf.

See also: Argentina; Bruce, William Speirs (1902–1904); Caird Coast; Filchner, Wilhelm; Filchner-Ronne Ice Shelf; Fuchs, Vivian; Shackleton, Ernest (1914–1916)
Adare but not that left on Coulman, where Morning was unable to land. Colbeck was able to land on Possession and Franklin Islands, however, but there Scott had not. This left just Cape Crozier on Ross Island, where on 18 January a relieved Colbeck finally learned of Discovery’s location in McMurdo Sound.

Making his way slowly through the pack ice, Colbeck found Discovery only on 23 January 1903, separated from him by over 10 miles of impenetrable ice. In mid-February, with the ships still separated by 7 miles of ice, the decision was taken to transfer stores in the likelihood that Discovery would remain trapped through another winter, an eventuality for which Scott was quite prepared.

In his desire to render every assistance to Discovery, Colbeck left Morning’s departure dangerously late, sailing only on 2 March. Soon he found his underpowered vessel barely able to make its way through rapidly forming ice but, by dint of superb seamanship, got through to reach Lyttleton on 25 March.

**Extracting Discovery from the Ice, 1903–1904**

Markham was now to cause considerable embarrassment to Scott. In his concern to raise funds for another relief expedition, Markham portrayed Discovery as having been providentially rescued by Morning’s arrival from a shortage of supplies and as having just sufficient provisions to survive until January 1904. This was far from true since, with seals and penguins to provide both food and fuel, Scott could in fact have survived more or less indefinitely. Fearing ever-escalating costs and further manipulation by Markham, the British government decided to take over control of the relief expedition, appointing a committee led by the hydrographer Sir William Wharton to take charge of its affairs.

With Morning still in New Zealand, another ship, the 400-ton Dundee whaler *Terra Nova*, was purchased and placed under the command of the experienced whaling captain Henry Duncan McKay (1857–1925). Colbeck remained in overall control of the expedition, with McKay chosen to assist him, particularly for his mastery of ice-blasting techniques. Having participated previously in attempts to rescue the expeditions of Adolphus Greely (1881–1884) and Johan Alfred Björling (1892), McKay knew as much as anyone about assisting polar expeditions. *Terra Nova*’s crew consisted largely of Dundee whalers, many of whom possessed extensive Arctic experience. To ensure rapid passage to Hobart, Tasmania, where it was to meet up with *Morning*, *Terra Nova* was towed most of the way by a relay of three naval cruisers. The two ships left for Antarctica on 5 December.

With the powerful *Terra Nova* forcing its way through the pack, followed by *Morning* by 4 January 1904 the two vessels were well within the Ross Sea, where a brief landing was made on Franklin Island. On 5 January, Discovery was in view but separated from them by 18 miles of thick ice. Colbeck now delivered the Admiralty’s instructions to Scott that Discovery was to be abandoned unless it could be freed in the next six weeks. Imprisoned by so much ice, that appeared unlikely. Ice saws were soon abandoned as ineffective, and slow progress was made only by using explosives and having the relief ships ram the ice. On 22 January, 14 miles of ice still separated Discovery from open water, but soon afterward there were increasing signs of the ice going out. Three days later, the ice belt had thinned to 10 miles and by 4 February to 6 miles. That, however, was still more than Colbeck had been able to break through the previous year. Crucially, on 10 and 11 February, strong winds arose, and the resulting swell made a significant contribution to the final breaking up the ice. On 14 February, the efforts of Colbeck and McKay were rewarded when *Terra Nova* finally broke through.

Two days later, *Discovery* was blasted free from the ice in which it was encased. At last it was free to follow *Morning* and *Terra Nova* but not before a scare on 17 February 1904 when, in a gale forcing the two relief ships to stand well off the shore, *Discovery* was blown onto a shoal. Scott was fortunate to be able to work his ship free from this considerable hazard, after-
ward taking on board whatever coal the other two ships could spare and then sailing north with them in convoy along the coast of Victoria Land.

With the winds favorable for crossing the pack, Colbeck chose to sail Morning to the Auckland Islands, the agreed rendezvous, which it finally reached on 20 March—the last ship to do so—having battled against contrary winds for much of its passage. Meanwhile, Discovery and Terra Nova landed at Wood Bay, Victoria Land, where Discovery was watered, and again at Cape Adare, where its rudder was replaced. It had been damaged when the ship ran aground. On 28 February, the two ships became separated in a storm, and McKay decided to head independently for the Auckland Islands, which Terra Nova reached on 19 March, only to find that Discovery had arrived five days earlier. Delaying at the Auckland Islands until 29 March to obtain fresh meat and allow time for Morning to take on much needed additional ballast, the three ships finally reached Lyttleton on 1 April.

See also: Borchgrevink, Carsten; Franklin, John (1845–1848); Greely, Adolphus; Markham, Clements; Scott Island; Scott, Robert Falcon; Shackleton, Ernest (1907–1909)

References and further reading:

Collinson, Richard (1811–1883)

For the rest of his life, the British naval officer Richard Collinson regretted having placed his interpreter, Johann Miertsching, not in his own ship, but in that commanded by Robert McClure. It probably cost him discovery of the fate of Sir John Franklin.

The Voyage of HMS Enterprise, 1850–1855

It was at the suggestion of Francis Beaufort, hydrographer of the navy, that Captain Richard Collinson was given command of two ships sent to search for Franklin’s missing expedition through the Pacific Ocean and Bering Strait. Collinson had first come to Beaufort’s attention for his excellent survey work as a midshipman in HMS Chanticleer during Henry Foster’s scientific expedition to Deception Island and the South Atlantic (1828–1831). The 450-ton HMS Enterprise and 400-ton HMS Investigator had recently returned from the Canadian Arctic, which Sir James Clark Ross had searched in vain for Franklin. Collinson’s was to be one of a series of expeditions continuing this search, his role being to explore east from Bering Strait in the hope that he would meet Franklin heading west. Collinson sailed in Enterprise, and Commander Robert McClure accompanied him in Investigator. Since there was a chance that the local Inuit might have information concerning Franklin, the expedition’s complement included an interpreter, the Moravian missionary Johann August Miertsching. At this time, very few people had any knowledge of the Inuit language, and interpreters were generally recruited in Greenland. Collinson’s course, however, would take him nowhere near Greenland. Miertsching had learned Inuktitut in Labrador. His English was poor, and it was not certain that the Inuit of the western Arctic would understand him, but any interpreter was better than none. There was no room for him aboard Enterprise, and Collinson therefore placed him in Investigator.

On 10 January 1850, the two ships departed from London. Enterprise sailed more quickly than Investigator, so Collinson arranged to meet up with McClure in Honolulu, Hawaii, or, if not there, off Cape Lisburne, Alaska, north of Bering Strait. In fact, he did not see Investigator after their passage through Magellan Strait. As they were towed together through the strait, McClure and Miertsching were invited to dine on board Enterprise, and Collinson suggested that the missionary now transfer to his ship. The weather, however, was wet and windy, and Miertsching was concerned that his books and papers might be damaged, so he requested to join Enterprise instead at Honolulu. Collinson waited five days at Honolulu before heading on alone toward Bering Strait. McClure, meanwhile, arrived one day later and then overtook Enterprise by taking a shortcut through the Aleutian Islands. Thus, Investigator was able to reach Point Barrow, Alaska, and enter the Beaufort Sea, whereas Enterprise arrived two weeks later to find its way blocked by ice. Collinson turned back to winter in Hong Kong.

Leaving there on 2 April 1851, Collinson made good progress through the North Pacific to round Point Barrow on 25 July. Missing McClure by just ten days, he entered Prince of Wales Strait on 26 August in an abortive attempt to complete the Northwest Passage by sailing through the strait to reach Melville Sound. Unaware that he was following McClure, he next sought to pass around to the west of Banks Island, only to be blocked by ice and forced to winter instead in Walker Bay, Victoria Island.

After a quiet winter, Collinson set out with a sledding party on 16 April 1852, making his way to the northern end of Prince of Wales Strait. From there, the mate Murray Parks crossed the sea ice to Cape Providence, Melville Island, where he left a message stating Enterprise’s course and plans. Collinson himself followed the east coast of Victoria Island to Wynniah Inlet, unfortunately duplicating Wynniah’s journey the previous year during McClure’s expedition. Time and again, Collinson found that he had been anticipated by other explorers—usually McClure—and in consequence one of the more remarkable voyages of Arctic exploration was eventually to return with comparatively few discoveries to report. Although expeditions exploring the uninhabited regions north of Parry
Channel had little need of an interpreter. Inuit communities were to be found on many of the islands farther south, including Victoria Island, where Collinson concentrated his investigations.

On 5 August, *Enterprise* was released from the ice to resume its voyage. Collinson’s first task was to explore Prince Albert Sound, in the expectation that it formed a strait cutting through Victoria Island. He was able to prove it a bay. He next sailed round the Wollaston Peninsula and, in an exceptional piece of navigation, through the shoaling waters of Dolphin and Union Strait, Coronation Gulf, and Dease Strait to reach safe anchorage in Cambridge Bay, still on Victoria Island, whose full extent became apparent for the first time during his voyage. Roald Amundsen experienced considerable problems in navigating these same waters fifty years later, despite *Gjøa* being only one-tenth the size of *Enterprise*. Amundsen was full of admiration for Collinson’s achievement and found his fine charts indispensable.

At Cambridge Bay, Collinson wintered with an Inuit community. Useful as Miertsching was to McClure, how much more could he have achieved there! *Enterprise* was just 100 miles west of King William Island, from which the ship was separated by Victoria Strait, where Franklin’s ships *Erebus* and *Terror* probably still lay abandoned. With the aid of a basic dictionary, Collinson’s officers sought to elicit what they could from their neighbors, who drew maps showing the coast farther east and appeared to intimate that a ship was to be found there, but all through such a miasma of misunderstanding that Collinson felt unable to act on the information. Early in the summer, some of his men found a fragment of wood, which most likely came from one of Franklin’s vessels. Had Collinson followed his original plan of sending a sledging party to King William Island, he would have anticipated Leopold McClintock’s discoveries by six years. Unfortunately, he cancelled the journey on seeing the roughness of the ice in Victoria Strait and instead focused all his energies on exploring the east coast of Victoria Island, where he himself was again anticipated—this time by John Rae, who had visited the same area in 1851.

Having spent three years in the Arctic, Collinson concluded that it was now time to head west to Bering Strait. He was running out of fuel, and although he had enough food and had managed to avoid scurvy by sending out hunting parties whenever possible, the stresses of the voyage had told on his officers in particular, most of whom he had held under arrest for extended periods of time. As far as the crew was concerned, Collinson was not a harsh disciplinarian—certainly less so than McClure—but he had trouble with his officers from early on in the voyage, who found him overcautious and later accused him of drunkenness. To achieve so much with so little support says much for Collinson’s abilities, but he received little recognition from the Admiralty when he finally managed to extract *Enterprise* from the Arctic in August 1854, after being forced to spend another winter off the north coast of Alaska at Camden Bay. Collinson had failed to discover news of Franklin, and although he had penetrated some 300 miles farther west than McClure, unlike the latter he had not completed the Northwest Passage and had everywhere been second rather than first in his discoveries. Although the Admiralty was prepared to tolerate a degree of dissent among officers engaged in stressful Arctic exploration, Collinson sought to court-martial those who had caused him most difficulty. When the Admiralty refused to do so, he declined all further commands and instead found alternative scope for his talents with Trinity House and the Royal Geographical Society.

*References and further reading:*


**Cook, Frederick**
(1865–1940)

The enigmatic American Dr. Frederick Cook is either one of the greatest explorers of all time or a confidence man of exceptional talent. On 21 April 1908 he claimed to have reached the North Pole. Two years earlier, he had announced the first ascent of Mount McKinley, North America’s highest mountain. Although today these claims are more generally disbelieved than otherwise, Cook has many devoted supporters. Whatever the truth, they can certainly demonstrate that a powerful conspiracy was mounted against him by those backing Robert Peary, Cook’s rival claimant to the Pole.

Frederick Albert Cook was the son of Dr. Theodore Albrecht Koch, one of a wave of immigrants who settled in Sullivan County, New York, following persecution in Germany for their liberal political beliefs. The early death of his father left the family destitute, but Frederick and his three brothers showed great enterprise in earning money where they could. Having decided to follow his father’s profession, Frederick paid his way through college by running a home milk delivery service. After establishing his medical practice in Manhattan, he attracted just three patients in the first six months. For once having time on his hands, he read voraciously about the Arctic before applying for the post of surgeon on Peary’s first expedition to northwest Greenland in 1891.

Relations between the two men were initially good. Peary had a high respect for Cook’s medical skills and natural aptitude as an ethnographer. Indeed, Peary appointed Cook second-in-command of his planned second expedition to north-
west Greenland before Cook withdrew, when Peary refused him permission to publish his observations of the Inuit.

Antarctic Ambitions, 1893–1900
Cook now became increasingly interested in Antarctica, where he was the first to appreciate that the techniques successfully employed by Peary in crossing the Greenland ice sheet—basically dogsledges, skis, and Inuit clothing—were likely to prove equally well-suited in Antarctica. Yet an expedition to Antarctica would be expensive. Cook estimated its cost at $50,000. He would also need dogs and fur clothing. An opportunity to acquire these arose in 1893, when Professor James H. Hoppin of Yale University hired him to lead an expedition to West Greenland with the intention of giving his son experience of the Arctic. Cook hoped to reach Cape York, where he would be able to obtain high-quality furs and dogs and continue his ethnographic research, but the ship’s captain was unwilling to sail north of Upernavik, and Cook had to acquire his furs and five dogs in West Greenland instead. From Labrador, he also brought back two young Inuit to assist him on a lecture tour of the United States.

With so little known about Antarctica, Cook’s plans were
necessarily vague, but he intended to make for the Antarctic Peninsula, where he would deposit a cache before heading farther south. He hoped to land a small wintering party, some of whose members would undertake an inland journey in the spring, while others would survey the coast. Cook’s model was clearly Peary’s successful exploration of northwest Greenland in 1891–1892.

Cook, however, was much less effective than Peary in raising funds by lecturing and instead hit upon the idea of organizing a tourist cruise to Greenland on which fifty-two passengers would be charged $500 each. Unable to obtain any more suitable vessel, he hired *Miranda*, an iron-hulled steamer of 1,158-tons. It was an ill-fated voyage. On 17 July 1894, *Miranda* ran full tilt into an iceberg off Newfoundland. When the ship put in for repairs, many of those on board decided to hunt in Labrador instead. Three days after reaching Greenland on 7 August, *Miranda* struck a submerged reef off Sukkertoppen. Leaving his passengers onshore, Cook sailed in a whaleboat 100 miles north to Holsteinborg before returning on 20 August with the fishing schooner *Rigel*. In the meantime, his passengers had used their time productively. One of them, George Frederick Wright, based his influential theories of the ice age largely on observations made during this brief stay. After an adventurous voyage, *Miranda* and *Rigel* arrived at Sydney, Nova Scotia, on 5 September.

Following this financial disaster, Cook remained as far as ever from being able to fund his own Antarctic expedition. He did, however, apply to join the Belgian Antarctic Expedition of Adrien de Gerlache and, although initially rejected, was later invited to participate when the chosen doctor withdrew shortly before the expedition’s departure. Cook met up with *Belgica* on 22 October 1897 at Rio de Janeiro, Brazil. During this voyage, he earned the lifelong friendship of the Norwegian explorer Roald Amundsen, then on his first expedition. Whether planned by Gerlache or not, *Belgica* became beset in the Bellingshausen Sea, compelling its crew to endure the first winter south of the Antarctic Circle. Noting a syndrome that he named “polar anemia,” Cook discovered that those affected appeared to benefit from exposure to heat and light from the sun. He named “polar anemia,” Cook discovered that those affected would have to spend a second winter in the ice, Cook spurred his companions into action, first suggesting the cutting of narrow trenches from its bow and stern toward the open water in the belief that they would be further widened by the sun’s heat, and then when this failed to have the anticipated effect, urging the cutting of navigable channels from *Belgica* to the nearest water.

Cook’s next polar venture did nothing to improve relations with Peary. In 1901, he was approached by the Peary Arctic Club to conduct a medical examination of Peary in the field to assess his continuing fitness for Arctic work. Traveling to northwest Greenland in *Erik*, the two men met up at Etah. Cook’s report was damning; not only was Peary substantially handicapped by the recent removal of eight of his toes, but his morale was low and he showed signs of pernicious anemia.

**Mount McKinley, 1903, 1906**

Although familiar to generations of Alaskan natives as Denali, “the High One,” the existence of a mountain over 6,000 meters high in interior Alaska was unknown to the outside world until 1896, when it was reported by the gold prospector William Dickey, who named it for the Republican presidential candidate William McKinley. Cook’s interest was aroused when he obtained the report of the first survey, conducted in 1902 for the U.S. Geological Survey by Alfred H. Brooks. With the aid of an advance from *Harper’s Monthly*, in 1903 Cook’s five-man party discovered a pass enabling them to complete the first circumnavigation of the entire massif, in the course of which Ruth Glacier was identified as offering a possible route to the summit. The achievements of this expedition were widely recognized.

Three years later, Henry Disston offered Cook $10,000 to organize a hunting expedition to Mount McKinley. Cook went on ahead of Disston with an eight-man party. Having accomplished some useful work, Cook and the guide Edward Barrill left the others to meet up with Disston, who failed to appear. Now free to use the remaining time as he pleased, on 8 September 1906 Cook and Barrill, initially accompanied by the prospector John Dokkin, climbed up the Ruth Glacier with the goal of reaching the northeast ridge at 3,650 meters. Finding the going surprisingly easy, they continued their ascent and despite a storm reached the summit eight days later.

**The North Pole, 1907–1909**

Within two weeks of his return from Alaska, Cook was elected president of the Explorers Club and soon afterward invited to lecture to capacity audiences at the American Alpine Club and National Geographic Society. His reputation was at its zenith, and he could afford to laugh off rumors that there were unanswered questions concerning his ascent of Mount McKinley. When Peary’s next expedition to the North Pole was delayed until 1908, Cook was able to depart one year ahead of him, on a private expedition financed by the gam-
bler and casino owner John R. Bradley, overtly for hunting purposes but early understood also to provide Cook with an opportunity for making his own attempt on the Pole. Thus, when the fishing schooner John R. Bradley sailed from Gloucester, Massachusetts, on 3 July 1907, stores on board included seasoned hickory for the manufacture of sledges, a collapsible boat, and 1,000 tons of canned pemmican. Cook's plan was derived from his intention to feed his party as long as possible off the land, and to this end he determined to cross Ellesmere Island through areas reported by Otto Sverdrup as well-populated by muskoxen, hares, and other game. Once across, he planned to follow Nansen Sound north to the Arctic Ocean and from there to the Pole.

Following visits to the Inuit communities of Wolstenholme Fjord, Whale Sound, and Etah, Cook selected Anoritoq, some 25 miles north of Etah, as the most suitable base for his journey the next year. There, many of the best hunters were to be found, as well as the best dogs. On 3 September John R. Bradley departed, leaving just Cook and Rudolph Francke, Bradley's steward and chef, who had offered to stay with him. Bradley was prepared to send his ship north the following year, but Cook said that he preferred to make his own way south. Good relations were established with the Inuit, who soon got into the custom of joining Cook and Francke each day for tea at 4:00 P.M. Good relations were important, since Cook would need not only the assistance of hunters and their dogs on his way to the Pole but also the help of the whole community to prepare his fur clothing, sledges, and other equipment.

Beginning in mid-January 1908, the first stores were transferred to Cape Sabine on the east coast of Ellesmere Island. By 19 February all was ready. Accompanied by Francke and nine Inuit with 103 dogs pulling eleven sledges, Cook crossed Smith Sound to Cape Sabine. Initially finding little game, Cook sent back Franke and two Inuit to Anoritoq, continuing on with just the best hunters to Flager Bay, where he turned inland. Soon afterward, muskoxen and hare were found in plenty, sufficient not just for the party's present needs but to allow Cook to deposit several caches for his return journey. Reaching the west coast of Ellesmere Island at Bay Fjord, Cook sledged through Eureka and Nansen Sounds to reach the northern tip of Axel Heiberg Island on 16 March, where he laid a depot. Two days later, he was ready to set out across the Arctic Ocean with two sledges and twenty-six dogs. Anticipating that the journey would take eighty days, they carried 365 kilograms of beef pemmican, 59 kilograms of walrus pemmican, 23 kilograms of muskox tenderloin, and smaller quantities of other food. This he calculated as sufficient to feed just three—himself and two young Inuit, Etkishook and Ahpellah. For the first three days, two other Inuit accompanied them some 60 miles from Axel Heiberg Island before heading back, having refused to accept anything from Cook's already dwindling supplies. On 22 March, Cook met the "Big Lead," a semipermanent belt of open water separating the ice attached to land from the Arctic Ocean pack. He was not delayed there long and eight days later reported sighting "Bradley Land" at 84°50'N, 95°30'W. Reaching the Pole on 21 April, he remained for two days to conduct observations to ensure that he was truly at the Pole before turning back.

Taken too far west by currents, Cook missed his depot on Axel Heiberg Island and only finally reached land in Hassel Sound between Ellef Ringnes and Amund Ringnes Islands in mid-June. From there he headed south through Penny Strait, then across northwestern Devon Island to Eidsbotten Fjord and Jones Sound. Realizing that it was too late in the year to reach Greenland, Cook opted to winter on the north coast of Devon Island in a small cave at Cape Sparbo, which he reached in late September. Virtually without ammunition, he and his companions survived by hunting muskoxen with crude lances and driving them over cliffs. On 11 February 1909, the sun returned, and seven days later they set out for Anoritoq, where they arrived on 15 April after a hard journey, during which Cook was forced to eat first his shoe laces and then his boots. Delaying there just three days, he learned about Peary's attempt on the Pole and his harsh treatment of Francke, but nevertheless decided to leave certain items of equipment, clothing, and papers with a young American hunter named Harry Whitney, whom Peary had installed in Cook's hut. Then Cook set out for Upernavik, some 300 miles farther south. From there he took the next supply ship south to Egedesminde and then boarded the trading vessel Hans Egede for Copenhagen.

Having announced his achievement of the Pole by telegram from the Shetland Islands, Scotland, on 1 September, Cook was amazed at the welcome he received in Copenhagen. Several dinners were held in his honor, and it was at one of these, just five days later, that he learned that Peary too had claimed the Pole. Whereas Cook's initial reaction was to treat Peary's claim as genuine, Peary lost no time in declaring that he could prove that Cook's was not. An extensive literature has been devoted to the Cook-Peary controversy, a sordid affair in which public opinion, originally strongly favorable to Cook, was turned against him by a stream of allegations designed to prove that he had no more reached the Pole than climbed McKinley. Eventually Cook broke, fleeing New York in disguise and soon afterward had his claim officially rejected by the University of Copenhagen, to whom he had submitted such papers as he had. With his reputation as a confidence man apparently confirmed, in 1921 Cook was convicted of financial misdemeanors in relation to the Texas oil boom and sentenced to fourteen years' imprisonment. He was released in 1930.

Whatever the Cook-Peary controversy resolved, however, it was certainly not whether either man, both, or neither got to the Pole. Many today are skeptical whether Peary reached the Pole—see Wally Herbert (1989) and Dennis Rawlins (1973) under his entry—but there is at least equal skepticism concerning Cook. It is easier to provide evidence against the
McKinley “ascent” than the North Pole. Again, there is an extensive literature that is not easily summarized, but essentially there is Barrill’s testimony that he and Cook neither came within 14 miles of the summit nor climbed above 3,000 meters—albeit testimony bought for $5,000 by the Peary Arctic Club; almost all of the photographs in Cook’s book can be shown to have been taken in the vicinity of Ruth Glacier and not higher up the mountain where their captions say they were shot; and, as yet, no expedition has succeeded in replicating Cook’s suspiciously easy route to the summit of Mount McKinley. Given such doubts about McKinley, many have been unwilling to credit Cook with reaching the North Pole, especially since his Inuit companions—admittedly under cross-examination by members of Peary’s expedition—stated that they never traveled out of sight of land (see Meighen Island). There is also the question of “Bradley Land,” now known not to exist—though Cook could here have been misled by a mirage—and the photographs, some of which have been heavily cropped and published with misleading captions. Yet more serious doubts, however, are raised by the recent rediscovery of a photographic copy of his field notebook for the polar journey. On the basis of detailed examination, Robert Bryce (1997) argues that its pattern of erasures, altered dates, and contrasting styles of entries show that Cook began by making an honest attempt on the Pole but once having realized its impossibility—probably when confronted by the “Big Lead”—then made whatever amendments were necessary to provide him with an account consistent with his claim to have reached it.

See also: Amundsen, Roald; Axel Heiberg Island; Devon Island; Ellesmere Island; Gerlache, Adrien de; Greenland; Inuit Contribution to Polar Exploration; Meighen Island; North Pole; Peary, Robert; Sverdrup, Otto (1898–1902)

References and further reading:

Cook Island (South Sandwich Islands)
Located at 59°28’S, 27°12’W, this small, precipitous, ice-covered island—3.75 miles by 2 miles—lies toward the southern end of the volcanic arc forming the South Sandwich Islands. It was probably first seen on 31 January 1775 by James Cook, who was unable to discern whether it was an island or part of some more extensive land and named it, together with the nearby islands Bellingshausen and Thule, as “Southern Thule.” Its separate insularity was established by Fabian von Bellingshausen in January 1820, who named it for James Cook. In 1930 it was charted by RRS Discovery II and recharted in 1962 and 1964 by HMS Protector, when the first landing was made by helicopter. The most recent scientific visit was made in 1997 from HMS Endurance, during a comprehensive geological and biological survey of the South Sandwich Islands.

See also: Bellingshausen, Fabian von; Bellingshausen Island; Cook, James (1772–1775); Discovery Investigations; Sealing and Antarctic Exploration; South Sandwich Islands; Thule Island; Whaling and Antarctic Exploration

References and further reading:

Cook, James (1728–1779)
The British navigator James Cook is commonly regarded as the greatest of all exploring seamen. Of his three great voyages, both his second and third had essentially polar objectives. On the second (1772–1775), he was instructed to look for land in the far southern oceans and in the process completed the first circumnavigation of Antarctica. On the third voyage (1776–1780), his instructions were to search the Pacific for an entrance to the Northwest Passage, the long-sought seaway linking Europe with China across the top of North America.

The First Circumnavigation of Antarctica, 1772–1775
Cook’s first voyage (1768–1771) to Australia, New Zealand, the South Pacific, and around the world, was generally—though not universally—recognized as a triumph, even though it was the young scientist Joseph Banks who was lionized by London society on its return rather than the humbly born Cook. One of the very few dissenters was Sir Alexander Dalrymple (1737–1808). Dalrymple had applied to lead the first expedition but was rejected since he was not a naval officer. He considered that Cook had failed to achieve his major objective, which Dalrymple believed should have been to discover the great southern continent depicted on maps from the sixteenth century on as Terra Australis Incognita. Dalrymple had made an extensive study of voyages to the southern oceans, marking reports of land on a map, which he had then interpolated to show the approximate outline of the vast landmass still waiting to be discovered, but unaccountably not found by Cook. In Dalrymple’s view, this southern continent was another new America, temperate and populated by perhaps 50 million people, with enormous prospects for trade. Dalrymple campaigned long and loudly for his continent, sufficiently so to pique the interest of both the lords of the Admiralty and Cook himself, who proposed a second voyage whose prime purpose would be to find Dalrymple’s continent or, more likely, sweep the oceans clean of any possibility of it.
Despite the full backing of the Admiralty, preparations initially went badly. Two vessels were purchased. Like HMS *Endeavour* (Cook's vessel on his first expedition) both were colliers, built to transport coal in the East Coast trade, strongly built, with a shallow draft, and good sailors, if slow. *Endeavour* had proved itself an ideal exploratory vessel, and the same was hoped of the 462-ton *Marquis of Granby* (renamed HMS *Resolution*) and 340-ton *Marquis of Rockingham* (renamed HMS *Adventure*). Unfortunately, Banks, again to be the expedition's naturalist, insisted on being accompanied by a staff of seventeen, not just the essential artist but musicians and a retinue of scientists and servants. Accommodation for them had to be found in *Resolution*, and Banks had the influence to make it happen. The result was the addition of a top-heavy superstructure, rendering *Resolution* not only unseaworthy but unsafe even in sheltered waters. The inevitable consequence was the stripping off of the added decks, Banks's resignation in fury, and Cook's appointment of John Forster and his son George as expedition naturalists. Awkward as at times Banks could be, Cook and all aboard *Resolution* found the elder Forster far more uncongenial. Other staff additions to the crew included two astronomers—William Wales and William Baily—and an artist, William Hodges.

The expedition finally sailed from England on 13 July 1772, bound for Madeira, the Cape Verde Islands, and the Cape of Good Hope, from where Cook set out to search for his first objective, Cape Circumcision. This cliff of rock and ice, forming a possible promontory of the southern continent, had been discovered by the French explorer Jean Bouvet de Lozier on 1 January 1739. 1 January is the Catholic feast day of the circumcison, hence the cape's name. Cook spent much of December in a fruitless search but in the process demonstrated the absence of any significant landmass to the south. Today, Bouvet's discovery is known as Bouvet Island, the world's most isolated island, 1,000 miles from any other land and in a position far from the original coordinates given by Bouvet.

Cook's next task was to search for land recently reported by another French explorer, Yves de Kerguelen, and called by him “South France,” but before doing so Cook wanted to see how far south he could sail. On 17 January 1773, the Antarctic Circle was crossed for the first time ever, but farther progress south was halted the next day by extensive pack ice. Cook reached 67°15'S, 40°46'E, just 90 miles short of Prince Olav Coast. Cook set a new course, first northeast and then east along 48°S latitude, with the aim of finding the land reported by Kerguelen. Reported latitudes being generally more reliable than longitudes, this strategy was widely adopted in hunting for islands whose coordinates were uncertain, but the stated longitude was 7° too far west, and Cook was unable to locate it.

On 8 February 1773, *Resolution* and *Adventure* were separated in a snowstorm, after which they were reunited only briefly at New Zealand and in the South Pacific. (For a full account of *Adventure*’s voyage, see Furneaux, Tobias.) *Resolution* now sailed sufficiently close to Heard Island for many swimming penguins to be seen. They were correctly identified as a sign of nearby land. The question was, in which direction? At his closest, Cook was about 45 miles from Heard, a high volcanic island reaching over 2,700 meters. In reasonable conditions, it would have been clearly visible to his northeast, but he was closest at night and had snow and strong winds in the morning. Heard remained undiscovered until 1853. Cook again headed far to the south, but it was now late in the season, and icebergs presented a real threat to his vessel, particularly at night, when they were difficult to see. Having reached 61°52'S, 95°2'E on 24 February, he accepted the inevitable and headed for New Zealand, where he found safe anchorages first at Pickersgill Harbor, Dusky Sound, and then farther north along South Island at Ship Cove in Charlotte Sound, where he had previously arranged to meet up again with Furneaux, should the two vessels become separated. On 13 May, *Resolution* and *Adventure* were reunited, soon afterward sailing in company eastward through the South Pacific, in the process showing it to be as free of land as the southern Indian Ocean. After being battered by storms off Cook Strait between New Zealand North and South Islands, *Resolution* returned safely to Ship Cove on 3 November for rest and reprovisioning, but *Adventure*, a much less handy vessel, was forced to find refuge on the east coast of North Island. The two were not to be reunited.
By 27 November 1773, Cook decided that he could wait no longer for *Adventure*, which finally reached Ship Cove just three days afterward, when Furneaux found Cook’s message outlining his plans in a bottle buried by a tree on whose bark had been carved in large letters “LOOK UNDERNEATH.” Cook was again heading south, but *Adventure* was in no fit state to follow.

During the next season, Cook made two determined attempts to sail far south in the Pacific Ocean, achieving his highest latitude of 71°10’S, 106°54’W on 30 January 1774. This was to remain the closest approach to the South Pole until James Weddell reached 74°15’S in 1823. It was also the closest that Cook would come to Antarctica, but not close enough for him to see it. By now, he had concluded that a large landmass did lie near the Pole but that it was far from the temperate continent dreamed of by Dalrymple. Judging by what he had seen, it was more or less entirely icebound, and any attempt to approach closer would be fraught with peril and probably not worth the risk. Having come to this view, Cook decided that he should next search for land farther north in the Pacific before proceeding to the South Atlantic, which he would attempt to sweep as clean of land as he had done the Indian and Pacific Oceans.

After the ship rounded Cape Horn in the last days of 1774, a young midshipman sighted land on 14 January 1775. Beyond his small island, another island was soon seen, and then a deeply indented mountainous coast. Into one of the many bays, Cook entered and sent out a landing party to claim his discovery for King George III, this being the only Antarctic land on which expedition members set foot during the entire voyage. With the inlet named “Possession Bay” and the island “South Georgia” (initially just “Georgia”), Cook sailed farther along the north coast, charting the many fine harbors and noting the profusion of fur seals, the latter observation subsequently to have great consequences. At Cape Disappointment, it became clear that it was not Dalrymple’s continent but another island, and Cook sailed on to search once more for Bouvet Island. Bouvet was not to be discovered—it was not found again until 1808—but instead Cook came upon a fog-bound coast southeast of South Georgia. High mountains could be seen, but were they part of a chain of islands or the west coast of a larger landmass? In 1820, Fabian von Bellinghausen proved the former, and Cook’s “Sandwich Land” became the “South Sandwich Islands.”

This discovery was Cook’s last achievement during this voyage, apart from one final demonstration of the superiority of his Kendall-made chronometer, which he proved by “running his jibboom on St. Helena”—in other words, by relying on this chronometer alone for his longitudes in plotting his course for this small island. It was a masterly voyage, concluded in masterly fashion, and was met by general acclaim on *Resolution’s* return to England on 30 July 1775.

**The Search for a Pacific Entrance to the Northwest Passage, 1776–1780**

The British Admiralty did not originally intend to appoint Cook to lead its projected expedition to search for the western entrance of the Northwest Passage on the Pacific coast of North America, but Cook was not a man to take early retirement despite his exertions over the last eight years, and when he offered to lead, it was clear that there could be no other choice. Despite numerous attempts reaching back over 200 years, no expedition had succeeded in discovering an entrance to the Northwest Passage from the Atlantic Ocean, but prospects of finding a western entrance appeared sufficiently encouraging in 1775 for Parliament to pass an act offering a reward of £20,000 to its discoverer. A recently published map indicated that Alaska did not form part of the North American mainland but was separated from it by a wide and navigable strait, and Samuel Hearne’s success in reaching the Arctic coast of North America in 1771 appeared to confirm the possibility of a passage, if explorers would only look sufficiently far north. In making his overland journey without encountering any other channels possibly connecting the Atlantic with the Pacific, Hearne had effectively disproved the possibility of any “Strait of Anian” bisecting North America at lower latitudes, and Cook accordingly was instructed to begin his search for the passage at 65°N and not to lose any time in exploring rivers and inlets farther south. Bearing in mind the sensitivities of Spain and Russia in particular, neither of which would welcome British exploration in regions regarded as their own, the purpose of Cook’s voyage was publicly advertised as being to return Omai, the Tahitian native brought to England by Furneaux, to his home country.

*Adventure* no longer being seaworthy, during this voyage *Resolution* was to be accompanied by the 298-ton HMS *Discovery*, yet another Whitby-built collier, captained by Charles Clerke, second lieutenant of *Resolution* during its previous voyage. When *Resolution* sailed on 12 July 1776, Clerke was in prison, having generously, if unwisely, stood security for his brother’s debts. *Discovery* departed on 1 August, meeting up with *Resolution* at the Cape of Good Hope in November. On 12 December, the newly discovered Prince Edward Islands were seen, and course was set for the Kerguelen Islands, for which corrected coordinates were now available, following a second voyage to them by their discoverer, Yves de Kerguelen (1773–1774). Pursuing an easterly course along 48°S, these islands were sighted on 24 December. Cook landed and spent six days exploring what he called the “the Islands of Desolation,” a name subsequently widely used by nineteenth-century whalers and sealers.

From Kerguelen, Cook continued east across the Indian and Pacific Oceans via Tasmania; New Zealand; Tahiti; the Society Islands; and the “Sandwich Islands,” which are known today as Hawaii. On 7 March 1778, the west coast of North America was sighted at 44°33’N. With his stocks of fresh water low and...
Through the Antarctic continent made in 1853 by the American sealer Mercator Cooper. Although probably not the first continental landing, since it was preceded by earlier landings on the Antarctic Peninsula (see Davis, John [fl. 1820]), Cooper's is the first in which a landing was unambiguously described, predating by over thirty years the loudly self-advertised landing by Carsten Borchgrevink and others in the same area in 1895 (see Bull, Henrik).

**The First Documented Landing on Antarctica in the Ross Sea Sector, 1853**

The voyage of the *Levant*, between 1851 and 1855, is unusually well documented. Two logs survive, one kept by Cooper himself and now in the East Hampton Library, Connecticut, and the other anonymous and held in the Whaling Museum in New Bedford, Massachusetts.

Having been systematically exterminated at one breeding site after another on the coasts and islands of the Southern Ocean, the valuable fur seal was exceptionally hard to find by
1853. The search continued, however, for new breeding grounds, and each report of a newly discovered island was followed soon afterward by a fleet of sealing vessels hoping to find fur seals. In consequence, the sealers played no small part in the exploration and discovery of Antarctica and the surrounding sub-Antarctic islands (for a full account, see Sealing and Antarctic Exploration).

Mercator Cooper was an experienced sealing captain who had made at least two previous voyages to the Southern Ocean, visiting the Crozet Islands in 1842–1843 and 1847–1849. Having sailed from Sag Harbor, Long Island, in 1851, Cooper looked for seals on the Chatham Islands, east of New Zealand, before deciding to search farther south, where he made a very quick passage through the belt of pack ice encircling the Ross Sea. On 26 January 1853 land was within view, an ice shelf backed by a high mountain some 70 to 100 miles distant, the entry in the anonymous second log recording, “At 10am saw Mount Dalmany baring Southwestarly by all account must be that Land that Capt Roos [James Clark Ross] Saw but aplenty of ice in the way which Cept us from aproaching it” (quoted in Conrad 1999, 65). The following day, Cooper reported the ice shelf still in sight, together with high mountains in the interior. Making his way close inshore, at 11:30 A.M. he ordered a boat to be lowered, and a landing was made on the ice shelf, where many penguins but no seals were found. The front of the ice there was from 1 to 5 meters high. Land remained in sight for several days, and on 2 February, now heading north, Cooper also saw the Balleny Islands.

Levant’s course can be charted with accuracy from the positions given in Cooper’s log. Between 25 and 30 January 1853, it was off the Pennell Coast, just north of Cape Adare, where Henrik Bull and his colleagues landed in 1895. It is clear from both logs that the landing was made on an ice shelf and thus part of the continent, rather than on an offshore island. Such unequivocal evidence was not available for the reported continental landings by Davis and others on the Antarctic Peninsula, in which the evidence chiefly takes the form of recording a landing somewhere on the other side of Bransfield Strait from the South Shetland Islands, but not stating clearly whether on the peninsula itself or on some close-by island. It is at least arguable that Cooper’s landing should be regarded as the first adequately documented continental landing, rather than simply as the first in the Ross Sea sector.

See also: Balleny Islands; Borchgrevink, Carsten; Bull, Henrik; Davis, John (fl. 1820); Ross, James Clark; Sealing and Antarctic Exploration; Victoria Land.

References and further reading:

Cope, John (1893–1947)
In more than a few polar expeditions, what actually takes place bears very little relation to what originally was planned. Perhaps the plans were too ambitious, the organizer was incompetent, or the nature of the region to be explored was radically different from expectations. All these factors combined in the British explorer John Lachlan Cope’s ambitious plans for aerial exploration of Antarctica and the first flight to the South Pole, which instead resulted in two young men spending one winter camped in an improvised hut made out of a boat on the Antarctic Peninsula, the smallest party ever to winter on the Antarctic continent.

Bagshawe and Lester Survive an Antarctic Winter at Waterboat Point, 1920–1922
As surgeon of the Ross Sea party during Sir Ernest Shackleton’s Imperial Trans-Antarctic Expedition (see Mackintosh, Aeneas), Cope was certainly not lacking in Antarctic experience. Unfortunately, his ambitions for the “British Imperial Antarctic Expedition” consistently exceeded his fund-raising abilities, a situation exacerbated when he fell out with influential sponsors, who were most probably bewildered by his constantly changing plans. His initial proposal was for the largest Antarctic expedition yet attempted, involving a five-year program and a specialist staff of fifty-eight. Antarctica was to be circumnavigated in Terra Nova, the former expedition ship of Robert Falcon Scott, in order to resolve successively many of the most significant outstanding questions concerning the geography of Victoria Land, Enderby Land, Coats Land, and the South Shetland Islands. By the time that Cope had come into contact with George Hubert Wilkins, these plans had mysteriously transmuted into a proposal to acquire twelve airplanes. They were to be transported to Edward VII Land, from where various flights would be made, if possible reaching as far as the South Pole. Whether at this stage in their development airplanes would have been technically capable of all that Cope expected of them is doubtful, but, in any event, since money could not be raised sufficient for even one plane, the first flight by an aircraft in Antarctica was not to be made until 1928. Wilkins, who made this flight, was one of only four actually to participate in the expedition; the other members were Cope himself, Thomas Wyatt Bagshawe, a nineteen-year-old geologist, and surveyor Lieutenant Maxime Charles Lester, only a little older and more experienced than Bagshawe.

When he heard of Cope’s failure to provide even one aircraft, Wilkins not surprisingly wished to withdraw, but rather against his better judgment was persuaded by Cope that the expedition could still do useful work on the east coast of the Antarctic Peninsula, where the Weddell Sea coast remained unexplored between Borchgrevink Nunatak, the farthest south reached by Dr. Otto Nordenskjöld, and the Luitpold and Caird.
of season, birthdays were celebrated with Christmas pudding and were all the more appreciated for offering a change from the otherwise mandatory seal and penguin.

Throughout the year that Bagshawe and Lester remained at Waterboat Point, they took meteorological measurements each day and wrote reports in a detailed log of the breeding cycle and other behaviors of the neighboring gentoo rookery. It was the first time that any penguin rookery had been observed for more than one year. They also constructed a tidal gauge, using a calibrated pole to measure the rise and fall of the tide over a forty-day period.

True to their promise, captains O. Andersen and Vermeli Hansen returned in the whale catcher *Graham* to pick up the two on 18 December. Very much to their surprise, Bagshawe and Lester were still unwilling to leave, explaining that they wished to remain until they had spent one full year at Waterboat Point to complete their meteorological and zoological studies. They did, however, allow the whalers to take the dogs away. Instead, arrangements were made for them to be collected on 13 January 1922, when they would have spent a year and a day at Waterboat Point. Once on board, they were taken
to Nansen Island and then remained with the whalers, until they left Antarctica at the end of the whaling season on 30 March.

See also: Antarctic Peninsula; Danco Coast; Filchner, Wilhelm; Mackintosh, Aeneas; Nordenskjöld, Otto; Scott, Robert Falcon; Shackleton, Ernest (1914–1917); Whaling and Antarctic Exploration; Wilkins, George Hubert

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Cornwall Island (Canada)
Located at 73°30'N, 95°00'W, this island of 872 square miles lies between Amund Ringnes Island and the Grinnell Peninsula of Devon Island, being separated from them by Hendriksen Strait and Belcher Channel, respectively. It was discovered by Sir Edward Belcher on 30 August 1852 and named by him for Prince Edward, Prince of Wales and Duke of Cornwall (1841–1910). The first landing was made at Pell Point on the south coast.

The island has had a largely peripheral role in Arctic history, with few parties staying long. In 1901, Gunnar Isachsen and Sverre Hassel from Otto Sverdrup’s expedition sledged along the north coast without landing. Donald MacMillan landed on the north coast at McLeod Head on 26 April 1916. Further brief visits were made by Royal Canadian Mounted Police patrols led by Staff-Sergeant A. H. Joy in 1926, and by Constable R. W. Hamilton in April 1932. Looking for signs of Hans Krüger’s missing expedition, Hamilton spent eight hours sledging across the island to its northernmost point. He found cairns recording Joy’s visit but nothing from Krüger. David Haig-Thomas landed in 1938. Cornwall was included within the systematic survey conducted in 1955 by the Geological Survey of Canada during Operation Franklin.

See also: Belcher, Edward; MacMillan, Donald (1913–1917); Sverdrup, Otto (1898–1902)

References and further reading:

Cornwallis Island (Canada)
Located at 75°15'N, 94°30'W, this member of the Parry Islands lies north of Barrow Strait between Bathurst and Devon Islands, being separated from the former by McDougall Sound.
and Crozier Strait and from the latter by Wellington Channel. It has an area of 2,701 square miles. It was discovered on 22 August 1819 by Edward Parry, who named it for Admiral Sir William Cornwallis (1744–1819).

During the search for Sir John Franklin, William Penny and Sir John Ross spent the winter of 1850–1851 in Assistance Bay on the south coast. At the same time, Horatio Austin was based nearby, off Griffiths Island in Barrow Strait. Much of the coastline was surveyed the following spring: the south coast by a sledge party led by Frederick Mecham of Austin’s expedition and the east, north, and west coasts as far as Little Cornwallis Island in McDougall Sound by Robert Good sir of Penny’s expedition. An unsuccessful attempt to cross the island was made by Charles G. Phillips of Ross’s expedition. Although Parry had considered Cornwallis and Bathurst Islands most probably separate, Goodsir failed to identify Crozier Strait. As a result, Cornwallis was believed to be a peninsula of Bathurst until 1859, when a document was found proving it to have been circumnavigated by Franklin in 1845.

Subsequent landings were made by Leopold McClintock in 1858 and by Joseph-Elzéar Bernier in 1906, when he claimed the island for Canada at Sherringham Point. During the 1920s and 1930s, it was regularly visited by Royal Canadian Mounted Police patrols from Dundas Harbour, Devon Island.

The modern period of occupation began in September 1947, when a meteorological station was established at Resolute Bay during Operation Nannook, following the failure of the icebreaker USS Edisto to reach Melville Island. The next year, stations were opened on Prince Patrick and Ellef Ringnes Islands with the aid of materials and supplies airlifted from Resolute Bay, where a camp and runway were constructed for the purpose. This inaugurated Resolute’s subsequent role as the principal logistical hub for the Canadian High Arctic. In addition to its two gravel runways, which can be used throughout the year, Resolute Bay provides a deep, sheltered anchorage with good holding ground.

Cornwallis was circumnavigated for the first time since Franklin in 1950, when a three-man party led by Dr. Y. O. Fortier of the Geological Survey of Canada (GSC) conducted a coastal survey in a canoe powered by an outboard motor. In 1955, Resolute served as the headquarters of GSC’s Operation Franklin, during which many previously inaccessible locations across the Queen Elizabeth Islands were visited by geological parties with the aid of two helicopters. Resolute has since served as the operating base for the Polar Continental Shelf Project, which provides logistical support to scientists.

A number of Thule culture sites have been excavated in the vicinity of Resolute, indicating that the island had a significant population in about 1400 C.E. Apart from occasional visits by hunting parties from Pond Inlet on Baffin Island, Cornwallis remained without a resident Inuit population until 1953, when several families were relocated here from Pond Inlet and Port Harrison, Quebec.

See also: Austin, Horatio; Bernier, Joseph-Elzéar (1906–1907); Franklin, John (1845–1848); Parry, Edward (1819–1820); Parry Islands; Penny, William (1850–1851); Ross, John (1850–1851)

References and further reading:

Coronation Island (South Orkney Islands)
Located at 60°37’S, 45°35’W, Coronation Island is the largest island in the South Orkneys, northeast of the Antarctic Peninsula, 25 miles long and 3–8 miles wide. It was discovered on 6 December 1821 by the sealers George Powell and Nathaniel Palmer. Powell landed the following day, taking possession for Great Britain and naming the island for the recent coronation of King George IV. After Powell, the next recorded landing was made by Eduard Dallmann on 28 January 1874, who appears to have been uniquely successful in finding fur seals, since he remained on the island to seal for several days.

Although charting work, particularly concerned with the identification of possible anchorages, was carried out by the whalers Petter Sørle and Hans Borge in 1912–1913 and in 1933 by Discovery Investigations, no attempt was made to occupy the island until February 1945, when the British ship RRS William Scoresby landed stores at Sandefjord Bay, with a view to setting up a base for Operation Tabarin. The site selected for Base P was in the middle of a penguin rookery. To site a station within a rookery was by no means uncommon, since penguins customarily occupy the few relatively level outcrops of rock above high tide. However, on this occasion, the inevitable smell was considered just too excessive, and the hut was never occupied. It was finally destroyed in a storm in 1956.

A topographic survey was completed in 1957 from the Falkland Island Dependencies Survey base on Signy Island. In the course of this survey, Mount Nivea (1,265 meters), the highest mountain in the South Orkneys, was climbed for the first time on 11 September 1956 by Alan Grant and Lance Tickell.

See also: Discovery Investigations; Operation Tabarin; Palmer, Nathaniel (1821–1822); Powell, George (1821–1822); Sealing and Antarctic Exploration; Signy Island; South Orkney Islands; Whaling and Antarctic Exploration

References and further reading:

Corte-Real Brothers
(fl. 1500)
Many of the improvements in navigational techniques, cartography, and ship design that first made possible extended voyages of discovery across the open ocean were first pioneered in fifteenth-century Portugal. Although the major Portuguese discoveries were made to the south, along the
coast of Africa, and east to India, significant voyages were also undertaken northward, most especially by the brothers Gaspar and Miguel Corte-Real.

**Portugal Launches the Age of Discovery**

Portugal's early ascendency in all matters hydrographic owed much to encouragement by Prince Henry the Navigator (1394–1460). With the aid of quadrant and astrolabe, Portuguese seamen were soon capable of calculating accurate latitudes, particularly if they were able to land to conduct their measurements. New techniques freed them from the necessity of hugging close to shore and gave them confidence to sail across the open ocean, knowing that they would be able to find their way back and could record where they had been on charts. Although the major Portuguese effort was devoted to reaching south along the coast of West Africa, other voyages were also made westward, where the Azores were discovered in 1432, one-third of the way to North America. Not only were Portuguese navigation and cartographic techniques particularly advanced, but in the caravel they had developed a fast sailing vessel capable of sailing close into the wind, an important consideration for voyages across the Atlantic, which were likely to be into the teeth of the prevailing westerlies.

Whereas on the Portuguese mainland interest in the latter part of the fifteenth century focused on exploration south in the expectation of discovering a southeast passage to India round the Cape of Good Hope, residents of the Azores devoted themselves to westerly exploration, with some also investigating far to the north. Most of the little information that survives from these voyages is preserved by much later sources and is of doubtful reliability. João Vaz Corte-Real, later governor of southern Terceira and São Jorge Islands, is recorded as making a northern voyage in the 1460s or 1470s, which, according to some, may have reached Greenland and even the north coast of North America. Sofus Larsen (1925) asserts that he was transported on a Danish expedition arranged at the request of the Portuguese king. Others doubt that this interpretation is correct. More certain is a voyage in 1500 by two other Azoreans—João Fernandes and Pedro Maria de Barcelos—during which the first sighting of Greenland was made by the least likely person aboard—João Fernandes the "Llavrador" (i.e., landowner). In consequence, the land seen was humorously named "Llavrador," a name transferred about 1570 from Greenland to a neighboring North American coast, Labrador. Fernandes later joined an Anglo-Azorean syndicate in Bristol, which organized voyages to North America in the early years of the sixteenth century. It is likely that he was driven to England by the decision of the Portuguese king Manoel I to grant rights of exploration supplanting his own to his well-connected fellow Azorean Gaspar Corte-Real.

**A Supposed Northern Entrance to Asia Is Discovered, 1500**

Although it is just possible that Manoel I’s decision to send an expedition to search across the North Atlantic for new lands resulted from his knowledge that the land now claimed by John Cabot for England had been discovered previously by João Vaz Corte-Real, it is much more likely that it was provoked by his belief that these lands lay east of the line agreed in the Treaty of Tordesillas in 1494 and were thus legally Portuguese territories, not to be usurped by other nations. Whatever the motivation, in June 1500 Gaspar Corte-Real (ca. 1450–1501), youngest son of João Vaz Corte-Real, sailed from Lisbon with two caravels. He had been assigned rights over all lands he might discover, with powers to claim them for the Portuguese crown.

Very little is known concerning this voyage. A legend on a map compiled in 1502 at the request of the Italian diplomat Alberto Cantino suggests that Gaspar most probably sailed sufficiently far north to see the southern tip of Greenland, where Cantino's map shows "A ponta d'Asia." Clearly, Gaspar, like Columbus and Cabot, assumed that he had reached Asia. He was unable to land. There is no further indication as to where he then sailed, though judging from where he went the following year, it seems most likely that he went west across Davis Strait and then explored the coasts of Labrador and Newfoundland. The suggestion by H. P. Biggar (1903) that he may have sailed north along the west coast of Greenland to 65°20'N is based on sources that appear to confuse Gaspar's voyage of 1500 with what he did the following year.

**Gaspar Corte-Real Is Lost Off the Coast of Newfoundland, 1501**

On his second expedition, Gaspar sailed with three caravels from Lisbon on 15 May 1501, apparently with objectives similar to those of his first voyage. Initially, he set a course for south Greenland, but after meeting first icebergs and then heavy pack ice, he was unable to come within sight of land. Gaspar then crossed Davis Strait to reach a coast with pine trees and many rivers. It has been identified by some as Labrador, though others consider Newfoundland more likely on the grounds that his discoveries, depicted as "Terra del Rey de Portugall" on Cantino's map, appear to reach no farther north than the east coast of Newfoundland. A violent storm was encountered, in which the three ships were scattered. Gaspar's ship was never seen again. Henry Harrisse (1969) surmises that in an attempt to prove the continentality or otherwise of his discoveries, he may have sailed north along the Labrador coast and west through Hudson Strait into Hudson Bay. If so, ice forming later in the year may have cut off his return journey, literally sealing his fate. The two remaining caravels returned to Lisbon on 11 October 1501.

**Miguel Searches in Vain for His Brother, 1502**

On Gaspar's failure to return, his second oldest brother Miguel (ca. 1450–1502) fitted out three ships to search for him. Miguel had invested heavily in Gaspar's two expeditions and in return had been promised a share in all lands discov-
ered. If Labrador could be considered as Arctic, which it might on grounds of severity of winter climate though not latitude, Miguel's journey may be viewed as the first recorded polar relief expedition, in that his aims were simply to recover his lost brother.

The three caravels set out from Lisbon in May 1502. After exploring the coasts of Newfoundland and Labrador, their captains agreed that the ships should separate in order to cover a wider area. Arrangements were made to meet up again on 20 August, probably at St. John's harbor, Newfoundland. Miguel was never seen again.

When the news of this second disaster was brought back to Lisbon by the two remaining ships, Vasco Añes, the eldest of the three brothers, laid plans for a further relief expedition. Two ships were to search for his missing brothers in 1503, but Manoel I refused permission for Vasco Añes to participate personally out of concern that a valued counselor might be lost.

The deaths of the two enterprising Corte-Real brothers effectively brought Portuguese exploration of the far north to an end, though fishing vessels continued to visit Newfoundland and Labrador for many years. The voyages of the Corte-Reals made few significant discoveries, but they did establish the probability that any Northwest Passage would lie within Spanish rather than Portuguese territory as delineated by the Treaty of Tordesillas. Apart from the rich fisheries, there was little reason for further Portuguese interest.

See also: Cabot, John; Greenland; Northwest Passage

References and further reading:

**Crozet Islands (Sub-Antarctic)**

Located between 45°57' and 46°30'S and between 50°20' and 52°35'E, the Crozet Islands were discovered by Marc-Joseph Marion DuFresne on 22 January 1772. The first landing was made by his second-in-command, Julien Crozet, on Possession Island on 24 January. The Crozets actually consist of two separate groups of islands 60 miles apart. The islands of the eastern group—Possession and East—are better known than the western group of Apostle, Hog, and Penguin Islands, the latter being even more difficult to land on than the former. Indeed, Marion DuFresne initially named Penguin Island “Inaccessible Island” because of the apparent impossibility of setting foot on it. This island probably remained unvisited until 1982, when a party was landed briefly by helicopter. On his final voyage, with the aid of a French chart, James Cook was able to confirm the French discoveries here, as at Kerguelen and the Prince Edward Islands. In ignorance of Marion DuFresne's names, which were not marked on his chart, Cook chose to call the western group “Marion” and the eastern group “Crozet” in honor of the discoverer and his second-in-command, but his intentions were later misunderstood by the sealers, who instead came to apply “Marion” to the larger of Cook's Prince Edward Islands and Crozet to both groups here.

Sealers are known to have visited the Crozet Islands since 1804, the first recorded voyage being by the American Henry Fanning. Sealers subsequently landed on all islands, with the probable exception of Penguin Island. Hog Island takes its name for the pigs left there by sealers for provisioning purposes.

A number of exploring expeditions visited the islands. In 1837, the French corvette *Héroïne* conducted a running survey, compiling the first nearly accurate chart of the archipelago. James Clark Ross hoped to land on Possession Island on 1 May 1840, having promised to resupply the sealers based there. He was unable to land, though his purpose was achieved when a party of sealers managed to row out to his vessel. HMS *Challenger* was similarly unsuccessful in December 1873, as also were the American Transit of Venus expedition in 1875 and Henrik Bull in 1894. In fact, it was not until 1901 that anyone apart from Crozet in 1772 and sealers and shipwrecked sailors managed to land on any island in the group. On 25 December 1901, Erich von Drygalski and five fellow scientists landed on the south coast of Possession Island to make the first brief scientific survey.

Situated as they are astride shipping routes from the Americas and Europe to Australia and New Zealand, the Crozets have been the occasion of numerous shipwrecks. The most notable include *Eliza* (1807), *Princess of Wales* (1821), *Aventure* (1827), *Hebe* (1831), *Strathmore* (1875), and *Tamaris* (1887). The books cited in the bibliography by Charles Goodridge, William Lesquin, and Ian Church provide harrowing accounts of the sufferings endured by castaways, many of whom remained here for many months, if not years, before being rescued.

In 1924, France asserted sovereignty on the basis of discovery by Marion DuFresne. It was reaffirmed by French naval voyages by *Antarès* in 1931, when landings were made on Hog and Possession Islands to raise the flag, and by *Bougainville* in 1939. Following a brief reconnaissance of Possession Island by helicopter in 1957–1958, plans were laid for establishing a French scientific station. From December 1961 to February 1962, preliminary surveys were conducted from a field camp to select a suitable site, which was opened in 1962–1963 following construction of a cable lift to facilitate supply from the beach. Since 1971, the station has been known as Alfred-Faure for the leader of the expeditions responsible for setting it up.

With the exception of Drygalski's brief survey in 1901, establishment of the French station on Possession Island marks the beginning of scientific studies of these previously largely unknown islands. Although most attention has been
focused on the eastern group where the station lies, surveys have also been extended to the western group. A detailed biological survey was conducted on Hog Island in 1973–1974, and the first comprehensive scientific survey was made of Penguin Island between 14 November and 12 December 1986. This latter island rises straight from the sea with sheer rock walls on all sides. It remains one of the very few places on Earth where the impact of human beings remains minimal and is a paradise for breeding birds, especially albatrosses, six species being found here.

See also: Bull, Henrik; Cook, James; Drygalski, Erich von; France; Marion Dufresne, Marc-Joseph; Ross, James Clark; Sealing and Antarctic Exploration; Sub-Antarctic Islands

References and further reading:
Goodridge, C. M. 1832. Narrative of a voyage to the South Seas, with the shipwreck of the Princess of Wales cutter, on one of the Crozets. . . . London: Hamilton and Adams.

Cunningham, John (1575–1651)
The Scottish explorer John Cunningham led one Danish expedition to Greenland and participated in another. Although he failed in his mission to reestablish contact with the lost Norse colonies, which were then believed to be still in existence, his was the first Danish expedition to reach West Greenland.

The Search for the Lost Greenland Colonies Begins, 1605
King Christian IV of Denmark had followed with interest the explorations made by the English navigators Martin Frobisher and John Davis in search of the Northwest Passage. It was not the passage itself that was of concern to him, but their apparent rediscovery of Greenland. Contact with the two Norse colonies on Greenland had been lost early in the previous century. Because Norway had for some time been united with Denmark under the Danish king, Christian wished to assert Danish sovereignty but first had to reestablish contact with the colonies. Several expeditions to this end had been organized by his predecessor Frederick II, but although some of them had managed to see East Greenland, none had succeeded in landing anywhere on its ice-encumbered coast. Clearly, the English were enjoying greater success than the Danes, which was not surprising given that they alone had maintained contact with the Norse colonies after the last Norwegian voyage of 1410 (Seaver 1996). If anyone could locate his colonies, surely they could.

To lead the expedition, Christian chose the Scot, John Cunningham, who had been employed as a captain in the Danish navy since 1603, when he was appointed on the recommendation of King James VI of Scotland, Christian’s brother-in-law. James, now also king of England, was responsible too for recommending the English pilot, James Hall. Although Cunningham clearly had some familiarity with the northern seas, Hall appears to have had personal knowledge of the coast of West Greenland, most probably derived from participation in Davis’s voyages. Cunningham and Hall sailed in the 60-ton Trost. Another Englishman, John Knight, captained the 20-ton pinnace Katten, and the Danish nobleman Godske Lindenow was captain of the 70-ton Røde Løwen. All three men later commanded Arctic expeditions.

The three vessels set out from Copenhagen on 2 May 1605. Sighting the tip of southern Greenland on 30 May, Hall followed a course up Davis Strait well out from the coast, where the ice was particularly heavy. This was not the route traditionally followed by the Norse, and a disagreement arose between Lindenow and Hall, with the former arguing that Hall’s course would lead them far north of where the colonies were most likely to be found. In consequence, Lindenow separated from the others on 11 June and headed southeast toward land. As Hall had anticipated, although land was soon in view, approaching it was a different matter, and it was only after Lindenow had sailed much farther south that he was finally able to land somewhere between 62° and 63°N, possibly near present-day Fiskenæsset. There furs, walrus ivory, and narwhal horns were acquired from the Inuit, two of whom were taken captive and brought back to Denmark in the hope that they might be able to give information about the Norse colonies. Unable to accomplish anything more, Lindenow headed straight back to Copenhagen, where he arrived on 28 July to be acclaimed as the rediscoverer of Greenland.

The two remaining vessels reached land on 12 June 1605 at 66°30′N at Itivdleq Fjord, where Davis too had anchored in 1586. While Cunningham remained in Trost, on 20 June Hall set out to explore farther north in the pinnace Katten. For this part of the voyage, Hall kept no journal but did compile four charts—the first to be made of West Greenland—and from these and a journal kept by one of his crew, it is possible to gain a good understanding of where he sailed. He appears to have reached as far north as 68°35′N, from where he would have seen the vast extent of Disko Bay stretching out ahead, the first sight of it by European explorers, though it had long been familiar to the Inuit and Norse. Hall wished to pursue these discoveries further but was persuaded to turn back by his crew, who feared that Trost would sail home without them. In addition to charting the coast, they collected promising mineralogical specimens, some of which were later said to contain silver. Hall rejoined Cunningham at Itivdleq on 10 July. The latter had maintained reasonably good terms with the Inuit before taking four of them prisoner. The Inuit had then attacked his ship until they were driven off by cannon fire. One of the prisoners proved so intractable that he had had to be shot. The other three adapted well to captivity and by the end of the voyage were swarming up the rigging as fast as any sailor.
They reached Copenhagen on 10 August 1605. Although Lindenow's earlier return attracted the bulk of popular acclaim, the king himself appreciated Cunningham's achievements, and Hall's maps received special praise. Cunningham participated in a larger expedition organized the following year, though this time not as overall leader but as captain of *Røde Løwen* under Lindenow's command. This change reflected no discredit on Cunningham, but rather Christian's belief that in Lindenow he now had a Danish national sufficiently experienced to act as overall leader. Cunningham continued in Danish service for the remainder of his life. In 1615, he led a naval expedition to Spitsbergen, over which Christian wished to assert Danish sovereignty, sharing as he did the general belief that it was part of Greenland. Perhaps Christian thought that as an English speaker, Cunningham would be better equipped to assert Denmark's claims among the English and Dutch whalers. If so, he was mistaken, for his fleet was ignored by the whalers. Four years later, Cunningham was appointed governor of Finnmark. Stationed in the far north of Norway at Vardø, he remained there for almost the rest of his long life, a vigil no doubt enlivened by occasional contacts with his fellow Scots, who had long maintained trading contacts there.

**See also:** Davis, John (ca. 1550–1605); Denmark; Frobisher, Martin; Greenland; Hall, James; Knight, John; Lindenow, Godske; Spitsbergen

**References and further reading:**

**Czech Republic**

The Czech Republic acceded to the Antarctic Treaty in 1993 on the basis of Czechoslovakia's ratification of the treaty on 14 June 1962. Interest in Antarctica has been maintained in recent years by the private organization Mladí polárníci (Young Polar Explorers), which has conducted an environmental program on Nelson Island in the South Shetland Islands since 1987–1988. Václav Vojtech station was set up with the assistance of the thirty-third Soviet Antarctic Expedition and was maintained until 1993 on an all-year basis. With no logistical support of their own, the Czech scientists have relied on a succession of different countries, including the Soviet Union, Russia, South Korea, and Poland, and have in consequence been forced to cease all-year operations. Their situation provides clear illustration of the difficulties likely to be experienced by any private organization attempting to run a long-term Antarctic program without extensive state support. Nevertheless, the Czechs have not been deterred and have recently investigated the possibility of expanding their work by opening a station at Turret Point on King George Island. Active consideration is also being given to the establishment of a state-run scientific station on James Ross Island.

The noted Arctic explorer Julius Payer was born near Teplitz, Bohemia.

**See also:** James Ross Island; King George Island; Korea; Nelson Island; Payer, Julius; Poland; Russia
**Dallmann, Eduard**  
(1830–1896)
One of the most capable ice navigators of his generation, Dallmann is less well-known today than he deserves to be. This German sea captain was possibly first to see and land on Wrangell Island in the Russian Arctic, made a series of pioneering attempts to open up the Northeast Passage north of Russia to European trade, and commanded the only expedition to Antarctica with interests other than purely commercial ones between 1845 and 1892, the era of “averted interest” characterized by the Antarctic historian Hugh Robert Mill.

**Claimed Discovery of Wrangell Island, Russian Arctic, 1866**
Eduard Dallmann, captain of W. C. Talbot, was engaged on a trading and exploring expedition from Honolulu, Hawaii, through Bering Strait to the eastern Russian Arctic when he reported discovery of and first landing on Wrangell Island on 17 August 1866. Although Ferdinand von Wrangell had inferred the island’s existence from native reports in the 1820s and Henry Kellett had possibly sighted it in 1849, it had never previously been visited. Dallmann published a report of his discovery only in 1881, by which time priority had been accorded to the American whaler Thomas W. Long, who saw the island but did not land on it on 14 August 1867. Dallmann’s claim is controversial, partly because he allowed fifteen years to go by before announcing it but also because his report includes details suggesting that he may actually have landed somewhere else. For example, he records seeing the footprints of muskoxen, which are not found on the island, and mentions passing “Plover Island,” now known not to exist. However, with many other achievements to his name, there is little reason to suppose that Dallmann laid claim to something he did not do, and it is more likely that he may have misremembered details of events taking place long previously.

**A German Whaling and Sealing Voyage to Antarctica, 1873–1874**
The Hamburg-based German Polar Navigation Society sought to promote exploration, whaling, and sealing in the polar seas. Fired with enthusiasm by the ideas of Georg Balthasar von Neumayer (1826–1909), who had long urged the cause of Antarctic exploration in Germany, the society’s director and animating spirit, shipowner Albert Rosenthal, persuaded the society to commission Dallmann to lead an expedition to Antarctica.

Taking command of the steam-whaler Grönland, Dallmann sailed from Hamburg on 22 July 1873. The details of his instructions are not clear, but he was to look for right whales, which James Clark Ross had previously reported as plentiful in the Southern Ocean. He was also to engage in sealing and to check the accuracy of available charts.

Dallmann soon proved the inadequacy of the latter after reaching the South Shetland Islands on 18 November, where the ship twice ran onto uncharted rocks but without suffering significant damage. He met a sealing fleet from Stonington, Connecticut, one of several such expeditions during a period when the Antarctic was otherwise unvisited. Unfortunately, little is known of their activities since the sealers left behind few records and neither did Dallmann, though on King George Island he did erect a plaque recording Grönland’s visit, the first by a steamship to these islands and soon also to Antarctica itself, where he sailed along the Antarctic Peninsula as far south as 64°45’S on 9 January 1874. Here, he found land that did not correspond to his charts. This area surrounding the Bismarck Strait, which Dallmann named and was the first to roughly chart, had been visited previously by sealers and by John Biscoe in 1832. Biscoe, in particular, had landed on Anvers Island, thinking it to be part of the mainland, and that is how it was depicted on Dallmann’s chart. However, instead of forming one landmass with the Antarctic Peninsula, Dallmann found the land north of the Bismarck Strait to consist of several separate islands, where he was first to see but not navigate the Neumayer and Lemaire Channels, as well as to name and roughly chart the Wilhelm Archipelago to the south of Bismarck Strait. Although conditions were good and he had time for further exploration both here and farther south, Dallmann, remembering his obligation to produce a commercial return on the voyage and having sighted no seals so far south, decided to return north after first spending some time investigating the Hughes Bay area to the north of Anvers Island. The remainder of the season until mid-February was spent sealing in the South Orkney Islands, where his expedition was uniquely successful in finding significant numbers of fur seals.

On 25 July, Grönland reached the Elbe. The voyage was not a commercial success. Although many whales were seen, none of them were right whales, and Grönland was not equipped to catch the fast-swimming rorqual species. Although the ship’s hold was filled with seal oil and skins, only 145 of the latter were of the highly valued and now very rare fur seal, the remainder being practically worthless. Dallmann’s geographical discoveries were significant but not widely known since they were published only in German-language sources. It is interesting to consider the implications had Dallmann’s failure to find right whales been better known. Would Svend Foyn, Robert Kinnes, and A/S Oceana have sent out their respective Antarctic whaling reconnaissance expeditions (see Bull, Hen-
Later Expeditions to the Northeast Passage

On his return from Antarctica, Dallmann continued to make use of his expertise in ice navigation, notably on a series of trading expeditions, during which he attempted to open up the Northeast Passage as a regular trading route, particularly its western section through the Barents and Kara Seas to the river Yenisey. Financed initially by the Russian merchant Aleksandr Sibiryakov and then by the Moscow-based German banker Ludwig Knoop and trading concerns in Bremen and Bremerhaven, Dallmann undertook six voyages from 1877 through to 1883, following the route pioneered by Joseph Wiggins and Adolf Erik Nordenskiöld, until repeated failures in poor ice years demonstrated the route’s economic unviability prior to the development of icebreakers. Dallmann spent his last years trading in the waters off New Guinea until his death in 1896.

See also: Bull, Henrik; Dundee Antarctic Whaling Expedition; Kellett, Henry; Larsen, Carl Anton (1892–1893, 1893–1894); Nordenskiöld, Adolf Erik (1878–1880); Northeast Passage; Palmer Archipelago; Ross, James Clark (1839–1843); Sealing and Antarctic Exploration; South Orkney Islands; South Shetland Islands; Whaling and Antarctic Exploration; Wrangell, Ferdinand von; Wrangell Island

References and further reading:

Danco Coast (Antarctic Peninsula)

This section of the west coast of the Antarctic Peninsula was first charted by the Belgian Antarctic Expedition led by Adrien de Gerlache between 23 January and 12 February 1898. Extending south from Cape Herschel (64°04′S, 61°02′W) to Cape Renard (65°01′S, 63°46′W), with the Davis Coast to the north and Graham Coast to the south, it is bordered to its west by Gerlache Strait and was named for Lieutenant Émile Danco, who died from heart disease during the expedition. In 1902, members of the Swedish Antarctic Expedition under Gunnar Andersson conducted a more detailed survey of the northern region.

The first party to winter there consisted of just two men—Thomas Wyatt Bagshawe and Maxime Charles Lester, at Waterboat Point (64°49′S, 62°51′W) in Paradise Harbor between 12 January 1921 and 13 January 1922, still the smallest party ever to have wintered on the Antarctic continent. Originally part of a larger expedition, the other members—John Cope and George Hubert Wilkins—returned to England when insufficient funds were raised to support the expedition’s ambitious plans. Bagshawe and Lester made their home in an abandoned whaling dory. This was 9 meters long but provided only 1-meter headroom. To it they added a small hut. Despite the privations endured, they insisted that they would remain there for an entire year, and when a whale catcher offered to pick them up on 18 December 1921, they refused collection. In addition to maintaining tidal records and a complete calendar year of meteorological data, their zoological studies provided the basis for the first in-depth published account of breeding penguin biology. Waterboat Point is now the site of the Chilean station (open seasonally), Presidente Gabriel González Videla.

Since the 1950s, several stations have been established along the coast, and they will be described in geographical order, from north to south. At Spring Point (64°09′S, 60°57′W) in Hughes Bay, stations have been built by both Argentina and Chile. Primavera originated as an Argentine refuge hut built in 1954 and expanded into an all-year station in 1976–1977. It continued to operate as such until 1981, since when it has been opened during occasional summers. The Chilean station Spring also originated as a refuge hut, built in 1973, and has operated as a summer station since 1985–1986.

In December 1956, the Falkland Islands Dependencies Survey (FIDS) opened a base on the northeastern tip of the Reclus Peninsula (64°30′S, 61°46′W). The station was named Portal Point since it provided a possible route up to the other-
wise almost inaccessible central plateau running along the top of the northern Antarctic Peninsula. Unlike most other British bases, no letter was ever assigned to it, and it was occupied only intermittently in the following season and not subsequently. The hut was later removed to the Falkland Islands Museum in Stanley, where it provides an evocative insight into life on a small FIDS base in the 1950s.

Some way to the south, Danco Island (64°44'S, 62°37'W) in the Errera Channel was selected for the FIDS Base O in February 1956, after a suitable site on Brabant Island could not be found. The station’s original purposes were to carry out reconnaissance in a geologically unknown area and to establish ground control for the Falkland Islands and Dependencies Aerial Survey Expedition. Because of the poorly chosen site, which had been chosen by the captain of the FIDS supply vessel John Biscoe with a view more to the needs of his ship than to those of the survey, meeting these goals proved impossible. All work had to be carried out by boat journeys covering an area from Cape Murray 75 miles to the north to Miethe Glacier 25 miles to the south. All attempts to reach the inland plateau along the top of the Antarctic Peninsula also failed. Base O was closed in February 1959, by which time all possible work had been completed.

In 1950, a Chilean refuge hut was built at the north end of Paradise Harbor in honor of Presidente Gabriel González Videla, the first head of state to visit the Antarctic. Facilities were expanded the following year, and a meteorological station was opened in May 1951 at Waterboat Point, the site where Bagshawe and Lester had wintered in 1921–1922. Operated throughout the year until 1964, it has since opened as a summer station only, manned by the Chilean Air Force.

The Argentine station Almirante Brown lies a little way farther south in Paradise Harbor (64°54'S, 62°52'W) on the Coughtry Peninsula. In the late 1940s, one of the first Argentine refuge huts was erected there and named for Almirante Guillermo Brown, the first admiral of the Argentine navy. In 1951, it was expanded into a naval meteorological station. Closed from 1959–1960 through to 1963–1964, it was subsequently reopened as a scientific station. On 12 April 1984, it was destroyed by a fire lit deliberately by the base commander, who was reluctant to return to Argentina. It is now manned intermittently as a summer station.

David, Edgeworth
(1858–1934)

Although the North Magnetic Pole had been reached in 1831 by James Clark Ross at 75°05.3′N, 96°46′W in northern Canada, no one had yet succeeded in reaching the South Magnetic Pole. Ross had attempted to do so in 1839–1843, and from his calculations and those of later explorers, the Pole was known to lie on the polar plateau beyond the mountains of Victoria Land. Ernest Shackleton determined that reaching it should be one of the two chief objectives of his first Antarctic expedition, but because he was set on reaching the South Pole, he gave charge of the mission to the South Magnetic Pole to Tannatt William Edgeworth David.

First to the South Magnetic Pole, 1908–1909

Born in Wales, David had emigrated to Australia, where he became professor of geology at Sydney University. Aged fifty
set out, initially accompanied by the car, which had to abandoned in thick snow after just 2 miles. By 17 October they had crossed McMurdo Sound and landed at Cape Bernacchi, where they took possession of Victoria Land for the British Empire. Traveling over the sea ice near the coast rather than on the coast itself, they found better surfaces but were still only able to make 4 miles a day since they were forced to relay their heavy sledges. From 2 November they marched at night to benefit from the harder ice. Not until 30 November did they reach the Drygalski Ice Tongue, a glacier reaching out beyond the coast into McMurdo Sound. There, at the point where they intended to head inland, *Nimrod* was to collect them on their return. Finding conditions on the glacier itself impossible for travel, on 12 December they deposed a sledge with their accumulated geological specimens at a conspicuous point within easy reach of the sea, rested for three days, and then bestirred themselves for the hard pull that they estimated at 500 miles up through the Transantarctic Mountains to the Magnetic Pole, and then—hopefully—back.

The surfaces they now crossed were heavily crevassed, and each member of the party survived narrow escapes, Mawson typically grabbing a handful of ice crystals for scientific examination as he hung insecurely suspended by his harness in one gaping hole. By 20 December, they were still not much more than 30 meters above sea level and experiencing considerable difficulty in locating a feasible route through the mountains. Later that day they managed to work their way slowly up a small branch glacier leading onto the Mount Bellingshausen Glacier, where the route looked practicable, if very steep. On 30 December they were at 1,370 meters, with signs of approaching the plateau, though they were to continue climbing until 10 January 1909, by which time they were at over 2,130 meters.

Two days later, Mawson's calculations showed the Pole to have moved to a more northwesterly position than anticipated. This meant that they had farther to go, being still 50 miles from it and now running out of time if they were to make their agreed rendezvous with *Nimrod*. Pressing on regardless, on 15 January 1909 Mawson's compass showed a dip of 89°48', just 12 minutes short of vertical, but in which direction was the Pole, and just how far away? Working to the best of Mawson's estimates, they made a depot of their sledge and heavy supplies the next day and hurried as fast as they could toward the calculated position, leaving behind equipment every 2 miles to mark their way because the compass was useless so close to the Pole. Having traveled 13 miles, at 72°25'S, 155°16'E, they planted the Union Jack, claimed possession for the British Empire, and took a quick photograph before they made all speed back to their depot.

To cover the 250 miles back to the Drygalski Ice Tongue in the fifteen days before *Nimrod* was due to pick them up, they had to average just under 17 miles a day. This was a tough proposition, but they got away well, making good speed downhill in generally fine weather. By 2 February—only one day

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late—they were within sight of the depot but found their way barred by an enormous ice cleft, 180 meters wide and 12 meters deep. Although they were able to descend into this ravine, they found it impossible to climb out on the far side. It was thus not until three days later that they reached the depot, having had to work their way around the obstacle. There was no sign of Nimrod. While they were contemplating the necessity of making an unaided return to Cape Royds, to David's intense relief Nimrod was suddenly seen close by, rapidly approaching through the ice floes. At this point, Mawson felt the snow give way beneath him as he disappeared 6 meters down a crevasse. Warnings were shouted to Nimrod's crew, who skirted the crevasse and succeeded in extracting Mawson uninjured. In all, David, Mawson and Mackay had traveled 1,260 miles in 122 days.

No more courteous man has ever lived than Edgeworth David. The story is told of how Mawson was changing photographic plates in the tent when he heard David's gentle call, "Mawson, I want you." Mawson did not wish to be interrupted and continued with his work. After a minute or two, David called again somewhat more urgently, "Mawson, I'm sorry to disturb you, but can you come?" Mawson, still very busy, remained unmoved. Finally, David was heard to say, "Mawson, I'm very sorry to trouble you, but I'm down a crevasse and I really can't hold on any longer" (David 1937, 175). Some years later, David extended the same courtesy to Nobu Shirase, whose Japanese Antarctic expedition had been compelled to winter in Sydney in reduced circumstances at a time of anti-Japanese prejudice in Australia. David ensured that his government treated Shirase with special consideration. Although his own direct contribution to Antarctic exploration ended with Shackleton's first expedition, through his students—Mawson, Thomas Griffith Taylor, Frank Debenham, and others—David exerted a continuing influence long afterward.

References and further reading:

Davis, John (ca. 1550–1605)
The Englishman John Davis was the greatest scientific navigator of his age. Although also credited with the discovery of the Falkland Islands, he is best remembered for Davis Strait, between Greenland and Baffin Island, whose coasts he explored in his search for the Northwest Passage during three voyages in the 1580s.

In January 1584, the seaman John Davis was invited to attend a meeting with Secretary of State Sir Francis Walsingham, Dr. John Dee—mathematician and astrologer—and his childhood friend Adrian Gilbert, brother of Sir Humphrey Gilbert, whose much-circulated Discourse persuasively argued the advantages of reaching Cathay by means of a northwest rather than a northeast seaway. This influential group thought it now timely to send out another expedition to search for the Northwest Passage.

Like many other seamen of this time, Davis was a native of Devon in southwest England, and from his early childhood he had been an intimate associate of the Gilbert family, which, in addition to Humphrey and Adrian, included the influential courtier Sir Walter Raleigh as their stepbrother. Following their meeting with Walsingham and Dee, in March 1584 Adrian Gilbert and Davis applied for a license from the Muscovy Company to seek the Northwest Passage. By this date, the merchants of the Muscovy Company had little interest in exploration and certainly not in the Northwest Passage, whose discovery might undercut their lucrative trade with Russia along the Northeast Passage. The application was therefore refused, but Gilbert and Davis had influence at court through Walsingham and Raleigh, and Queen Elizabeth I was persuaded to intervene personally in February 1585 to grant a patent to Davis, Gilbert, and Raleigh under the name "The Colleagues of the Fellowship for the Discovery of the North-West Passage."

The next step was to obtain financial backing. Many courtiers, merchants, and even the queen herself had incurred heavy losses when the ore brought back by Martin Frobisher from Baffin Island in 1577 and 1578 was found not to contain any gold. Understandably, there was some reluctance to back further expeditions searching for the Northwest Passage. The losses from Frobisher's expeditions had resulted from its mining rather than its exploratory activities, however, and Frobisher's discoveries had in fact been encouraging in that he had recorded finding two possible entrances to the Northwest Passage. Persuaded that another venture was worth undertaking, the leading London merchant William Sanderson, husband of Raleigh's niece, advanced a large proportion of the necessary funds and took charge of preparations.

The Search for the Northwest Passage Resumed, 1585
On 7 June 1585, Davis embarked from the West Country port of Dartmouth in the 50-ton barque Sunneshine, accompanied by William Bruton in the 35-ton barque Mooneshine. Most unusually, and reflecting Davis's cultured tastes, Sunneshine's complement of twenty-three included four musicians, who were later to be put to good use.

Initial progress was slow when they encountered contrary winds off southwest England, but after meeting pack ice on 19 July, the following day they were within sight of the southeast coast of Greenland, "the most deformed rocky and mountainous land that ever we sawe" (Markham 1880, 4). This Davis named the "Land of Desolation" and, following the misleading
map depicting the fictitious voyages of the fourteenth-century Zeno Brothers, later identified it not as Greenland but as the nonexistent “Frisland,” since the Zeno map depicted Greenland as 20 degrees farther west and 6 degrees farther north than its actual location. The wind being from the north, they next headed south along the coast, where much driftwood was noted. The weather was like England in April, only cold when the wind blew off the land or ice. Rounding Greenland’s southern tip, which Davis named Cape Farewell, they sailed northwest to 64°15′N, near the latitude of present-day Nuuk, Greenland’s modern capital, where an archipelago of islands was found in an area Davis named “Gilbert’s Sound.” Landing here, soon afterward they were approached by a multitude of natives along the shore and in kayaks, whereupon Davis instructed his musicians to play and others to dance in a token of friendship. The Inuit responded to this “overture” with delight, though they were undoubtedly most pleased by the nails and other metal objects given them, in return for which they were happy to exchange anything they were asked for—clothing, reindeer skins, spears, seals, and even kayaks.

Making use of a fair wind, on 1 August 1585 they left Greenland behind, and crossed an ice-free Davis Strait to reach Baffin Island five days later at 66°40′N. The names Davis bestowed here commemorate his friends—Mount Raleigh, Cape Dyer, and Cape Walsingham—and his West Country origins—Exeter Sound and Totnes Roads. On 8 August they headed south, three days later coming across a major opening to the west, 80–120 miles in width. Into this Davis entered and through open water sailed for 280 miles, or so he estimated, in high hopes that this might indeed be the Northwest Passage. As they came within sight of a cluster of islands in the midst of what was later named Cumberland Sound, the weather grew foggy and the wind shifted to the southeast. These unfavorable conditions persisted for six days, and with no sign of them ending, on 21 August Davis determined to sail for home, it being now late in the season for further exploration. While anchored in Cumberland Sound, they had seen clear signs of human occupation but no natives. Perhaps word had spread among the Baffin Inuit following their unfortunate encounters with Frobisher’s expeditions some years previously that such strangers were to be avoided. Leaving Baffin Island behind on 26 August, Davis reached southern Greenland on 10 September, where he hoped to land but was unable to find a suitable harbor. There, the two ships were separated in a storm, Mooneshine only reappearing two days later as Davis waited anxiously close to shore. On 13 September, they set out for England, reaching Dartmouth on 30 September.
Further Explorations in Davis Strait, 1586

On the basis of his explorations, Davis believed that the Northwest Passage was now all-but-found. “The North-West Passage is a matter of nothing doubtful, but at any tyme almost to be passed, the sea navigable, voyde of yse, and ayre tolerable, and the waters very depe” (Letter to Sir Francis Walsingham, October 1585). Encouraged by Davis’s optimism and by the quantity and quality of the products obtained from the Inuit of Greenland, West Country and London merchants provided sufficient backing to fit out another voyage. This time Davis was equipped with a much larger trading vessel, the 120-ton Mermayde, in addition to his two ships of the previous year and the small 10-ton pinnace, Northstarre.

On 7 May 1586, Davis sailed from Dartmouth with his small fleet to make landfall near Cape Farewell on 15 June, having previously separated from Sunneshine and Northstarre, which were to explore the east coast of Greenland. Mermayde and Mooneshine headed up the west coast to “Gilbert’s Sound,” which they reached on 29 June. They were approached by large numbers of Inuit in kayaks, bringing with them “seale Skinnes, stagge skinnes, white hares, seale fish, samon peale, smal codde, dry caplin [capelin], with other fish, and birds such as the country did yeele” (Markham 1880, 17). After first constructing a small pinnace to assist his explorations and encouraged by the friendliness of the natives, Davis explored the country, which he found not unlike the moors of upland England. (As a Devon man, he probably had Dartmoor particularly in mind.) Initially friendly relations deteriorated during Davis’s absence, as the Englishmen discovered that the Inuit would steal anything that came to hand, particularly if it was made of iron. They also had a great sense of mischief, cutting the ships’ cables and pelting the seamen with stones. The chief troublemaker was taken hostage, and it was time to move on.

Sailing north, a massive body of ice was encountered on 17 July 1586, which they continued to skirt until some thirteen days later. Consisting of pack ice interspersed with many icebergs, this was the Middle Ice, with which the whalers of this region were later to become very familiar, moving slowly south through Davis Strait. With ice all about them and the high ice plateau of interior Greenland to their east, the cold deepened and many seamen fell ill, begging Davis to send them home. Davis, John 175

Meanwhile, Sunneshine and Northstarre had been similarly unsuccessful, disastrously so in the case of Northstarre. They had been given instructions to explore the possibility of a passage northward between Iceland and Greenland, to 80°N if their way was not interrupted by land. (Here Davis had in mind the Zeno map, which suggested that Greenland was joined to Asia.) Sunneshine and Northstarre anchored off Iceland from 12 to 16 June 1586 before steering northwest. Becoming beset on 3 July, they were forced to turn about. Considering further progress impossible to the north, the two ships coasted southward some miles off land along southeast Greenland, round Cape Farewell, and then northwest to “Gilbert’s Sound,” their appointed rendezvous with Davis. After waiting for him until 31 August, they decided to head back to England. Sunneshine reached London on 6 October. The tiny Northstarre was lost in a storm on 3 September.

One More Try for the Northwest Passage, 1587

Apart from Sanderson, few merchants were prepared to back further voyages, but there was some encouragement in
Davis's belief that the entrance to the Northwest Passage was now to be found in one of four places, or else not at all. There was also the prospect of recouping at least some costs through the cod fishery that he had come across off Labrador. For this last voyage, Davis was equipped with three vessels, the barques *Sunneshine* and *Elizabeth*, at least partly for fishing purposes, and the 20-ton pinnace *Ellen*, of whose seaworthiness Davis was doubtful but on which nevertheless he would have to rely for his own exploratory work.

Setting out from Dartmouth on 19 May 1587, it was not long before many on board *Sunneshine* were eager to abandon exploration and concentrate solely on fishing. Davis persuaded them to stay with him until he anchored off West Greenland on 16 June to construct a pinnace. A shallow draft vessel such as that should have proved invaluable for exploration. However, before the vessel could be completed, Inuit stole much of its top planking for the nails hammered into it, so that it was useless for the purposes Davis had in mind and instead was sent to fish with *Sunneshine* and *Elizabeth*. Meanwhile, Davis entrusted himself with considerable disquiet to *Ellen*, which had developed a leak.

Between 21 and 30 June, *Ellen* coasted northward to 72°12'N, making friendly contact with several parties of Inuit, far from land in their kayaks but all eager to trade whatever they had for much-valued iron. Here, at the northernmost point reached on any of his voyages, Davis named a prominent headland “Sanderson, His Hope” for his most loyal sponsor. With the sea free of ice to both north and west, Davis might have considered continuing farther north, had the wind not shifted to the northward, deciding him instead to head west toward Baffin Island. Having sailed more than 160 miles without sight of land, on 2 July 1587, *Ellen* met up with a large body of ice blocking further passage for the next eleven to twelve days. Davis was determined to reach the region that he had explored during his previous two voyages and, despite being kept offshore by the ice off eastern Baffin Island, eventually managed to work his way close to land, where Inuit were again encountered.

By 19 July, Davis had sailed south to reach land recognizable from his first voyage. Retaining high hopes of reaching the Northwest Passage through Cumberland Sound, he piloted *Ellen* through the entrance and sailed 240 miles before discovering that the islands where he had anchored for several days in 1575 lay close to the head of the inlet, which was thus shown to be merely a very large bay and no strait. By 29 July, *Ellen* was again in the open sea, sailing first past Frobisher Strait the next day and then Hudson Strait on the day following. Davis made no attempt to explore either, though he noted the strong currents through each, which must have seemed to promise the possibility of a Northwest Passage.

As in the previous year, Davis continued down the coast of Labrador south to 51°N, searching with rising anxiety for *Sunneshine* and *Elizabeth*, which he had arranged to meet there. Evidently, they had abandoned him. *Ellen* was a very small and unseaworthy craft in which to attempt the stormy North Atlantic, but Davis had no choice. By dint of good seamanship and favorable weather, he reached Dartmouth on 15 September. *Sunneshine* and *Elizabeth* had returned some time previously.

**Later Life and Expeditions**

Although Davis remained sanguine that the Northwest Passage existed and would not be difficult to navigate, his backers took a different view and decided to cut their losses. Davis himself, however, was not finished with adventure—far from it.

It is unclear what part he took in the defeat of the Spanish Armada by the English in 1588, but it is likely that he was prominently involved. He may well have been the “John Davis” recorded as commanding the 20-ton *Black Dog*, tender to the lord high admiral. Subsequently, he accompanied Thomas Cavendish’s attempted circumnavigation of the world in 1591–1593, as captain of *Desire*. Davis stated that he was only induced to go by a promise that once California had been reached, he would be released to search once more for the Northwest Passage, but this time from the west. *Desire* was separated from the rest of the fleet in Magellan Strait at the bottom of South America. While Cavendish retreated to Brazil, Davis made several attempts to get through the strait and three times entered the South Pacific Ocean, only to be blown back each time. It was during this voyage on 14 August 1592 that he took shelter among low-lying islands to the east of Cape Horn. It was the first certain sighting of the Falkland Islands.

Davis was not simply a man of action but also possibly the finest navigator of his age, publishing two books—*The Seaman’s Secrets* (1594) and *The World’s Hydrographical Description* (1595)—and inventing the backstaff, an important navigational instrument. Further voyages were to follow to the Dutch East Indies. There on 27 December 1605 he died, killed when the ship he was piloting was attacked by Japanese pirates in Molucca Strait.

**See also:** Baffin Island; Davis Strait; Frobisher, Martin; Greenland, West; Hudson Strait; Muscovy Company; Northwest Passage

**References and further reading:**


**Davis, John**

(1720–1799)

In the 1950s, two early sealing logs were discovered. One had been used as a child’s scrapbook and recorded the voyage of the *Huntress* (Captain Christopher Burdick). The other was the log of the *Huron* (Captain John Davis). This second was particularly important since it included reference to the first
known landing on the Antarctic continent. The 250-ton square-rigged ship *Huntress* and the 80-ton schooner *Huron* sailed together for much of the 1820–1821 season, and their logs enable us to retrace these voyages in some detail.

**First Landing on the Antarctic Continent, 1820–1821**

John Davis left New Haven, Connecticut, on 20 March 1820. His destination was the Pacific Ocean, and he only learned of the discovery of the South Shetland Islands when he was anchored at the Falkland Islands in November. News of this discovery and the large numbers of fur seals found reached the New England ports in May, too late for Davis but in time for Christopher Burdick, who set out from his home port of Nantucket, Massachusetts, on 4 August. It was from Burdick that Davis learned of the new land, and they decided to sail together in their two vessels, accompanied by *Huron’s* small schooner, *Cecilia*.

The South Shetlands were reached in late November, but Davis and Burdick were unable to locate a safe anchorage until 8 December, when they came upon Yankee Harbor, Greenwich Island. It was comparatively late in the season, by which time the best fur seal beaches were already occupied by other vessels. With relatively few seal skins to be obtained, Davis determined to undertake a long exploratory voyage in *Cecilia*. Sailing from Yankee Harbor on 30 January 1821, he headed first for Smith Island, where he intended to land a shore party. Finding a large group of English sealers already there, he then turned southeast, where he found the descriptively named Low Island. Although Davis considered it a new discovery, the island was most probably first seen early in 1820 but probably not previously visited. Noting fur seals on the beaches, Davis dropped anchor and obtained many seal skins before continuing south on 6 February.

*Huron’s* log for 7 February records *Cecilia* as next sailing past Hoseason Island to reach the Antarctic Peninsula—and thus the continent—probably in Hughes Bay. The log continues: “Large Body of Land... close in with it out Boat and Sent her on Shore to looke for Seal at 11 A.M. the Boat returned but found no signs of Seal... I think this Southern Land to be a Continent” (Stackpole 1955, 51). Davis recorded his latitude as 64°01’S. He concluded his explorations by sailing back across Bransfield Strait to reach Yankee Harbor on 10 February.

We know of one other continental landing in the 1820–1821 season. Robert Fildes records the British sealer Andrew McFarlane as also making a landing but without giving a date. At 7 February, Davis’s landing was late in the season, theoretically allowing plenty of time for him to have been anticipated by McFarlane, who is known to have been in the South Shetland Islands from late October. However, sealers usually undertook long exploratory voyages in the late summer or fall, when few fur seals remained. Davis’s is certainly the first documented landing known today. Whether he was actually the first may well remain impossible to prove.

**Davis Strait (North Atlantic)**

Extending north from the North Atlantic 400 miles between southeastern Baffin Island and southwestern Greenland, Davis Strait separates the Labrador Sea to the south from Baffin Bay farther north. It varies in width from 200 to 400 miles. It was probably named in 1616 by William Baffin for John Davis, one of the first to navigate its waters. The presence of a warm current flowing north off West Greenland and a cold current flowing south along Baffin Island ensures strikingly different conditions, especially since the latter bears large numbers of icebergs calving in Melville Bay. Exploring and whaling ships therefore tended to sail northward along the eastern side, where the navigation season generally extended from midsummer through to late fall.

The first Europeans to explore the coasts on either side of the strait were the Norse, who are known to have visited southeastern Baffin Island (“Helluland,” or the Land of Stone Slabs) (see Eriksson, Leif), though they naturally would have been much more familiar with the coast of Greenland, at least as far north as Disko Island. The Portuguese navigator Gaspar Corte-Real crossed the strait between southern Greenland and Labrador in 1500 and 1501. About the same time, Basque whalers may have begun to follow the whales from their wintering grounds off Labrador and Newfoundland as they migrated north into the strait, following the retreating ice.

Until the discovery of Hudson Strait in the early seventeenth century, Davis Strait appeared to English navigators to offer the best prospect of a Northwest Passage. First to explore its potential was Martin Frobisher in 1576, though his voyages in the two following years were primarily mining rather than exploratory ventures. John Davis continued the search in 1585–1587, reaching 72°12’N at his farthest north in 1587 and making significant discoveries on both sides of the strait. Less successful was George Weymouth, who reached 68°53’N in 1602 before a mutinous crew forced him to turn south. John Cunningham (1605) and Godske Lindenow (1606) were searching not for the Northwest Passage but for the lost Norse colonies, with which the Danish king Christian IV wished to resume contact. Chief pilot on both expeditions was James Hall, who led his own expedition to West Greenland—another mining venture—in 1612. Few exploring expeditions visited Davis Strait after William Baffin went there in 1616. In 1776, Richard Pickersgill was sent to conduct a preliminary reconnaissance in preparation for James Cook’s return voyage through the Northwest Passage, which he was to enter from the

**See also:** Antarctic Peninsula; Low Island; Sealing and Antarctic Exploration; Smith, William; South Shetland Islands

**References and further reading:**


Pacific Ocean. Cook failed to discover an entrance, and the little achieved by Pickersgill was in vain.

Dutch whalers first visited Davis Strait in 1614, though it was not until 100 years later that they began to make regular visits. Until John Ross's voyage in 1818, their activities and those of the British who displaced them in the later eighteenth century were confined to these waters, with few ships fishing north of 71°N.

After the rediscovery of Baffin Bay in 1818, Davis Strait was sailed through but seldom investigated by exploring expeditions, and it was to be left to whalers such as William Penny to rediscover Cumberland Sound and other inlets on the southeastern coast of Baffin Island.

See also: Baffin Island; Baffin, William; Cook, James (1776–1780); Corte-Real Brothers; Cunningham, John; Davis, John (ca. 1550–1605); Eriksson, Leif; Froebisher, Martin; Greenland, West; Hall, James; Hudson Strait; Lindemann, Godskar; Norse Arctic Exploration; Northwest Passage; Penny, William (1832–1840); Weymouth, George; Whaling and Arctic Exploration

De Long, George
(1844–1881)

From a later perspective there seems something especially hopeless about the expedition of the American naval officer George Washington De Long. Others, too, had been charged with the impossible goal of sailing to the North Pole, but they had drawn back when there was still time. De Long, however, continued on until he was frozen in past hope of recovery. The shattered shards of his ship, which were later to emerge on the far side of the Arctic Ocean, inspired Fridtjof Nansen's great voyage in Fram. That anyone at all survived was surprising, and although De Long himself was not among them, the expedition surely was his greatest achievement.

The Jeannette Is Crushed in the Arctic Ocean, 1879–1881

In the late nineteenth century, particularly in relation to the still essentially unknown Arctic Ocean, there was a constant interchange of ideas and information between explorers and scientists working in the infant field of oceanography. On the basis of discoveries reported by explorers, theories were constructed by oceanographers, which were in turn highly influential in the planning and conduct of expeditions. Thus, reports of the discovery of a large polynya—an open polar sea—off northeastern Siberia by Ferdinand von Wrangel and Peter Anjou in the 1820s came to be viewed subsequently as evidence for a warm ocean current percolating into the Arctic Ocean through Bering Strait. This idea of a northerly bifurcation of the Kuro Siwo was initially proposed by the American hydrographer Silas Bent and was believed by the well-known German geographer August Petermann to open up a “thermometric gateway” to the North Pole, just as the Gulf Stream did through the Barents Sea. In 1877, James Gordon Bennett, proprietor of the New York Herald, met Petermann for a briefing on how best to reach the Pole. Bennett had previously sponsored Allen Young's 1875 search for relics of Sir John Franklin's last expedition and knew that polar exploration made good copy for his newspaper. Indeed, it was he who had been responsible for sending Henry Morton Stanley to locate the far from lost Dr. David Livingstone in central Africa. It was a scoop he was keen to repeat.

One of those whose exploits had been widely reported in the New York Herald was Lieutenant George Washington De Long, who in 1873 had searched Melville Bay in northwest Greenland for survivors from Charles Francis Hall's Polaris expedition. Bennett considered that he need look no further for his leader. For a vessel, he purchased Young's Pandora, renaming it Jeannette for his sister. This 240-ton barque-rigged steamer was now subjected to considerable strengthening and fitted with a 200-horsepower engine in a naval dockyard, Bennett having persuaded Congress to make the expedition a national undertaking. Although Bennett bore the brunt of the expense, the U.S. Navy provided crew, equipment, and instructions. De Long was accompanied by four naval officers, three civilian scientists, and twenty-three seamen in a well-equipped expedition. Lieutenant Charles Winans Chipp, second-in-command, had been to Greenland with De Long in Juanita in 1873, and Chief Engineer George Wallace Melville had also searched for Hall in Tigress. Others with Arctic experience included ice pilot William Dunbar, a veteran whaler, and carpenter William F. C. Nindemann, who had been with Hall in Polaris. In contrast, the well-connected navigation officer, Lieutenant John Wilson Danenhower, had been foisted on De Long following a recommendation to Bennett from former U.S. president Ulysses Grant. Although competent, Danenhower had a history of mental instability resulting from his having contracted syphilis some years before, and the state of his health during the voyage added one more burden for his commander. The civilian scientists were Raymond Lee Newcomb (naturalist), Jerome James Collins (meteorologist), and Dr. James Ambler (surgeon).

At this time no one had been within 400 nautical miles of the North Pole, and ignorance of the central Arctic Ocean was total. Although Petermann for one believed that “thermometric gateways” might provide access to an open polar sea in the vicinity of the Pole, he was also prepared to countenance the possibility of a polar continent sweeping north from Greenland and east to “Wrangel Land,” uniting a series of reported sightings of land in the high Arctic. De Long was therefore instructed to pick up dogs and dog handlers off Alaska. If he could not reach the Pole by sea, then perhaps he could do so by land, sledged north from “Wrangel Land.” His final instruction from Bennett, always in search of a good story, was that he should search for the Swedish explorer Adolf Erik Nordenskiöld, who was attempting the first transit of the Northeast Passage and had not been heard from for some time.
On 8 July 1879, Jeannette sailed from San Francisco. Reaching the west coast of Alaska at Norton Sound on 12 August, sledges, forty dogs, and two dog handlers—Alexey and Aniguin—were taken on board at St. Michael, where Jeannette waited nine days to transfer stores from the dilatory supply vessel Fanny Hyde. Soon afterward, another landing was made at St. Lawrence Island, providing a last opportunity to add to food and coal stocks before sailing through Bering Strait in early September. Although De Long would have wished ideally to head north with the putative warm current, he was obliged to search for Nordenskiöld first and follow the coast of Chukotka east, where he was relieved to learn soon from the local Chukchi that Nordenskiöld had spent the previous winter in Kolyuchin Bay, from where he had departed safely some weeks previously. Freed from any obligation to rescue Nordenskiöld, De Long could now concentrate on his attempt on the Pole. Already doubt had been cast by his scientists on the presence of any warm current north of Bering Strait. Their assiduous observations of water temperature and dredged-up seafloor specimens revealed no sign of any “thermometric gateway.” Irrefutable disproof was confronted at 71°N on 4 September, when Jeannette’s course was blocked by ice over 2 meters thick.

De Long’s hopes now rested with “Wrangell Land,” where he planned to winter. Jeannette’s bow was packed with solid pine 3 meters thick, wrought-iron straps reinforced its hull, and beneath the waterline it was sheathed with elm. With such a vessel, De Long did not fear ice, and when he found leads extending north, he forged his way into them, conning its course through the pack from the crow’s nest. Two days later the ship was firmly beset at 71°35’N, 175°05’E, and there was no sign of “Wrangell Land.” Unable to move under its own power, Jeannette drifted slowly northwest until land was seen on 28 October. It was unmistakably Wrangell, but all too evidently an island and not part of any polar continent. With no other land in sight, De Long’s hope of sledding to the Pole appeared as unlikely as his sailing there through open water. His crew braced themselves for a dispiriting winter. When the sun returned on 26 January 1880, Wrangell Island was still in view as the slow ice drift continued to bear them northwest.

By now Jeannette was leaking and in need of constant pumping, and as spring advanced into summer, there was no sign of any open water into which it might be released. De Long was concerned, too, by the increasingly erratic nature of the ship’s drift. Changing to the southeast, by November Jeannette was back near where it had been in late April. With the onset
of winter, again its drift reverted to the northwest and now become more rapid so that by 14 February 1881, the ship was beyond 75°N at about 171°E. Soundings taken in March and April showed rapidly plummeting depths, indicating that they were above a continental slope leading down to a deep ocean basin. By the end of April, they had reached 76°19'N. On 16 May land was sighted, Jeannette Island, a new discovery and the easternmost member of the De Long Islands, a group of small islands forming the northernmost members of the New Siberian Islands. Eight days later, another island was seen, Henrietta Island, where Melville landed on 2 June after a difficult three-day journey across the ice. With the pack now drifting due west, for the first time there were signs that it would break up, and on 11 June Jeannette was at last released. Its respite, however, was brief. The following day the ice closed up again. Caught between floes 5 meters thick, Jeannette was subjected to intense pressure, buckling its timbers and tearing off planking to leave exposed holes through which water poured. Everything of value was hurriedly tossed overboard onto the ice, which was just as well since Jeannette sank the next day. Thirty-three men now had to find their way to safety. At 77°15'N, 155°E, they were 500 miles north of the Lena delta, the nearest inhabited land.

It took five days for De Long to organize men and stores into sledding teams. On 18 June 1881 they set out, hauling in all nearly 7,000 kilograms of stores and equipment, the heaviest items being the three essential boats. Despite strenuous effort, after seven days they were at 77°46'N, the wind impelling the ice northwest faster than they could travel south. Altering course to the southwest to gain at least some advantage from the drift, they began at last to make slow progress. In mid-July a small island was seen, Bennett Island, the third of the De Long Islands. There they landed on 29 July, remaining until 6 August to recuperate and conduct scientific studies. South of this island, the ice became increasingly fragmented, allowing De Long to take to his boats—two cutters and a whaleboat—and soon afterward to abandon the sledges as excess weight. In this way, they made their way south through the New Siberian Islands until just 90 miles of sea separated them from the mainland. As the three small boats approached the Lena delta on 12 September, they were separated during the night in a violent storm. Chipp's cutter and its eight men were never seen again. Almost certainly they were swamped by the heavy sea. De Long and Melville had better fortune. De Long's party of fourteen reached the northern Lena delta in the other cutter on 17 September, while Melville and ten men in the whaleboat landed two days later on the delta's east side, where they were found soon afterward by local hunters.

As Melville's men were led to safety, De Long struggled to relate the maze of waterways in which he found himself to his inaccurate map. There was no sign of any of the villages indicated. With no clear channel to follow, De Long sought to lead his men overland to the nearest settlements. Already weakened by exposure and exhaustion, they began to die as food ran out. By 6 October the first was dead. Three days later two of the stronger members of the party, carpenter Nindemann and seaman Louis Noros, were sent ahead to search for help. Not until 22 October did these two finally make contact with any local inhabitants, who then led them to Bulun, the largest settlement, where they arrived seven days later. Only then were they able to find someone to understand that there were others also requiring rescue. It was too late. By the time De Long made his last diary entry on 30 October, only three others were still alive. It is probable that they died soon afterward.

On 2 November 1881, Melville too was brought to Bulun, where he learned of De Long's probable fate from Nindemann and Noros. Wasting no time, he immediately set about organizing a search party. Between 3 and 27 November, he succeeded in retracing part of De Long's route and in finding a cache left by him on the coast containing his logbooks. His last camp, however, could not be found. The onset of winter darkness meant that little more could be done until spring. In the meantime, Melville led the survivors south to Yakutsk, where they arrived on 30 December. Of Jeannette's complement of thirty-three men, nineteen remained unaccounted for: Chipp's party of eight and De Long's eleven men. Of the thirteen known survivors, Melville sent ten back to the United States, keeping Nindemann and fireman James H. Bartlett behind to assist his search. Initially delayed by bad weather, by mid-March 1882 Melville was able to begin systematic investigation of the delta, assisted by interpreters and local guides. On 23 March, De Long's final camp was found, along with his journals and the bodies of the last six men to die. Now that he had learned De Long's fate, Melville extended his search to the coast to look for Chipp. Although he looked as far east as the Yana River, nothing was found, and by the end of April Melville was forced to conclude that Chipp's party had failed to reach land. All that remained was to carry the news back to Yakutsk and the outside world.

In June 1884, three Inuit were traveling far from land on ice floes off southwestern Greenland when they discovered items unmistakably lost with Jeannette at 60°36'N, 46°07'W. In addition to a torn checkbook and a pair of oilskin trousers inscribed “Noros,” they included fragments of boxes on which “Jeannette” was written. One of those to learn of this widely reported discovery was the Norwegian explorer Fridtjof Nansen, who was inspired to think along the following lines: given that these relics had drifted at least 4,500 miles in 1,096 days, a suitably designed vessel frozen into the ice in the same region should be expected to drift across the Arctic Ocean to the North Atlantic at the rate of about 4 miles a day. This was the genesis of the Fram expedition.

See also: Anjou, Peter; Arctic Ocean; De Long Islands; Hall, Charles Francis (1871–1873); Nansen, Fridtjof (1893–1896); Nordenskiöld, Adolf Erik (1878–1880); North Pole; Open Polar Sea; Wrangell, Ferdinand von; Wrangel Island
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De Long Islands (Russia)
Located at 76°N, 155°E, these northeasterly members of the New Siberian Islands are named for the American explorer George De Long, their probable discoverer on 16 May 1881. It is possible, however, that Bennett Island was first sighted from a considerable distance by Mathias von Hedenström and Yakov Sannikov in 1810 and by the latter again in 1811, leading to rumors of a large landmass in this region named “Sannikov Land.” The archipelago has a total area of no more than 120 square miles and consists of the three small islands discovered by De Long—Jeannette (Ostrov Zhannetty), Henrietta (Ostrov Bennetta)—and Vil’kitskiy and Zhokhov Islands, discovered in 1913 and 1914 during the Arctic Ocean Hydrographic Expedition. The official Russian name is Ostrova De-Longa.

The land sighted on 16 May 1881 was the first seen by De Long’s expedition since Wrangell Island, and it was named for their vessel, Jeannette. Eight days later, they saw Henrietta Island, where George W. Melville landed on 2 June. On 12 June, Jeannette was crushed by ice at 77°15’N, 155°E. Bennett Island was seen in mid-July, as De Long’s men made their way south. They landed on 29 July, remaining here until 6 August to recuperate and explore. Measuring 12 miles by 9 miles, Bennett is the largest of the De Long Islands and was named for James Gordon Bennett, the sponsor of De Long’s expedition. Henrietta Island was named for Bennett’s mother. Both Henrietta and Bennett Islands were claimed for the United States at this time, though no attempt has been made since to dispute Russian sovereignty.

In August 1886, Eduard von Toll saw land in the far distance northeast of Kettle Island. He described it as consisting of four tabular mountains merging into a lowland, and was certain that it was “Sannikov Land.” In fact, it was either a mirage or else Bennett Island. In 1900, Toll organized an expedition to search for “Sannikov Land,” coming within sight of Bennett Island on 11 September 1901 and remaining in the vicinity of the De Long Islands for the next four days before withdrawing south without finding further sign of land. On 21 July 1902, Toll landed with three companions on Bennett Island to investigate the geology and wildlife and continue his search for “Sannikov Land.” Arrangements had been made for them to be picked up by their ship, but when it failed to reach them, they left the island on 8 November in an unsuccessful attempt to reach New Siberia Island. A party led by Aleksandr Kolchak searched the island between 17 and 20 August 1903, finding Toll’s hut, cairns, and messages documenting his stay. It also located his collection of rocks and fossils but did not bring it back on account of its weight. It was partly in order to retrieve this collection that Boris Vil’kitskiy visited the region in the icebreaker Taymyr. Although initially unable to land on Bennett Island, on 20 August 1913 he discovered Vil’kitskiy Island, which was named for his father, the hydrographer Alexey Vil’kitskiy. Taymyr returned on 18 September to collect Toll’s specimens and conduct the first accurate survey of Bennett Island. On 27 August 1914, Taymyr’s sister ship Vaygach discovered Zhokhov Island. It was originally named Novopashennyy Island for the captain of Vaygach but was renamed in 1926 for Lieutenant A. N. Zhokhov, Novopashennyy having falling into disfavor for emigrating after the Russian Civil War. Zhokhov had been first to see Vil’kitskiy Island; he died in 1915 during the enforced wintering of Vil’kitskiy’s expedition on the Taymyr Peninsula.

Roald Amundsen’s Maud drifted near the islands in 1923 and 1924, but they remained otherwise unvisited until 1937, when Sado established a meteorological station on Henrietta Island. Soon afterward, De Long’s diary was discovered in a copper cylinder placed by Melville within a cairn. Unfortunately, the cylinder had not been properly sealed, and the diary proved completely indecipherable. The first full scientific survey of Bennett Island was conducted in 1956, when another message left by De Long was discovered on Cape Emma, the prominent headland he had named for his wife.

In March 1979, Dmitriy Shparo set out from Henrietta Island to complete the first journey from Eurasia to the North Pole. His was also the first expedition to do so on skis, unassisted by dogs or snowmobiles. The Arctic and Antarctic Institute, located in St. Petersburg, conducted studies on Bennett and Zhokhov Islands between 1987 and 1990, in the process discovering evidence of human occupation during the Early Holocene period (Makeyev et al. 1992). Even today, reindeer reach these islands across the ice from the main body of the New Siberian Islands farther south. The station on Henrietta Island closed in 1963. A station on Zhokhov Island was opened in 1955 and was still operating in the mid-1990s.

See also: Amundsen, Roald (1918–1921); De Long, George; Hedenström, Mathias von; New Siberian Islands; Toll, Eduard von (1900–1903); Vil’kitskiy, Boris

References and further reading:

Dease, Peter (1788–1863)
Of the two continental coastlines all but encircling the Arctic Ocean, the Eurasian coast was almost fully surveyed by 1743 (see Bering, Vitus). Not until 100 years later was its North
America equivalent explored in similar detail by an expedition led by Chief Factor Peter Dease of the Hudson's Bay Company (HBC).

A fur trader since age thirteen, Peter Warren Dease first came into contact with exploring expeditions in 1820 when, based at Fort Chipewyan, on Lake Athabasca, he had provided helpful information to John Franklin on the recruitment of Indian guides and hunters and on the geography of land lying farther north. Between 1824 and 1827, he was released from his other duties to assist Franklin's second expedition, constructing and arranging provisions for Fort Franklin on Great Bear Lake and proving to be an indispensable intermediary between the British and the Copper and Dogrib Indians.

From Point Barrow to Beyond the Back River, 1837–1839

By 1836, when Dease was appointed leader of an expedition organized by the HBC to complete the survey of the Arctic coast, British naval expeditions had explored east from Bering Strait to Point Barrow (see Beechey, Frederick) and from Return Reef to Point Turnagain (see Franklin, John), Chantrey Inlet (see Back, George), Boothia Peninsula (see Ross, John), and Foxe Basin and Hudson Bay south from Fury and Hecla Strait. Dease's task was to fill in the gaps. In this, he was to be assisted by Thomas Simpson (1808–1840) and twelve men. Simpson was a cousin of HBC governor George Simpson. At this time HBC had good reason for wishing to be seen as making a prominent contribution to exploration: its rights to exclusive trade in Rupert's Land and the North West Territories were soon due for renegotiation.

That Thomas Simpson was a formidable traveler was immediately apparent, when it took him just sixty-two days to complete the 1,277-mile journey from Red River to Fort Chipewyan, where he met up with Dease on 1 February 1837. Setting out on 1 June 1837 in two boats, Castor and Pollux, they reached the mouth of the Mackenzie River by 9 July and just fourteen days later were at Franklin's farthest west. This feat had been achieved by forcing their boats through the body of the ice rather than keeping close to shore, a tactic that was successful until 31 July, when it became clear at "Boat Extreme" that the boats could take them no farther. While Dease remained behind to conduct tidal observations, Simpson set off overland with five men to complete the remaining 60 miles to Point Barrow. With the aid of a borrowed Inuit umiak, whose draft was less than 15 centimeters, he reached Point Barrow on 4 August. After Simpson rejoined Dease at "Boat Extreme," by 17 August they were back at the mouth of the Mackenzie River and on 4 September reached Fort Norman, where they picked up instructions for the coming year before returning to their winter quarters at Fort Confidence on Great Bear Lake.

Although 1837 had proved a favorable year for exploration, little was achieved in 1838, when a long, hard winter delayed the expedition's departure down the Coppermine River until 6 June, and heavy ice meant that their boats could reach no farther than Cape Flinders by 9 August, 3 miles short of Franklin's Point Turnagain, the easternmost point reached by Franklin in 1821. Here they remained for twenty-two days waiting for conditions to improve, before Simpson led a party of seven men on foot to trace the coast of the Kent Peninsula to Cape Alexander, turning back two days later after discovering the Beaufort River. Across the strait now named for Dease, Simpson had seen land, which he called Victoria Land—now Victoria Island—unaware that it was an extension of "Wollaston Land," which had been sighted by Dr. John Richardson in 1826. Returning to the Coppermine on 3 September, they were back at Fort Confidence eleven days later.

In June 1839 they set out again toward the mouth of the Coppermine. On 3 July the sea ice opened up, allowing Dease and Simpson to reach Cape Barrow by 18 July and to round Cape Alexander ten days later. Proceeding east, they discovered Simpson Strait separating King William Island from the mainland, and by 16 August they had reached Montreal Island in Chantrey Inlet, where they found a cache left by George Back in 1834. Having now united the earlier surveys of Beechey, Franklin, and Back, the main issue requiring resolution was the insularity or not of "Boothia Felix," identified as a peninsula—correctly—by John and James Clark Ross but believed to be an island by others, including Back and the influential second secretary of the Admiralty, John Barrow. This point was critical for the Northwest Passage, for if Boothia were an island, then the passage might be sought south of it through Fury and Hecla Strait or Prince Regent Inlet. Dease and Simpson had insufficient time to resolve this point, though Simpson did manage to extend his survey to Castor and Pollux River, 40 miles northeast of Cape John Ross. From there poor visibility misled him into asserting that the coast beyond turned south, suggesting the probability of a strait. They continued their survey work on the return journey, concentrating on the southern coasts of King William and Victoria Lands before ascending the Coppermine River back to Fort Confidence, where they arrived on 24 September.

Dease enjoyed a long and happy retirement, but Simpson died in mysterious circumstances in 1840, either committing suicide or being murdered after killing two traveling companions on his way to Great Britain, where he was traveling to seek full recognition of his contribution to the expedition's success and to propose a further survey that he would lead. Simpson had long chafed under Dease's leadership. It was he who had drawn up initial plans for the expedition, and during it he had proved himself the more daring and resilient traveler. Nevertheless, George Simpson, knowing his cousin's temperamental and irascible nature, was undoubtedly wise in deciding that leadership should rest with the easier-going Dease, whose logistical efficiency and capabilities of man-management indeed proved essential. As it was, for a total HBC outlay of $1,000, 60 degrees' latitude of coastline had been surveyed, with the only section still to be explored lying between
Boothia Peninsula and Fury and Hecla Strait. That would be completed by another HBC employee, Dr. John Rae, in 1846–1847 and 1853–1854.

See also: Back, George (1833–1835); Barrow, John; Beechey, Frederick; Bering, Vitus (1733–1743); Boothia Peninsula; Franklin, John (1819–1822, 1825–1827); Hudson's Bay Company; King William Island; Northwest Passage; Rae, John; Ross, John (1829–1833); Victoria Island

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Deception Island (South Shetland Islands)
Located at 62°57'S, 60°38'W, the drowned caldera of this spectacular volcanic island in the South Shetland Islands provides one of the finest natural anchorages in Antarctica. Its name, probably though not certainly given by Nathaniel Palmer, reflects its deceptive nature; it is apparently an ordinary island until one comes upon Neptune's Bellows, through which one enters to find a flooded interior. It would have been sighted just as soon as vessels began to visit the South Shetlands and is almost certainly the land “charted in thick fog” marked on the map compiled by Edward Bransfield and seen on 29 January 1820. Although that would be the first sighting, credit for discovery—at least of the caldera harbor—is generally accorded to Palmer, whose log makes clear that he was unaware of this feature before he chanced upon it. It is, however, possible that Palmer was anticipated by the British sealer Andrew McFarlane, about whose explorations very little is known since his log does not survive, but references in the log compiled by Robert Fildes make clear that these explorations were extensive and early and may well have included Deception Island.

Palmer had been sent out in search of fur seals and suitable harbors by Benjamin Pendleton, leader of a sealing fleet from Stonington, Connecticut. In the following year, Pendleton's fleet anchored at Deception Island, from where Palmer conducted further exploratory voyages.

Between 9 January and 8 March 1829, Deception Island was the site of Antarctica's first purely scientific expedition, when HMS Chanticleer (commanded by Henry Foster) anchored in Pendulum Cove to conduct measurements of the varying force of gravity using a pendulum, after which the then much larger cove was named. Lieutenant Edward Kendall conducted a topographic survey, on the basis of which he compiled an excellent map, the most detailed to date for any part of the Antarctic.

Brief visits to Deception Island were made by Jules Dumont d'Urville in February 1838 and by Lieutenant Robert E. Johnson in Sea Gull in March 1842. Johnson was sent by Charles Wilkes, leader of the U.S. Exploring Expedition, to search for a self-registering thermometer left behind by Foster, which was eventually found later that same year by the sealer William Smyley. The lowest recorded temperature was −20.3°C (−4.4°F), which for many years was believed to be as cold as Antarctica could get.

The island's period of neglect ended abruptly in 1906, when Amandus Andresen of Sociedad Ballenera de Magallanes stationed a whaling factory ship here. In the following year, four factory ships and eight whale catchers were based in the caldera, this number rising to twelve factory ships and twenty-seven catchers in 1912–1913, the year of maximum activity, when over 5,000 whales were processed, surpassing even South Georgia's output. From 1912 to 1931, Hector Whaling operated a shore station, which worked closely with the many floating factories anchored in Whalers Bay.

Although not themselves involved in exploration at this date, several expeditions benefited from the presence of whalers at Deception Island (see Whaling and Antarctic Exploration). The whalers in return benefited from information supplied by explorers, notably by Jean-Baptiste Charcot, whose first expedition (1903–1905) reported numerous whales farther south along the Antarctic Peninsula and compiled charts for several excellent anchorages, which were to be much frequented from 1911 on by whaling vessels. On his second expedition (1908–1910), Charcot received generous treatment from the grateful whalers, who provided him with coal and sent down a diver to inspect the hull of his ship, which had hit a rock. While here, his scientists conducted a full scientific program, the first detailed study since Foster's in 1829. Following the loss of Endurance in the Weddell Sea, Sir Ernest Shackleton faced a straight choice in 1915 between Deception Island and South Georgia, these whaling settlements being the nearest possible sources of assistance. He chose South Georgia, but instructed his second-in-command, Frank Wild, to make for Deception Island, should he fail to return. Wild was making preparations for this journey when Shackleton arrived to rescue his men.

Deception Island played an important role in the history of Antarctic aviation. George Hubert Wilkins first noted its potential as a base for air operations when he came here in a whaler during John Cope's ill-fated expedition of 1920–1922. In 1928, Wilkins returned in the hope of making the first transcontinental crossing of Antarctica. He did not succeed but did achieve the first Antarctic flight on 16 November and the first aerial reconnaissance of the Antarctic Peninsula in 20 December, when he flew over 1,300 miles south to 71°20'S, 64°15'W. Wilkins returned to Deception Island the following year but, finding conditions unfavorable to flying, instead took up the offer to make use of the Discovery Investigations vessel RRS William Scoresby to search for an alternative base. It was from Deception Island in 1950 that a specially constructed Norseman airplane took off to relieve the “Lost eleven” Falkland...
Islands Dependencies Survey (FIDS) party at Stonington Island (see Marguerite Bay). Deception Island also served as the chief operating base for Hunting Aero Surveys in the Falkland Islands and Dependencies Aerial Survey Expedition of 1955–1957.

During World War II, Primero de Mayo visited Deception Island in 1942 and 1943, raising the Argentine flag here and leaving a cylinder containing documents asserting Argentina’s claim to 25°W to 68°34’W, south of latitude 60°S. This claim largely overlapped with that put forward by Great Britain in 1908 and with Chile’s claim of 1940. This challenge to British sovereignty, combined with Deception’s strategic position, potentially controlling Drake Passage, through which shipping must pass between the South Atlantic and South Pacific Oceans, provoked Great Britain into organizing the covert military expedition Operation Tabarin. Deception Island was the first location visited in February 1944, when Base B was established at Whalers Bay, using facilities provided by the abandoned whaling station. When the war ended, this station was taken over by Operation Tabarin’s peacetime successor, the Falkland Islands Dependencies Survey, which conducted scientific work here until 1967, when a volcanic eruption caused the base to be abandoned. In January 1947, Argentina opened Primero de Mayo station in Fumerole Bay, which was manned by naval personnel until 1969, when a second eruption caused it, too, to cease operating. Since 1986, it has been reopened during occasional summers. Argentina also built refuge huts at Telefon Bay, Pendulum Cove, and Whalers Bay. The last caused controversy with the British since it was erected in the middle of the base football field, which also served as the landing strip. Two Argentines were forcibly evicted by British policemen brought from the Falkland Islands and backed by a detachment of Royal Marines. In January 1955, Chile opened Presidente Pedro Aguirre Cerda station in Pendulum Cove, staffed by naval, army, and air personnel. This station was more or less completely destroyed in the eruption of 1967, but fortunately without loss of life. With three stations set up in such close proximity by three rival claimant states, each asserting sovereignty through the formal exchange of protest letters, tense situations occasionally arose, most notably in the incident concerning the football field referred to above. However, for most of the time, station members maintained good relations, informal visits were frequent, and hospitality was shared, particularly after the mid-1950s, when base commanders were no longer required to deliver formal protests at the start of each season. Apart from the Argentine summer station, the only
other station currently operating is Gabriel de Castilla, a Spanish summer station opened in 1990.

See also: Argentina; Bransfield, Edward; British Antarctic Survey; Charcot, Jean-Baptiste; Chile; Cope, John; Dumont d'Urville, Jules; Foster, Henry; Great Britain; Marguerite Bay; Operation Tabarin; Palmer, Nathaniel (1820–1821); Pendleton, Benjamin (1821–1822); Sealing and Antarctic Exploration; Shackleton, Ernest (1914–1916); South Shetland Islands; Spain; Whaling and Antarctic Exploration; Wild, Frank (1915); Wilkes, Charles; Wilkins, George Hubert (1928–1929, 1929–1930)

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Denmark

Apart from ratifying the Antarctic Treaty on 20 May 1965, Denmark's involvement in the polar regions has been almost exclusively concerned with Greenland. Even its historic interest in the North Polar Regions of the earth (the Arctic Ocean), which was charged with similar responsibilities but possessed a larger membership.

Greenland first came under Danish rule in 1397 with the Union of Kalmar, which brought Denmark, Norway, and Sweden together under the Danish king Erik VII. Greenland had been a crown colony of the king of Norway since 1261.

Scholars dispute the extent of contact with Greenland during the late Middle Ages, after voyages to Norway ceased in 1410. Sofus Larsen (1925) has claimed that Christian I, king of Denmark (1448–1481), commissioned Didrik Pining, Hans Pothorst, and pilot Johannes Scolvus to take two Portuguese emissaries to Danish lands west of the Atlantic Ocean about 1470. According to Larsen, this expedition certainly reached Greenland and possibly Labrador and Newfoundland. Recent scholars are generally skeptical, believing that third-hand accounts of voyages by these figures and by the Portuguese João Vaz Corte-Real have been conflated into one and that there is very little reason to believe that any of these figures made such a voyage, with the possible exception of Scolvus, who may just possibly have explored west of Greenland.

Both Frederik II (1559–1588) and Christian IV (1588–1648) organized several expeditions to look for the Norse colonies. The first to succeed in reaching Greenland was John Cunningham in 1605. Godske Lindenow also landed in West Greenland the following year, though Carsten Richardson in 1607 was unable to do more than come within sight of inaccessible East Greenland. Christian was also interested in the Northeast and Northwest Passages, equipping expeditions under Jens Munk to search for the former in 1610 and the latter in 1619–1620 on a famously disastrous voyage. Although Christian sponsored no more expeditions to Greenland, he retained his interest in the island and in 1619 insisted that the newly incorporated Grønlanske Compagnie, formed originally to whale off Svalbard and Iceland, instead concentrate its activities on developing trade with Greenland. This company undertook just one voyage in 1636, returning with narwhal tusks and "gold dust." After the latter was shown to be valueless, no further trading voyages were attempted until the 1650s, when Henrik Müller of the Danish Customs Department organized expeditions in 1652, 1653, and 1654, led by David Dannell, all of which proved financially unprofitable.

The Danish colonization of Greenland began in 1721, with the establishment of a mission and trading station near Godthåb by Hans Egede. After a short-lived experiment between 1728 and 1731, when a military governor was installed, Denmark delegated the running of its Greenland colonies to trading companies in return for monopoly privileges. Between 1774 and 1908, this monopoly was exercised by the state-run Royal Greenland Trading Company. Danish policy was paternalistic and generally protective of the Inuit. Access to Greenland was strictly controlled, and the prohibition of foreign trade defended by the need to screen its inhabitants from corrupting external influences.

In 1875, Professor Johannes Frederik Johnstrup (1818–1894) of the University of Copenhagen proposed to the Danish government the need to establish an organization to ensure the systematic scientific exploration of Greenland, particularly with a view to its geological resources. In 1876, he was appointed director of geological surveys, enabling him to organize two expeditions led by Knud J.V. Steenstrup to southwestern Greenland in 1876 and 1877. Following their success, in 1878 the Danish parliament was persuaded to vote an annual grant supporting the establishment of the Commission for the Direction of Geological and Geographical Investigations in Greenland (Kommissionen for Ledelsen af de geologiske og geografiske Undersøgelser i Grønland). By 1925, the commission had conducted sixty-five expeditions, whose results were published in the journal Meddelelser om Grønland (1879–). In 1932, this body was replaced by the Commission for Scientific Research in Greenland (Kommissionen for videnskabelige Undersøgelser i Grønland), which was charged with similar responsibilities but possessed a larger membership. From Gustav Holm on, most of the great Danish expeditions responsible for exploring East and North Greenland were sponsored by the commission, as well as numerous investigations of West Greenland.

In the 1920s and 1930s, Danish sovereignty over East Greenland was disputed by Norway, following Denmark's decision to extend its monopoly to this region, where Norwegians had long hunted seals and trapped for furs. A treaty signed in 1924 only exacerbated the situation by allowing the possibility for Greenlanders of any particular region to choose between Denmark and Norway. In effect, this meant that whichever country was successful in establishing its presence first in an area should be able to ensure sovereignty. Although Denmark strengthened its claims in 1925 by founding a new colony at Scoresby Sound (see Mikkelsen, Ejnar), Norway could not be deterred from issuing formal claims to "Eirik Raude Land."
Significant as Bering's expeditions were on behalf of the Danish explorer because of his role in the discovery of Alaska.

Outside Denmark, Vitus Bering is probably the best-known Danish explorer because of his role in the discovery of Alaska. Significant as Bering's expeditions were on behalf of the Russian tsar, they were hardly more so than those of some of his compatriots in Greenland. Although Greenland might not possess the immediate glamour of the North and South Poles, the history of its exploration is hardly less dramatic. The most famous episode is the tragic loss of Ludvig Mylius-Erichsen and his two companions in Northeast Greenland in 1907, but other expeditions are of comparable interest. To those who know, the great Danish explorers have few peers.

See also: Bering, Vitus; Cunningham, John; Egede, Hans; Greenland; Holm, Gustav; Koch, Laue; Lindenow, Godsk; Mikkelsen, Ejnar; Munk, Jens; Mylius-Erichsen, Ludvig (1906–1908); Northeast Passage; Northwest Passage; Rasmussen, Knud; Richardson, Carsten

References and further reading:


Devon Island (Canada)

Located at 75°00′N, 87°00′W, at 21,331 square miles, Devon Island is the largest of the Parry Islands and the second largest of the Queen Elizabeth Islands. It is the world’s largest uninhabited island. Memorably described by Moira Dunbar and Keith Greenaway (1956, 278) as resembling a legless donkey, the island appears to have its head thrown back in mid-bray, facing west toward Wellington Channel and Cornwallis Island. Beneath the belly lie Lancaster Sound and Somerset, Baffin, and Bylot Islands. Baffin Bay is behind the rump, which is crowned by an ice cap. Jones Sound runs along the length of the back, with Ellesmere Island farther north. More than any other island in the Canadian Arctic, its history is essentially that of the channels surrounding it.

The west coast was first seen in 1616 by William Baffin, who records landing near Jones Sound, though he may have done so on Ellesmere or Coburg Island. It was next sighted in 1818 by John Ross. The island was named “North Devon” by Edward Parry in 1819 for the English county Devon, the birthplace of his second-in-command Matthew Liddon. Parry sailed the length of the south coast—the first to do so—and made possibly the first landing when Frederick Beechey and Henry Hoppner briefly went ashore to conduct astronomical observations at Erebus Bay on 22 August.

The south coast of Devon Island was to become familiar to exploring expeditions traveling through Lancaster Sound, especially since the water was generally more open near the northern shore. Thus, Parry landed near Cape Warrender in 1824, and members of Sir John Franklin’s expedition are known to have made short excursions across the southwestern parts of the island from their winter quarters on Beechey Island in 1845–1846. Where they went was subsequently determined from the presence of campsites and sledge tracks. These journeys would have been made for various purposes, but some at least were scientific. Thus, one of the objects found at Cape Riley was a rake of the kind used by botanists for collecting seaweed. The first Franklin relics were found by Erasmus Ommanney in August 1850 during Horatio Austin’s expedition. Ommanney had searched the full length of the south coast before spotting a cairn at Cape Riley, which had been visited by no previous expedition other than possibly Franklin’s. The main discoveries were made on nearby Beechey Island, though Alexander Stewart of William Penny’s expedition later came upon a second campsite in Radstock Bay at Caswall Tower.

The west coast abutting Wellington Channel was thoroughly explored by sledding and boat parties in 1851, as the search for further signs of Franklin’s expedition continued. Controversy surrounds exactly who discovered Grinnell Peninsula (the donkey’s muzzle), or at least, who saw it first after Franklin, who must have noted it in 1845 during his attempt to get north through Wellington Channel. Insofar as his name is preferred to William Penny’s “Prince Albert Land,” discovery is credited to Edwin De Haven in 1850. However, while members of Penny’s expedition both saw and landed on it in 1851 during their first systematic survey of the west coast, it is questionable whether De Haven drifted sufficiently far north to have seen it. Adoption of De Haven’s name of Grinnell Peninsula reflected desire on behalf of the British Admiralty to recognize the substantial contribution made by Americans to the Franklin search effort and by Henry Grinnell in particular. It also offered some compensation for its decision to preserve on its charts names given by Penny in Wellington Channel for features first observed and named by De Haven.

The north coast was explored last, reflecting the greater difficulty in penetrating Jones Sound. From Austin’s brief foray in 1851, it was clear that only a relatively thin strip of land separated this sound from Wellington Channel. In 1852, Edward Inglefield succeeded in extending his survey as far west as Cape Sparbo. The next advance was made from the west, when Sir Edward Belcher wintered in Northumberland Sound off
Grinnell Peninsula in 1852–1853. From here, boat and sledge parties explored east to Cardigan Strait, though Belcher was mistaken in believing Arthur Fjord to be a sound cutting Devon Island in two. This mistake was rectified by members of Otto Sverdrup's expedition wintering on the north shore of Jones Sound in 1902. In the same year, two other members of this expedition, Gunnar Isachsen and Edvard Bay, mapped much of the remainder of the coast between Cape Sparbo and Skruiis Point. In 1908, Frederick Cook sledged south through Penny Strait to reach the west coast of Devon Island at Pioneer Bay. He then crossed over to West Fiord before traveling along the north coast to winter at Cape Sparbo.

The Royal Canadian Mounted Police (RCMP) post at Dundas Harbour (74°31’N, 82°30’W) was established on the south coast in 1924 by Joseph-Elzéar Bernier. It was from here that patrols led by A. H. Joy reached Axel Heiberg Island in 1926 (the first Canadians to do so), and in 1929 they conducted a 1,700-mile circuit of the Arctic islands, traveling west to Melville Island and then via Loughed, King Christian, Cornwall, and Graham Islands to the RCMP post at Bache Peninsula, Ellesmere Island. Accompanied by the Inuk Nookapeungwak, Joy also completed the first documented journey across the interior in 1926, pioneering a new route between Craig Harbour (Ellesmere Island) and Dundas Harbour across the ice cap. The post was closed in 1933 but was later reopened between 1945 and 1951. Hudson’s Bay Company operated a trading station at Dundas Harbour between 1934 and 1936. Six Inuit families were relocated from Baffin Island, but the experiment was not a success. Although game was abundant, hunting was seriously hampered by the quantities of ice offshore throughout the summer, and rough coastal ice in winter made traveling difficult. As a result, fewer arctic foxes were caught than anticipated, and the station was closed after just two years, with the families moving elsewhere.

The Arctic Institute of North America has pursued a range of long-term scientific studies at a field camp maintained since 1960 on the north coast at Truelove Inlet. More recently, the NASA Flashline Mars Arctic Research Station has operated in Haughton Crater, a well-preserved impact structure resulting from a meteorite strike dating from 25 million years ago. This is the northernmost such structure in the world and offers the conditions off the coast made navigation difficult. Soon after their arrival on the Kolyma, the Russians heard of a river lying farther east where rich sables were to be found, and in 1646

Dezhnev, Semen (ca. 1605–1673)
The great achievement of the Russian cossack Semen Dezhnev was to prove that Asia and America were not joined in the far north by a land bridge. Although he himself was largely unaware of the significance of his voyage of 1648, when news of it reached St. Petersburg more than eighty years later, it inspired the largest program of Arctic exploration undertaken by any European country.

First through Bering Strait, 1648
The Russian colonization of Siberia is generally held to have begun with the crossing of the Ural Mountains by a military expedition led by Yermak Timofeyevich in 1582. For the Russians, Siberia offered rich furs that were obtained as tribute from the native peoples following conquest. In general, the finest furs came from the far north, though the chief fur-bearing species, the sable, was less plentiful there than farther south. An important stage in Russian exploration of the Arctic was the establishment in 1600 of the trading settlement Mangazeya on the Taz River, a tributary of the Ob’ River. It soon became an important outlet for Siberian furs. With local supplies in danger of exhaustion, expeditions were sent out from there east to make the first investigations of the Taymyr Peninsula and to reach the Lena River by the early 1620s. In 1632, Yakutsk was founded on the upper Lena as an administrative and trading settlement, with the port of Zhigansk established the following year some way farther north. Yakutsk and Zhigansk played a role similar to that of Mangazeya, as expeditions and Zhigansk were sent to explore the Arctic coast to the east of the Lena River, searching in particular for rivers offering access to unexploited regions. Thus, in the 1630s, the Yana River was discovered by Il’ya Prefiryev and the Indigirk River by Ivan Rebrov, and by 1643 Dmitriy Zyryan and Mikhail Stadukhin had reached the Kolyma River. Settlements established on these rivers were soon linked by coastal shipping, and routes south to Yakutsk were established via the Lena and overland to carry the furs and other products obtained as tribute from the now subdued peoples.

This is the context in which Semen Ivanov Dezhnev’s epic voyage took place. Nothing for certain is known of where he was born, though it has been suggested that he was a Pomor from the White Sea region. By 1638, he was in government service at Yakutsk, participating soon afterward in an exploring expedition led by Dmitriy Zyryan to the Yana River, on which Dezhnev was given command of a party carrying tribute furs back to Yakutsk. The Kolyma River was by no means viewed as marking an end to Russian expansion eastward, though the warlike Chukchi presented more formidable opponents than native peoples previously encountered, and ice conditions off the coast made navigation difficult. Soon after their arrival on the Kolyma, the Russians heard of a river lying farther east where rich sables were to be found, and in 1646

References and further reading:

See also: Austin, Horatio; Baffin, William; Belcher, Edward; Bernier, Joseph-Elzéar (1922–1925); Cook, Frederick (1907–1909); Franklin, John (1845–1848); Parry, Edward (1819–1820, 1824–1825); Parry Islands; Penny, William (1850–1851); Ross, John (1818); Sverdrup, Otto (1898–1902)
Isay Mezenets led the first attempt to reach it. Despite encountering heavy ice offshore, this expedition managed to explore over 100 miles by keeping close to land, before abandoning the attempt and returning instead with walrus ivory and other goods obtained through trade with the Chukchi.

Acting as representative of the state, Dezhnev teamed up with the trader Fedot Alekseyev in two further attempts to reach the rumored river, which was almost certainly the Anadyr’. In June 1647, fifty men set out in four vessels but were soon forced to turn back by strong north winds that forced the ice close to the coast and made navigation impossible. Undaunted, Alekseyev initiated a yet larger expedition the following year. This time ninety men sailed in seven vessels, with Dezhnev as head of a small group of state representatives and nominal leader. The majority of those participating were hunters and traders, who were prepared to undergo hardship and considerable danger in the hope of making their fortunes from fine furs and walrus ivory. Dezhnev’s role was to ensure that the state got its cut too. He was illiterate, so what little we know of his voyage comes from reports by others painstakingly copied by Gerhard Friedrich Müller, which he found scattered in various archives in Yakutsk during the Great Northern Expedition of Vitus Bering (1733–1743).

Setting out from the Kolyma on 20 June 1648, the party must have encountered unusually favorable ice conditions off the Arctic coast. Despite this, before the easternmost point of the Chukotka Peninsula was rounded and Bering Strait passed through for the first time, at least four vessels had been wrecked and their crews either drowned or killed by the Chukchi, whose warlike reputation was well-deserved. On 20 September, when they were probably south of Bering Strait, the two or three remaining vessels were attacked by Chukchi as they followed the trend of the coast to the south and west. The surviving vessels were those commanded by Dezhnev and Alekseyev, possibly accompanied by that of Gerasim Ankudinov, a semibrigand of lurid reputation who had himself sought leadership of the expedition in place of Dezhnev. On 1 October, Dezhnev lost contact with his companions in a severe storm. He did not see them again. Not long afterward, he was wrecked some way south of the Anadyr’ River, possibly near Cape Navarin. Dezhnev now led his twenty-five survivors overland to the lower Anadyr’, which they reached after ten weeks’ hard traveling. Twelve of his men were sent up the river to hunt for food. Nothing was found, and only three managed to rejoin the main party. Having survived what must have been a very hard winter, Dezhnev traveled up the Anadyr’ in the spring or summer of 1649 to establish a trading outpost at Anadyrsk. Having endured so much to reach the Anadyr’, he and his remaining men found the region itself to be a disappointment, consisting largely of tundra and having few furs. Nevertheless, Dezhnev remained there for twelve years before making his way back to Yakutsk, overland to the Kolyma River, and then along the coast to the Lena River.

The easternmost promontory of Asia now bears the name Cape Dezhnev in honor of Dezhnev and his companions, but for many years his expedition was all but forgotten. Although Dezhnev’s discoveries anticipated Vitus Bering’s discovery of the strait that bears his name by eighty years, Bering himself learned of it only from fragmentary information gathered during his travels in Siberia between 1725 and 1730, which reported that a party of cossacks had reached the Kamchatka Peninsula from the Kolyma River. If true, this information opened the possibility of a Northeast Passage, a navigable seaway by which goods might be transported to Japan and China, and it was this hopeful scenario that persuaded the Russian government to organize Bering’s Great Northern Expedition (1733–1743), during which the entire Arctic coast was surveyed and Alaska reached for the first time.

References and further reading:

Discovery Investigations
This series of scientific voyages, carried out to gather information on the effects of whaling on whale stocks in the Southern Ocean, represented the major British national Antarctic research effort in the interwar period. Although concerned primarily with issues of cetacean and krill biology, ships of the Discovery Investigations lent much-needed support to Antarctic expeditions on several occasions, as well as conducting surveys that greatly improved the charting of many sub-Antarctic and Antarctic islands.

Sale of Whaling Licenses Funds Scientific Research, 1925–1951
In 1908 Great Britain established the Falkland Islands Dependencies, consolidating its territorial claims and administration of that segment of the Antarctic continent falling between 20°W and 80°W, together with those scattered islands in the South Atlantic that had been discovered by British nationals. This action was largely motivated by the growth of the whaling industry in this region from 1904 onward and by Great Britain’s desire to impose licenses and generally regulate activities. Regulation became a major issue when it became apparent that despite earlier restrictions on the number of licenses sold, there were clear indications that populations of the hunted whales were beginning to decline.

In 1920, an advisory committee reported to the Colonial Office on the preservation of the whaling industry in the Falkland Islands Dependencies. This report led in 1923 to the setting up of the Discovery Committee, which took its name from RRS Discovery; the expedition ship originally built for Robert Falcon Scott, which was purchased in 1924 from the Hudson’s
Bay Company and refurbished with laboratories for use in the first years of the investigations. To assess what effects whaling was having on whale populations and thus to determine what restrictions, if any, should be imposed, it was clearly essential first to find out as much as possible about the breeding, growth, distribution, movements, and migrations of the hunted species, basically the great rorquals (blue, fin, humpbacks, sei, and minke). This then was to be the task of Discovery Investigations, a series of expeditions to the Southern Ocean funded out of proceeds from the sale of whaling licenses that took place between 1925 and 1951.

The investigations had three main components: a marine laboratory at King Edward Point on South Georgia to examine the carcasses of dead whales brought in to Grytviken whaling station; the fast-sailing 326-ton RRS William Scoresby to fire identifying darts into whales to gather information on migration patterns; and more general studies focusing on krill, the whales’ main food source, especially on its distribution and seasonal availability. From 1925 to 1927, this third group of studies was undertaken by Discovery; until its replacement in 1929 by the 1,000-ton, steel-hulled RRS Discovery II, when the older ship was found to be simply too slow and cumbersome to carry out all the work required.

Although most of the work of the Discovery Investigations was primarily oceanographic and thus falls outside the scope of this encyclopedia, on a number of occasions considerable assistance was provided to explorers. Thus, during the 1929–1930 season, William Scoresby was assigned to assist Sir Hubert Wilkins in his attempt to fly across the Antarctic continent. In February 1934, when the only medical officer on Richard Byrd’s second Antarctic expedition had to be invalidated home, Discovery II brought a replacement from New Zealand to Little America in the Bay of Whales. Later the same year, Discovery II transported stores and dogs from the Falklands to Port Lockroy on the Antarctic Peninsula for John Rymill’s British Graham Land Expedition. In January 1936, Discovery II retrieved Lincoln Ellsworth and Herbert Hollick-Kenyon from Little America after their successful transantarctic flight. Finally, from 1943 to 1945, William Scoresby assisted in transporting Operation Tabarin south to the Antarctic Peninsula when HMS Bransfield sprang a leak. This list is not intended to be exhaustive, but it does indicate the range of activities undertaken by ships of the Discovery Investigations in support of expeditions. In the 1935–1936 season, the men of William Scoresby did more than assist exploration by others; they made a significant contribution to geographical knowledge with the discovery of Edward VIII Gulf and other charting work along the largely unknown coasts of Enderby and Kemp Lands. For the most part, however, the duties were more mundane: William Scoresby roved the Southern Ocean in search of whales to fire marks into, and Discovery and Discovery II made more leisurely voyages on their assigned tasks. Each night at 8.00 p.m., these two ships would stop for a “station.” There, the ocean depth would be established through sounding, water samples collected, and nets lowered for zoo- and phytoplankton. On each voyage, one month was set aside for surveying islands previously imperfectly charted, that is, virtually all the sub-Antarctic islands as well as those closer to the Antarctic coast.

As with most other polar work, the Discovery Investigations came to a halt during World War II but resumed briefly in 1949, when the National Institute of Oceanography took over responsibility from the Discovery Committee. Just one last voyage by Discovery II was made in 1950–1951, before the investigations were wound up and incorporated within a wider-ranging national program of oceanographic research.

See also: Byrd, Richard (1933–1935); Ellsworth, Lincoln (1935–1936); Enderby Land; Kemp Land; Operation Tabarin; Rymill, John (1934–1937); Scott, Robert Falcon (1901–1904); South Georgia; Southern Ocean; Whaling and Antarctic Exploration; Wilkins, George Hubert (1929–1930)

References and further reading:

**Dogs**

Dogs have played an indispensable role in the exploration of the polar regions. Indeed, with their masters, they were the first Arctic explorers, and hunters in particular would have had a hard time surviving the rigorous conditions of the far north without them. How knowledge acquired by native peoples in the use and handling of dogs was and, more commonly, was not assimilated by European explorers played a critical role in determining their relative success.

Sled dogs resemble wolves in variable sizes; all have thick double coats, with wool underneath for warmth covered with longer greasy hair for insulation. Long fluffy tails held curled over the back also protect nose and feet when the dog is curled up asleep in the snow. Their webbed feet act as snowshoes, their ears are short and well-furred, and their limbs have an arrangement of blood vessels to guard against freezing. Their coats come in all known dog colors. Sled dogs have an inborn instinct to pull and are exceptionally tough characters, wily, full of willpower and determination, and independent. They dislike any kind of confinement. They will literally eat anything but require a diet high in fats such as are found in oily salmon or blubber-rich sea mammals.

**Notes and sketches made during two years on the Discovery expedition, 1925–1927. Oxford: Holywell Press.**

**Below the roaring forties. New York: Longmans, Green and Co.**

**A camera in Antarctica. London: Winchester Publications.**

**The voyages of the Discovery. London: Virgin.**
All dogs are descended from just two female wolves that lived about 135,000 years ago; sled dogs probably evolved in Mongolia. Dogsledging is a survival technique dating from the Paleolithic age, when hunting and fishing communities were pushed north into Siberia by early pastoralists, at a time when hunter-gatherers became less nomadic. These people and their dogs were the first Arctic explorers, during milder spells in the last Ice Age, and for thousands of years their dogs were the only domesticated animals. Three major groups of peoples followed the Russian rivers northward: one, the Samoyedic peoples, followed the Ob’ River into northwestern Siberia; the precursor of the Nanay peoples descended the Amur River to the Pacific Ocean; and the third group reached Lake Baikal and then went down the Lena River to northeastern Siberia. Each wave of the following migration pushed the previous ones farther to the northeast, until they crossed the Bering land bridge to North America and Greenland, which was reached by ancestors of the Inuit 3,000 to 4,000 years ago.

The next peoples to penetrate western Siberia were Russian hunters in the twelfth century, who then learned about dogsledging from the natives. During the sixteenth and seventeenth centuries, Russians expanded eastward across Siberia to the Pacific Ocean, discovering a country unsuitable for horse transportation because of lack of fodder. They thought western Siberian sledging methods were inefficient and adapted their horse-drawn methods to suit dogs, enlarging the sledges and dog teams to carry more freight and passengers. Local tribes usually used three to five dogs to pull the load, for the most part cargo only. Over the centuries, different peoples developed their own sled dog breeds as well as sled and harnessing methods to suit local terrain and availability of materials. They influenced each other, their ideas frequently spreading at trading centers.

Today there are between thirty and forty different breeds of sled dog, with two major influences on working methods, the Russian and the Inuit. The Inuit developed the most efficient harness, which enables dogs to use their chest, neck, and shoulder muscles plus their own body weight to pull the sledge. Each dog has its own trace attached to the sledge, which is known as the fan hitch. This proved popular among Antarctic explorers for traveling over ice and crevassed areas. The Russian method involved a single trace attached to the sled with the dogs harnessed to it in pairs, which is better suited for traveling on trails or in wooded areas. Russians used a harness adapted from the original Inuit design.

In the eighteenth century, the Russians crossed the Pacific Ocean to Alaska. Meanwhile, Western Europeans were moving into the North American Arctic. Martin Frobisher provided one of the earliest reports of Inuit use of dogsledges in the 1570s. As the Russians pushed east with their Siberian...
huskies, looking for sables, in North America the search was for beaver pelts. French hunters penetrated westward from Quebec in Canada. They used Indians as guides and therefore adopted their travel methods by canoe and snowshoe along lakes and rivers. From the eighteenth century onward, Alaskan Indians learned Russian dogsledging methods, which enabled them to penetrate the forests. Trading posts established by the British led to exploration of the tundra using Inuit dogsledging methods. Just as the fur trade played a significant role in the exploration of Arctic land areas, the rich waters offshore attracted whalers and sealers. They reported observations of dogsledging among the Inuit, as did expeditions searching for the Northwest Passage, especially those spending several winters in the Arctic close to Inuit communities, such as Edward Parry (1821–1823) near Igloolik and John Ross on the Boothia Peninsula (1829–1833).

Some members of these two expeditions experimented with dogsledging, including James Clark Ross, who participated in both, but when Ross returned to the Arctic in 1848–1849, he made no attempt to pass on what knowledge he had of dogs. Instead he trained up a generation of British naval officers and sailors in man-hauling. Difficulties in obtaining suitable dogs, and—especially—skilled dog handlers in a region uninhabited by the Inuit were major factors, but institutional conservatism may have played a part. Explorers from different institutional traditions—Dr. John Rae of the Hudson’s Bay Company and American explorers from Elisha Kent Kane onward—were less hidebound. Those who lived among the Inuit naturally learned most about their methods; both Robert Peary and Roald Amundsen made particularly important contributions to the adoption of Inuit travel techniques to polar exploration. Given the excellence of the local sled dogs and the expertise of the inhabitants, dogs have played an especially significant role in the exploration of Greenland. European explorers from Ludvig Mylius-Erichsen in 1906–1908 through Jim Simpson of the British North Greenland Expedition of 1952–1954 (see Simpson, Jim) made effective use of dogs, and Knud Rasmussen was to become one of the best of all dog drivers in the 1920s and 1930s.

Problems with dog teams during several early Antarctic expeditions were due to a number of factors, not least ignorance of climate and terrain, which were initially assumed as likely to be similar to those of the Arctic. Also significant was explorers’ lack of appreciation of the abilities of the different sled dog breeds and of the differing designs of harnesses and sledges, as well as their generally inadequate experience in handling dogs. Carsten Borchgrevink was the first to take sled dogs south in 1898, selecting them from northwestern Russia and using Saami dog drivers. The winds at Cape Adare were much colder than anticipated, and the dogs were used to working on snow, not ice. Inadequately fed, they all died. Erich von Drygalski fared better in 1901–1903, when he selected dogs from the Kamchatka Peninsula. They were used to extreme cold and the experienced dog handler, Daniel Johanssen, considered them stronger than Greenland dogs. They were fed meat and worked Greenland sledges with eleven dogs to a team. Allowed to breed freely, many had to be shot because there was no room in the ship to take them home, and the remainder were left behind on the Kerguelen Islands. Otto Nordenskjöld had previous experience of dogsledging in Greenland before organizing his Antarctic expedition of 1901–1904. Unfortunately, only four of his Greenland dogs survived the long voyage south, and he was forced to take on a selection of crossbreeds in the Falkland Islands. Once in the Antarctic, they were hunted down and killed by the remaining huskies operating as a pack because of the failure of the dog handler Ole Jonassen to tether them. In other respects, the huskies performed well. They were fed dog pemmican, and five dogs were recorded as being able to pull 265 kilograms over 18 miles in three and a half hours.

The potential contribution of dogs to Antarctic exploration was greatly undervalued during Robert Falcon Scott’s first expedition. Advice from Fridtjof Nansen was insufficient in itself to equip Scott for Antarctic conditions. On the southern journey in 1902, he brought just twenty Samoyedic dogs from western Siberia, and they found it hard going, with just four harnessed to each loaded sled pulling through snow 45 centimeters deep, often with bleeding feet. Scott blamed their failure on dried fish that had perished in high temperatures as Discovery sailed south through the tropics. Inadequate numbers and the lack of an experienced dog handler were at least equally significant factors. This experience was to have significant influence on choice of transportation for the next two British expeditions: Ernest Shackleton (1907–1909) and Scott (1910–1913). Shackleton had been one of the three making the southern journey in 1902 but was unimpressed by dogs then and chose to take only nine with him in 1907. They were described as “Siberian” and bred in New Zealand. For his polar journey he relied on ponies, though he noted the benefit to the men of having dogs around the base. All dogs returned aboard Nimrod. On his second expedition, Scott took thirty-three dogs from southeastern Siberia. Comparatively short in the leg, they were unable to cope with deep snow, and, crucially, all had docked tails and so could not keep their noses and limbs from freezing when curled up asleep. Scott used the Goldi-type primitive harness and light Amur-type sled, with only seven dogs to pull each heavily loaded sled. On the advice of his dog handler, Scott initially fed his dogs enriched biscuits but later found them to perform much better when fed seal meat. No dogs were brought back.

In contrast, Amundsen’s South Pole expedition was planned meticulously around his ninety-seven sled dogs, based on his previous experience of Inuit methods learned on his voyage through the Northwest Passage (1903–1906). After an initial false start when two of his dogs froze to death in temperatures of −56°C (−69°F), he set out again on 19 Octo-
ber 1911—Scott, meanwhile, had to wait until 1 November before starting with his less cold-tolerant ponies. Because Amundsen achieved with ease his target of traveling 17 miles each day, stops were made every 3 miles to build a cairn to mark their way, which gave his dogs a chance to rest. Amundsen had with him fifty-five Eskimo dogs of the highest quality and experience, fed largely on seal meat and pulling Nansen-type sleds. As loads lightened, he killed the weakest dogs as planned, until fourteen dogs remained when he turned back from the Pole. All four men with him were experienced dog handlers, who recognized the dogs’ need for encouragement by placing a skier ahead of them, who on the return journey placed dry fish to mark their route and spur them on. Eleven of Amundsen’s polar team returned with him to Norway, and twenty-one more were presented to Douglas Mawson, though unfortunately none of these survived the exceptional winds and cold of Commonwealth Bay.

Amundsen’s example convinced Shackleton that dogs were essential for his attempt to cross Antarctica. Other lessons were less well learned: He took with him no experienced dog handlers, and the dogs selected were mainly crossbreeds from northwestern Canada, many of whom died from heartworm on the way south (a parasite unknown in Europe at that time). Many of them lacked the coat and willpower necessary to survive the severe conditions. All remaining dogs were shot after Endurance sank.

The introduction of airplanes and effective motor transportation on Richard Byrd’s first expedition of 1928–1930 did not lead to an immediate decrease in the importance of dogs. Instead, they were used in different ways, providing flexible transportation for field parties, whose heavy supplies were laid in depots by airplane and tractor teams. John Rymill’s British Graham Land Expedition (1934–1937) established the Eskimo dog as the most suitable sled dog breed for Antarctic conditions; it also set the standards for handling and working them, such as not killing them unless they were disabled. This expertise was passed on to the Falkland Islands Dependencies Survey and to its successor, the British Antarctic Survey, and through them to the other national programs, most of which made use of Eskimo dogs. These programs also sponsored a number of studies of dog health, diet, and effective operation in the Antarctic.

Although supplanted increasingly by snowmobiles, dogs continued to have a valued place on Antarctic bases, where the companionable dogs made the sometimes hard life more bearable. There was thus considerable sorrow when, as a non-native species, they were banned from the continent by the Protocol on Environmental Protection to the Antarctic Treaty in 1992.

Dog teams played a considerable part in the exploration of the polar regions and made great sacrifices for the benefit of humankind. They still provide essential transport in areas of the Russian Far East, while elsewhere in the North, the skills of dog driving are kept alive by tourist attractions and sled dog racing, the latter sport now spreading worldwide.

Jenny Mai Handford

See also: Amundsen, Roald; Borchgrevink, Carsten; British Antarctic Survey; Byrd, Richard; Drygalski, Erich von; Frobisher, Martin; Hall, Charles Francis; Indigenous Peoples; Inuit Contribution to Polar Exploration; Man-Hauling; Mawson, Douglas (1911–1914); Nordenskjöld, Otto; Parry, Edward (1821–1825); Peary, Robert; Ross, James Clark (1848–1849); Ross, John (1829–1833); Rymill, John (1934–1937); Scott, Robert Falcon; Shackleton, Ernest; Sledges and Sleds

References and further reading:

**Drifting Ice Stations**

During the Cold War, small groups of scientists could be found in camps established on ice floes and ice islands in the Arctic Ocean. Their discoveries are fundamental to our knowledge of this ocean and the basin in which it lies. Had war indeed broken out between the United States and the Soviet Union, this information would undoubtedly have proved of the greatest value to the competing war efforts.

Although previous explorers had been forced to set up camps on the pack ice when their vessels sank, for example, Friedrich Hegemann off East Greenland in 1869 (see Koldeway, Karl) and Sir Ernest Shackleton in 1915 in the Weddell Sea, the first to establish a camp deliberately for the purposes of exploration was Storker Stokrson, who was part of the Canadian Arctic Expedition of Vilhjalmur Stefansson in 1918. Stokrson’s five-man party established its base on an ice island about 180 miles north of the Alaskan coast. The intention was to occupy the station for an entire year to keep a record of meteorological and oceanographic conditions. Stokrson’s stay was reduced by illness to six months, during which time he drifted 440 miles and in the process disproved the existence of “Keenan Land.”

Although the first Soviet station was established in 1937, ice stations are preeminently associated with the Cold War period: the Soviet Union operated stations from 1950 to 1991 and the United States from 1951 to the early 1990s. Although the Soviet stations ranged across much of the Arctic Basin, U.S. stations have generally been located between the coast of
North America and the Pole. Stations vary considerably according to their duration, from just a few weeks to 3,129 days for NP-22. The longer-lasting stations are sited on ice islands, for example, U.S. stations T-3 and ARLIS II and the Soviet stations N-6, N-18, and N-22. Stations set up on ice floes frequently had to be relocated at short notice, sometimes to adjacent floes. NP-5 was a particularly extreme case: its floe fractured 111 times in 536 days. The main source of ice islands is the Ward Hunt ice shelf, north Ellesmere Island. Although a floe might at best be a few meters thick, an ice island will generally be at least 10 meters thick, maybe much more. Assuming that the floes on which they are sited do not first break up, stations are usually abandoned when they approach Fram Strait on the assumption that they will be caught up in the East Greenland Current and carried far south. An exception was ARLIS II, which remained occupied until it reached the Denmark Strait, after traversing the length of Greenland.

**Soviet Ice Stations, 1937–1991**

How and why the Soviet Union set up North Pole–1 (NP-1) in 1937 is told under the name of its leader, Ivan Papanin. Not until 1950 was NP-2 established in support of the High-Latitude Air Expeditions program inaugurated in 1948. These expeditions sought to obtain information across the Arctic Basin from as many points as possible through the use of “flying laboratories,” that is, small parties of scientists and support personnel who were landed on the ice for a few days at a time before moving on. The early postwar ice stations acted as logistical centers and sources of longer-term data series. From the 1970s onward, the ice station program became more autonomous, with the role of aircraft limited to identification of suitable floes, support, and supply and underwater acoustics increasingly the chief research focus. These developments were a direct response to concern that nuclear submarines might make use of the Arctic Ocean in any forthcoming conflict. Nowhere are submarines more difficult to detect, especially in the marginal ice zones where the constant sounds of the fragmented ice breaking apart and smashing together effectively mask the noise of a submarine's engine. The Soviet policy was always to have at least two stations operating at the same time, in case one got into difficulty. Most were set up by air and a few by icebreakers. All had dogs, ever since Papanin's husky Vesely had proved invaluable in giving early warning of polar bears. The staff of NP-1 were pretty much restricted to their own and adjacent ice floes. In contrast, later stations were provided with motor vehicles, tractors, small boats, aircraft, and helicopters. Accommodation facilities also improved over time. From NP-3 on, huts were heated sufficiently for sleeping bags not to be required, and NP-5 marked the introduction of collapsible huts mounted on skids with foam-insulated walls and floors (see Table 6).

The Soviet program was naturally of the greatest interest to the United States and its allies. Thus when NP-7 was sighted in 1961 east of Baffin Island, having been evacuated two years
earlier north of Greenland on the assumption that it was about to be caught up in the East Greenland Current and carried south to the North Atlantic, Canadian scientists landed to discover the hut with abandoned supplies and equipment. Shortly afterward, the Central Intelligence Agency organized Project Coldfeet, in which Lieutenant Leonard LeSchack and Squadron Leader James Smith were parachuted onto NP-8 on 28 May 1962. NP-8 had been evacuated in a hurry after its airstrip broke up, and it was believed that there was a good chance of finding sensitive information and equipment. In the event, the strongest indicator that it had been used for acoustic research was the presence of sophisticated silent power generators. On 2 June LeSchack and Smith were lifted off the ice using Robert E. Fulton's skyhook aeroretriever system, a technique best known for its use in the James Bond movie Thunderball. More than 300 photographs were obtained and twenty-one pieces of equipment brought back for inspection.

U.S. Ice Stations, 1951 to the Present
The U.S. program was initially operated by the U.S. Air Force. It began with the experimental establishment of Polar Ice Pack station 180 miles north of Barter Island, Alaska. It was occupied in early 1951 for just twenty-three days before being destroyed by pressure ridges. T-3, also known as Fletcher's Ice Island for its discoverer, Lieutenant Colonel Joseph Fletcher, was first sighted by Alaska Air Command in 1945. At several miles across a relatively large fragment from the Ward Hunt Ice Shelf, it was occupied during four periods from 1952 to 1974, the first two occupations being separated by an interval of just over a year, when it drifted sufficiently close to Ellesmere Island to merely duplicate the observations of the Canadian stations there. As part of the U.S. contribution to the International Geophysical Year (IGY), it was occupied for a third time in 1957 and renamed “Bravo,” until it was abandoned in 1962 when it became grounded in shallow water. A

### Table 6 Soviet Union Drifting Ice Stations, 1937–1991

<table>
<thead>
<tr>
<th>Station</th>
<th>Dates</th>
<th>Location Established</th>
<th>Location Closed</th>
</tr>
</thead>
<tbody>
<tr>
<td>NP-1</td>
<td>21/5/1937–19/2/1938</td>
<td>89°24'N, 78°40'W</td>
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<td>NP-3</td>
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<td>86°00'N, 178°00'W</td>
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<tr>
<td>NP-5</td>
<td>21/4/1955–8/10/1956</td>
<td>82°10'N, 156°51'E</td>
<td>84°18'N, 63°19'</td>
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<tr>
<td>NP-6</td>
<td>15/4/1956–14/9/1959</td>
<td>74°27'N, 177°04'W</td>
<td>82°06'N, 03°56'</td>
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<tr>
<td>NP-7</td>
<td>23/4/1957–11/4/1959</td>
<td>82°06'N, 164°11'W</td>
<td>85°14'N, 3°03'</td>
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<tr>
<td>NP-8</td>
<td>19/4/1959–19/3/1962</td>
<td>75°42'N, 163°10'W</td>
<td>83°15'N, 32°30'</td>
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<tr>
<td>NP-9</td>
<td>21/4/1960–28/3/1961</td>
<td>77°23'N, 163°00'W</td>
<td>86°36'N, 176°W</td>
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<td>NP-10</td>
<td>17/10/1961–29/4/1964</td>
<td>75°27'N, 177°10'W</td>
<td>88°32'N, 90°30'</td>
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<tr>
<td>NP-12</td>
<td>30/4/1963–25/4/1965</td>
<td>76°50'N, 165°34'W</td>
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<tr>
<td>NP-13</td>
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<td>73°50'N, 166°00'W</td>
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<tr>
<td>NP-14</td>
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<td>74°20'N, 175°20'E</td>
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<tr>
<td>NP-15</td>
<td>29/3–27/5/1966</td>
<td>78°50'N, 168°43'W</td>
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<tr>
<td>NP-16</td>
<td>9/4/1968–22/3/1972</td>
<td>74°58'N, 171°40'W</td>
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<tr>
<td>NP-17</td>
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<td>NP-18</td>
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<td>NP-22</td>
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<td>86°06'N, 29°40'W</td>
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<td>NP-28</td>
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<td>79°40'N, 03°09'</td>
</tr>
<tr>
<td>NP-29</td>
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<td>NP-31</td>
<td>22/10/1988–25/7/1991</td>
<td>76°35'N, 153°10'W</td>
<td>73°33'N, 161°04'W</td>
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</tbody>
</table>

Note: NP = North Pole.
second IGY station, Alpha, was destroyed by pressure ridges and replaced by Charlie, itself evacuated ten months later when its floe broke up.

In 1960, responsibility for the ice station program was transferred to the U.S. Navy, with operations coordinated from the Arctic Research Laboratory, Barrow, Alaska. U.S. stations of this era bear the acronym ARLIS (Arctic Research Laboratory Ice Station). The longest lasting was ARLIS II, set up like T-3 on an ice island. In early 1962, air reconnaissance established that T-3 had split and that part of it was again adrift. Following reoccupation, it was to become the longest-serving U.S. station.

While the program was run by the U.S. Air Force, logistics were provided by C-124 and C-130 aircraft, large planes that needed long runways and the presence of significant numbers of support personnel. Accommodations were provided by Jamesway huts, except for Bravo (another name for T-3), which used insulated commercial trailers. The Arctic Research Laboratory economized through use of light aircraft—for example, Cessna 180s and 195s—which were able to land on ice no more than 1 meter thick, and by reducing the number of support personnel. Prefabricated plastic-covered huts provided accommodations (see Table 7).

### Ice Station Discoveries

The most dramatic discoveries have been those concerning the topography and conformation of the Arctic Basin. The first indication that the floor of the Arctic Ocean might, like other oceans, be cut across by mountain ranges were soundings obtained in 1948 by Soviet scientists engaged in the High-Latitude Air Expeditions. A party landed at the North Pole found a difference of over 1,000 meters between measurements obtained on two successive days. What they had found was the Lomonosov Ridge, whose full extent was to be established primarily by soundings taken from Soviet ice stations. Thus, a peak reaching within 825 meters of the surface was located by NP-6, and on either side of the ridge, basins as deep as 4,300 meters were identified toward the Atlantic and 3,700 meters toward the Pacific. The Alpha Cordillera, or Mendeleyev Ridge, was first noted in 1955 from NP-4. Two years later, American scientists on station Alpha had the good fortune to drift across it twice and then along its length, allowing them to take sufficient observations to identify it for the first time as a major feature. Signs of volcanic activity along ridges such as these were first detected in November 1954 by NP-3 along the Lomonosov Ridge and by 1960 by NP-8 on the Northwind Ridge north of Bering Strait (Smith 1971).

Inevitably, much was learned about surface currents, not just a detailed understanding of the major flow of water west from the East Siberian and Laptev Seas toward the Greenland Sea but also the discovery of a number of smaller currents in the Laptev and Chukchi Seas and close to Franz Josef Land. The circular rotation of the Beaufort Gyre has been defined on the basis of observations conducted on U.S. ice stations, with the drift of T-3 demonstrating that in the outer sectors of the gyre, it takes about ten years to complete one revolution. Much work has been done on sea ice, especially between 1970 and 1976, when extensive studies were conducted on the behavior of pack ice at several U.S. stations as part of the Arctic Ice Dynamics Joint Experiment (AIDJEX). Scientists continue to conduct research from camps on the ice, but they now tend to be of much shorter duration than the stations of the Cold War era.

The ice stations are the prime source of our knowledge of meteorological conditions in the central Arctic. By January 1959, over 15,000 meteorological observations had been recorded, conclusively refuting previous theories that a permanent high-pressure system was located over the North Pole. Meteorological data supplied by the Soviet stations have proved invaluable in ice and weather forecasting for shipping using the Northern Sea Route. All these data, together with other previously classified ice station information, were made publicly available for scientific analysis following an agreement.

<table>
<thead>
<tr>
<th>Station</th>
<th>Dates</th>
<th>Location Established</th>
<th>Location Closed</th>
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<td>T-3</td>
<td>19/3/1952–14/4/1954</td>
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<td>84°40'N, 81°00'W</td>
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<td></td>
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<td>82°46'N, 99°30'W</td>
<td>1°45'N, 160°00'W</td>
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<td></td>
<td>17/2/1962–10/1974</td>
<td>73°24'N, 161°18'W</td>
<td>off Ellesmere Island</td>
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<td>Alpha</td>
<td>17/4/1957–6/11/1958</td>
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<td>86°12'N, 113°00'W</td>
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<tr>
<td>Charlie</td>
<td>13/4/1959–7/11/1960</td>
<td>74°48'N, 159°00'W</td>
<td>76°55'N, 169°00'W</td>
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<td>66°43'N, 27°01'W</td>
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<tr>
<td>ARLIS III</td>
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<tr>
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<td>25/2–16/5/1965</td>
<td>73°05'N, 152°12'W</td>
<td>73°07'N, 155°12'W</td>
</tr>
</tbody>
</table>

Note: ARLIS = Arctic Research Laboratory Ice Station.

See also: Arctic Ocean; International Geophysical Year; Koldewey, Karl; North Pole; Papanin, Ivan; Russia; Shackleton, Ernest (1914–1916); Stefansson, Vilhjalmur; Submarines; United States

References and further reading:

**Dronning Maud Land**

*See Queen Maud Land*

**Drygalski, Erich von**

(1865–1949)

Although not judged a success on its return, Germany’s first expedition to Antarctica, led by Erich von Drygalski, ultimately generated a greater weight of results in terms of published scientific reports than any other expedition. Other achievements included discovery of 600 miles of coast in a region where Antarctica is particularly difficult to approach and, most memorably, the development of an ingenious method for freeing a ship caught up in the ice. Before undertaking this expedition, its leader had conducted pioneering glaciological studies in Greenland.

**Expeditions to Greenland, 1891 and 1892–1893**

Erich Dagobert von Drygalski, a professor of geography and geophysics at the University of Berlin at this time, established his reputation as an explorer-scientist during two expeditions to Greenland, where he set up the first scientific wintering station and carried out the first systematic studies of the movement of the Greenland ice sheet. In 1891, traveling with Dr. Otto Baschin, he identified a suitable site for his studies at Qarajaq nunatak at the head of Itivliarssuk Fjord, north of the West Greenland settlement of Uummannaq. The following year, accompanied by the zoologist Dr. Ernst Vanhöffen and the meteorologist Dr. Hermann Stade, Drygalski returned to Qarajaq, from where, after erecting huts to provide accommodations and an observatory, he embarked on the first extended journey onto the ice sheet. The purpose of this journey was to place markers from which snow accumulation and ice motion could be measured. Continuous meteorological records were kept by Stade at Qarajaq from 16 July 1892 to 28 July 1893; meanwhile, Vanhöffen conducted natural history observations, and Drygalski observed the temperature, structure, and movement of glaciers discharging from the ice sheet. In June 1893, Drygalski again ventured far onto the inland ice to find out what could be learned from his markers before returning to Uummannaq and sailing for Copenhagen on 27 August.

**The First German Antarctic Expedition, 1901–1903**

Dr. Georg von Neumayer (1826–1909), director of the German Marine Observatory, had campaigned for many years for a German expedition to Antarctica, identifying the Indian Ocean sector south of the Kerguelen Islands as the most appropriate area for German exploration. There he believed that a warm current flowed south into an embayment in the continent, offering the possibility of achieving latitudes close to the Pole (Lüdecke 1989). The Franco-Prussian War and German unification had established Germany’s place as the leading continental European power, with the world’s second-most-powerful navy and colonial ambitions to match. With a rush to Antarctica now apparently about to succeed the scramble to Africa of the 1880s, there were those in Germany who were determined that their country should not to be left behind. Yet plans were stalled by the lack of an obvious leader, until Drygalski’s abilities were demonstrated in Greenland. The advantages of the Indian Ocean sector, as identified by Neumayer, were partly preexisting German connections with the Kerguelen Islands, where a station might be established to provide long-term support to this and future expeditions in a manner similar to the support provided to British expeditions by Australia and New Zealand, but also that this largely unknown region offered the prospect of significant new discoveries and thus the possibility of establishing a “German Antarctic sector” far away from areas discovered and claimed by the British, most notably in the Ross Sea region. Antarctic expeditions were the “big science” of their day, and many studies were best carried out on a cooperative basis. Thus plans for the expedition were closely coordinated with the proposed British and Swedish expeditions so that magnetic and meteorological observations could be undertaken simultaneously on selected “term” days. Participation in a major collaborative international endeavor provided another influential argument in favor of the German expedition (Lüdecke 2003).

Fully persuaded of the expedition’s significance, in 1899 the German government committed itself to bearing all costs, including construction of a specially built ship closely modeled on Fridtjof Nansen’s *Fram*. A three-masted schooner with auxiliary steam power, *Gauss* was named after the mathe-
matician Karl Friedrich Gauss (1777–1855), whose theory of terrestrial magnetism had predicted the position of the South Magnetic Pole with remarkable accuracy. As with *Discovery*, the expedition ship of Robert Falcon Scott (1901–1904), *Gauss* exhibited several significant design faults, with leaks and slow sailing two problems shared by both. Captain Hans Ruser, former first officer of *Valdivia* (see Chun, Carl), was placed in command, acting under instructions from Drygalski that might be questioned only if ship or personnel were placed in danger. Including Drygalski and Ruser, *Gauss* carried just five naval officers, six scientists, and twenty-two seamen. Of the scientists, Vanhöffen, Drygalski’s companion in Greenland in 1892–1893, was the only one with Antarctic experience, having been south previously with Carl Chun. The other scientists were Dr. Hans Gazert (surgeon, bacteriologist, and meteorologist), Dr. Emil Philippi (geologist), Dr. Friedrich Bidlingmaier (magnetician and meteorologist), and Dr. Emil Werth. Primarily a botanist, Werth was to be left behind at the Kerguelen Islands, where he was to carry out a wide range of studies, including magnetic and meteorological observations simultaneous with those made in *Gauss* at its Antarctic station.

Sailing from Kiel on 11 August 1901, *Gauss* reached the Crozet Islands via Cape Verde and Cape Town on 25 December. A brief landing was made by all six scientists on the south coast of Possession Island, the first scientific visit to this island. Reaching the Kerguelen Islands on 31 December, Drygalski met up with a party brought there some weeks earlier, which had begun to set up a station at Observation Bay on the site first used by the British Transit of Venus Expedition in 1874. There had been an outbreak of beri-beri in the ship bringing this party to Kerguelen, which was to recur six months later and claim the life of the station leader Dr. Joseph Enzensperger.

After taking on board forty dogs from Kamchatka brought by the station party, on 31 January 1902 *Gauss* again set sail, now south to Heard Island, where Drygalski and his scientists landed to conduct glaciological and natural history studies. From Heard, course was set for Antarctica, where Drygalski hoped to investigate the region about 90°E, between Kemp Land and Knox Land, the latter being the westernmost of Charles Wilkes’s likely discoveries in 1840. Deciding to head initially for the latter, Drygalski’s intention was to follow the coast from east to west, passage in this direction being eased by the prevailing easterly winds. On 21 February Wilhelm II Land was sighted, but impenetrable ice prevented exploration within 46 miles of it. Believing this coast to be an extension of Wilkes’s controversial discoveries, Drygalski turned west to see whether he could join his discovery to that of Wilkes before following his proposed plan of exploring predominantly to the east. Unfortunately, he soon found himself unable to do either, when the ice closed about him, until *Gauss* was irretrievably trapped.

Once it became apparent that they must winter where they were, huts were erected on the ice for scientific studies, and the first reconnaissance party was sent out on 18 March with two dogsledges. Eight days later, it returned, having discovered the Gaussberg Nunatak at 66°40’S, some 50 miles from the ship. It was the only ice-free land seen in Antarctica during the entire expedition.

On 29 March 1902, a captive hydrogen balloon was inflated, in which Drygalski made the first ascent and remained aloft for two hours. What he could see from 500 meters determined the research program to be followed in the coming months, with the Gaussberg Nunatak and an area of blue ice the most intriguing destinations for sledge parties. Equally significantly, Drygalski was also able to identify the best probable route for *Gauss*’s eventual escape to open water.

Two more sledging trips were made to the Gaussberg before the onset of winter, on the second of which a party led by Drygalski experienced considerable difficulties in relocating the ship on their return, a real problem because the ship lay 56 miles offshore in an ever-shifting landscape of snowdrifts and icebergs, with no fixed reference except the ship itself, and it was also subject to drift.

In comparison with Adrien de Gerlache’s expedition, they
endured winter without too much discomfort, much having being learned from that expedition’s experiences. The ship was comfortable and well-supplied, the scientists kept busy with their studies, and clubs proliferated, with something to interest all. From Gerlache, Drygalski had also noted the observation that dark objects left on the ice absorbed heat sufficient to cause melting underneath them. Proposing to use this as an experimental method of freeing the ship, from June onward he ordered that all rubbish and ashes be saved.

By mid-September 1902, conditions again permitted sledge parties to be dispatched to the two destinations identified from the balloon ascent: the Gaussberg and the field of blue ice some 25 miles away. These sites were visited several times until early December, when Drygalski began his plan to extricate Gauss from the ice. Having come to the conclusion that there was little more that could be accomplished by wintering a second year where he was, he now wanted to find another wintering site but first had to free Gauss. From the balloon, he had seen that the best route lay west, where open water lay just one-third of a mile away, but from which they were separated by ice 5–6 meters thick and against which ice saws and explosives had proved ineffective. After he ordered his accumulated rubbish to be laid in a broad path between the ship’s bows and the open water, cracks very soon began to open up, forming a navigable channel within a month. Although this was temporarily closed in a storm, by 16 March 1903 Gauss was free and ready to resume exploration.

Unfortunately for Drygalski, no alternative wintering site could be found, forcing him to take the unwelcome decision to head north on 31 March. Sailing via Kerguelen, St. Paul, and Amsterdam Islands, Gauss reached Simonstown, South Africa, on 9 June. Drygalski next contacted the German government, seeking support to enable him to spend another year in the Antarctic to complete his program. No support was forthcoming, and on 2 July he received orders to return to Germany.

No great national welcome awaited Gauss at Kiel, where it docked on 24 November 1903 via St. Helena, Ascension, and the Azores. In comparison with Scott’s contemporary British expedition, Drygalski’s achievements seemed unspectacular and his farthest south of 66°40’S particularly inadequate in comparison with Scott’s 82°17’S. How considerable were the expedition’s results was slowly to be revealed between 1905 and 1931, with the publication of a series of reports in twenty large volumes. The zoological reports alone described 1,440 species endemic to the Antarctic, and the oceanographic results provided the strongest evidence to date for the major oceanic boundary, now known as the Antarctic Convergence. Nor were the expedition’s geographical discoveries insignificant: The 600 miles of new coastline discovered provided clear evidence for an extended coast at about the latitude of the Antarctic Circle, and Wilhelm II Land was almost certainly linked to Wilkes’s discoveries farther west and to Kemp and Enderby Lands farther east. Much of Drygalski’s later life was devoted to the publication of these results, as well as to other works of scholarship. He did, however, find time to make one last visit to the polar regions in 1910, as a member of Count Ferdinand von Zeppelin’s expedition to Spitzbergen. Gauss had a distinguished later career in Canada as Joseph-Elzéar Bernier’s Arctic.

See also: Bernier, Joseph-Elzéar; Chun, Carl; Gerlache, Adrien de; Germany; Greenland, Inland Ice; Kerguelen Islands; Ritscher, Alfred; Scott, Robert Falcon (1901–1904); Wilhelm II Land; Wilkes, Charles

References and further reading:

Dumont d’Urville, Jules
(1790–1842)
The Adélie penguin and Adélie Land in Antarctica bear witness to the love of a French explorer for his wife, being named in gratitude for her permitting him to make three great round-the-world voyages. Along with similar expeditions organized by the U.S. and British governments, the French expedition of 1837–1840 reflects a brief period in the mid–nineteenth century during which the United States, Great Britain, and France effectively competed in seeking to discover more about the region surrounding the South Pole. In particular, each nation wished one of its nationals to be the first to reach the Pole—or at least to come closest to it—and first to discover the location of the South Magnetic Pole.

Not naturally diplomatic, Jules Sébastien César Dumont d’Urville found himself without a vessel to command for eight years after returning from his second circumnavigation of the world in 1829. Known for his outspoken republican views, he had fallen out with senior members of the monarchist government, who had then found excuse to criticize his outstandingly successful voyage in Astrolabe (1826–1829), during which he had carried out important charting and ethnographic work in the South Pacific, discovered new islands, and enabled classification of the scattered island groups into the three major divisions—Melanesia, Micronesia, and Polynesia—recognized today. Previous to this, Dumont d’Urville had completed a similarly successful circumnavigation under Louis-Isidore Duperrey (1822–1825), sailing in the same vessel, then known as Cochille. As if these achievements were not enough, Dumont d’Urville’s most famous feat had been to recognize the quality of a recently discovered statue when visiting the Greek island of Milos as a junior officer in 1819. The subject clearly was Venus, and so glowing was Dumont d’Urville’s report that the French government determined to
buy the statue at any price. A scuffle with brigands followed, during which the statue lost its arms. It now stands in the Louvre Museum in Paris and is known as the Venus de Milo.

The Discovery of Adélie Land, Antarctica, 1837–1840

The appointment of Vice Admiral Claude du Campe, Baron de Rosamel, as minister of marine encouraged Dumont d'Urville to hope that the government might now be more favorable to voyages of exploration. In January 1837, therefore, he submitted a proposal to undertake another circumnavigation, this time focusing particularly on the ethnography of the Pacific Islands, which he could justifiably claim to know better than anyone else. Ethnography, languages, and botany were Dumont d'Urville's great enthusiasms, and he was somewhat taken aback when his proposal was not only accepted — with his expedition to be provided with two rather than the one vessel he had requested — but with personal instructions from King Louis-Philippe to make an attempt to better James Weddell's farthest south. At this stage in his life, Dumont d'Urville was an unlikely Antarctic explorer. A martyr to gout, as he limped on board he overheard one of the sailors saying, "Oh! This old boy won't lead us very far!" Dumont d'Urville, of course, determined to lead him very far indeed.

Despite the planned brief Antarctic sortie, the expedition was viewed as being essentially one to the Pacific Ocean, and no efforts were made to fit out the vessels for sailing in ice-infested waters. Thus, their gun ports remained open and their timbers unstrengthened. The vessels selected were two corvettes, Dumont d'Urville's established expedition vessel, the 380-ton Astrolabe, and the slightly smaller Zelée, the latter being captained by Charles Hector Jacquinot, a colleague of Dumont d'Urville's on both of his previous circumnavigations. In contrast to the long-advertised U.S. Exploring Expedition (see Wilkes, Charles), preparations were rapid, and the vessels sailed from Toulon on 7 September 1837.

Making one stop at Tenerife, Canary Islands, they reached Magellan Strait in December. There survey work was carried out, and Astrolabe and Zelée were prepared for their attempt to sail farther south than 74°15'S, the latitude reached by the British sealer Weddell in 1823 and the closest approach to the South Pole yet achieved. Before setting out, Dumont d'Urville had wisely persuaded the French government to offer his crew a bonus of 100 gold francs if they reached 75°S, and an extra 20 francs for each further degree. Not surprisingly, all were therefore eager for the attempt, sailing from Magellan Strait on 9 January 1838. By 20 January, the expedition was in the Weddell Sea, heading south along Weddell’s course and hopeful of beating his record. The following day, their hopes were dashed when continuous ice blocked their way. Dumont d'Urville sought to regroup on the South Orkney Islands, from where he made a second attempt to get far south, again without success. Conditions were simply far less favorable than they had been for Weddell in the uniquely mild summer of 1823, and after two months spent in futile battle against ice, Dumont d'Urville abandoned the attempt with considerable doubts as to Weddell's veracity.

Making his way west to the South Shetland Islands, on 27 February Dumont d'Urville saw land apparently not depicted on his charts. For once diplomatic, he named it for his expedition's patrons: Louis-Philippe Land, Rosamel Island, Joinville Land, and Orléans Channel. Dumont d'Urville believed that this latter channel, which was free of ice at the time but through which he did not sail, cut across the Antarctic Peninsula, the tip of which was therefore an island — Louis-Philippe Land — rather than part of the mainland as believed (rightly) by previous explorers. Dumont d'Urville's inaccurate survey was later corrected by the Swedish Antarctic Expedition of Otto Nordenskjöld (1901–1904).

Although Dumont d'Urville had now fulfilled his instruction to attempt to better Weddell's record, he determined on his own initiative to make one more attempt to sail south, motivated principally by his desire to forestall the Americans
and British—especially the latter!—in locating the South Magnetic Pole. Thus, after twenty months of productive exploration in the Pacific, when the French expedition reached Hobart, Tasmania, on 12 December 1839, Astrolabe and Zelée were again made ready for the Antarctic, for which they sailed on 1 January 1840.

Dumont d’Urville’s plan was simple. He would sail due south along the line of least magnetic declination until he reached the South Magnetic Pole or the coast of Antarctica. Wind and ice naturally interfered with this course, but nevertheless on 20 January 1840 the Antarctic Circle was crossed, and furthermore, land was in sight. Now ensued one of the more bizarre spectacles in Antarctic history, as the French seamen celebrated crossing the circle. Not permitted to use water because of the cold, they first poured rice over their commanding officer and then over other crew members as seamen trounced about in fancy costume, listened to a blasphemous sermon, and enjoyed a hearty meal. The next day, a seaman dressed as Father Antarctic was welcomed aboard with land yet more clearly in view, in magnificent weather but without wind and therefore impossible to reach. Now at 66°30’S and longitude 138°21’E, the magnetic needle showed a dip of 86° and the compasses fluctuated wildly. Evidently, they were close to the magnetic pole. On 21 January, a light breeze arose, sufficient to waft Astrolabe and Zelée closer inland—icebergs towering high above their masts—toward a coast entirely covered by snow and rising apparently to over 1,000 meters. The following day, two boats were lowered, and a landing was eventually effected on a small island, the enthusiastic crews racing each other for the honor of being first to raise the French flag over the new discovery Dumont d’Urville named Adélie Land for his long-suffering wife. Two more days were spent sailing slowly eastward along the coast in conditions of good visibility until, with their course now blocked by pack ice and a growing ocean swell, Dumont d’Urville considered national honor sufficiently satisfied and his Antarctic duties discharged.

Heading north, they encountered a severe storm that the two vessels were lucky to survive, with Astrolabe at one point heeled over to such an extent that its leeward gun ports were fully beneath the water. The storm passed as rapidly as it had arisen, and on 29 January 1840, at 64°48’S, the expedition was surprised to encounter a rapidly sailing brig, which first headed toward them and then suddenly veered away without communication. The brig was USS Porpoise, commanded by Lieutenant Cadwalader Ringgold of the U.S. Exploring Expedition, who, approaching with the purpose of making contact, had mistakenly misunderstood the movements of the French vessels as an intended snub. For Dumont d’Urville, this incident confirmed the reputation the American expedition had already established for excessive and unnecessary secrecy.

Dumont d’Urville finally reached Toulon on 6 November 1840, having spent another eight months exploring the Auckland Islands, New Zealand, New Guinea, and Timor. His expedition was greeted as a triumph and Dumont d’Urville himself showered with honors. Promoted to rear admiral and appointed president of council of the Paris Geographical Society, he lived just two more years before dying with his beloved wife and son when their train caught fire, after he had been persuaded to indulge in a rare holiday visit to Versailles.

See also: Adélie Land; Antarctic Peninsula; Magnetic Poles; Nordenskjöld, Otto; Ross, James Clark (1839–1843); South Orkney Islands; Weddell, James (1822–1824); Wilkes, Charles

References and further reading:

**Dundee Antarctic Whaling Expedition**

One of several expeditions launched in the 1890s to investigate previous reports of right whales in the Southern Ocean (see also Larsen, Carl Anton, and Bull, Henrik), the Dundee Antarctic Whaling Expedition was notable for inaugurating a new era of Antarctic exploration after many years of neglect and for being the first expedition of William Speirs Bruce, soon to become a major figure in polar exploration. The earliest photographs of Antarctica were taken during the expedition.

**The Renewal of Antarctic Exploration, 1892–1893**

In 1874, two Arctic whaling captains, David and John Gray of Peterhead, Scotland, published a pamphlet drawing attention to reports by James Clark Ross (1839–1843) of many right whales in the Ross and Weddell Seas. By the 1870s, the decline in Arctic whale stocks was causing serious problems for the whaling industry at a time of increasing competition from other products, most notably the availability of gas as an alternative to whale oil for urban and domestic lighting. Although sub-Antarctic right whale stocks had long been exploited and were close to exhaustion, Ross’s report appeared to indicate large un hunted populations at higher southern latitudes. The Grays’ pamphlet aroused great interest, particularly among other British whalers and in Australia, but the first material results were delayed until 1892, when Robert Kinnes, a shipowner in Dundee, Scotland, decided to send an expedition south.

Undertaking this expedition at considerable personal financial risk, Kinnes intended for it to be exclusively commercial, but he was persuaded by the Royal Geographical Society and Meteorological Office to appoint two medical officers with scientific training as well as an artist, after these organizations took responsibility for supplying scientific instruments and instructions. The expedition consisted of four ships: the 400-ton Balaena (Captain Alexander Fairweather), 340-ton Active (Captain Thomas Robertson), 340-ton Diana (Captain Robert Davidson), and 216-ton Polar Star (Captain
James Davidson). Bruce and the artist W. G. Burn Murdoch sailed in *Balaena*, and Dr. Charles W. Donald sailed in *Active*.

Although departure was delayed for two days because of difficulties in finding experienced crew, the expedition clearly aroused considerable local interest, and more than thirty lads were found as stowaways and had to be put ashore soon after the expedition’s departure from the Firth of Tay on 6 September 1892. Two other stowaways—William Brannan and Terrence M’Machon—escaped the initial search and were later taken on as regular crew, replacing men who jumped ship in the Falkland Islands.

Erebus and Terror Gulf, off the east coast of the Antarctic Peninsula, was reached on 23 December by *Balaena*, *Active*, and *Diana*, with the slower-sailing *Polar Star* joining the others on 9 January 1893. No right whales were seen and, equipped with outmoded whale-killing technology—muzzle-loading harpoon cannons, large-bore guns firing mushroom bullets, and rockets to fire at already harpooned whales—the expedition was incapable of hunting the many rorqual whales observed. When one fin whale was harpooned, it towed two whaleboats and their parent ship at high speed for fourteen hours before they were released by the line breaking. Indeed, no whales at all were killed, and the captains attempted to fill their holds by hunting crabeater seals on the ice and rendering them down to oil.

The naturalists had a very frustrating time. Bruce, on *Balaena*, never came within 6 miles of land, and Donald landed just once in Active Sound, where the relatively sympathetic Robertson allowed him to inspect a penguin colony. Bruce and Murdoch criticized *Balaena*’s captain, Fairweather, for his refusal to help their studies in any way. However, it should be remembered that Fairweather’s instructions were to ensure a commercial return and that Kinnes had stipulated that the expedition should limit its investigations to areas where Ross had reported right whales. Thus, the whalers were not to explore south of 65°S, west of 57°W, or east of 51°W.

Despite these restrictions, however, one discovery was made when Robertson, examining the southern coast of “Joinville Land,” entered an opening that he called the Firth of Tay to find a navigable channel through which he sailed on 6–8 January 1893. Active Sound separates Dundee Island from Joinville Island. Bruce was sufficiently impressed by Robertson to appoint him *Scotia*’s captain on his Antarctic expedition of 1902–1904. Both Bruce and Donald took photographs, and although Bruce’s were necessarily all taken some distance from land, Donald’s included a series of panoramic photographs of Active Sound.

Preceded by *Polar Star*, the three remaining ships sailed north toward the Falkland Islands on 24 February 1893, the much-relieved crew of *Balaena* cheering as Antarctica disappeared from view. It had not been a happy voyage, nor did it bring happiness on its return to Dundee to the out-of-pocket Robert Kinnes.

**See also:** Bruce, William Speirs (1902–1904); Bull, Henrik; Dundee Island; Larsen, Carl Anton (1892–1893, 1893–1894); Ross, James Clark (1839–1843); Whaling and Antarctic Exploration

**References and further reading:**


**Dundee Island (Antarctic Peninsula)**

Located at 63°30’S, 55°55’W, this island off the northern tip of the Antarctic Peninsula to the north of Antarctic Sound is separated from Joinville Island by Active Sound and the Firth of Tay, names denoting discovery by a Scottish expedition, though in this case it was discovery of insularity rather than first sighting. The island was first seen in 1842–1843 by James Clark Ross and regarded as merely a continuation of “Terre Joinville,” discovered by Jules Dumont d’Urville. However, on 5 January 1893, it was shown to constitute a separate island by Captain Thomas Robertson (*Active*), of the Dundee Antarctic Whaling Expedition, who named it for the expedition’s home port. It was in Active Sound that one of the expedition’s naturalists, Dr. Charles W. Donald took the first Antarctic photographs.

On 22 November 1935, Lincoln Ellsworth and Herbert Hollick-Kenyon took off from Dundee Island on the first transantarctic flight. From here they flew with four stops to the Bay of Whales, on the Ross Ice Shelf. Sir George Hubert Wilkins, who was assisting Ellsworth as adviser and expedition manager but who had previously attempted unsuccessfully to fly across Antarctica largely because he had been unable to find a suitable operating base, commented that if he had known about Dundee Island, he, rather than Ellsworth, would have been first to fly across the continent.

Petrel Cove, on the northeast, at the western tip of the island, has been the site of an Argentine station since 1952. Initially established as a refuge hut, in 1967 it was enlarged and formally opened as Estancion Aeronaval Petrel, being named Petrel after the operational codename. From 1967 to 1977, the station was manned throughout the year. Since 1977, it has been occupied on a temporary basis only.

**See also:** Antarctic Sound; Argentina; Dumont d’Urville, Jules; Dundee Antarctic Whaling Expedition; Ellsworth, Lincoln (1935–1936); Joinville Island; Ross, James Clark (1839–1843); Wilkins, George Hubert

**D’Urville Island (Antarctic Peninsula)**

Located at 63°05’S, 56°20’W, this island off the northern tip of the Antarctic Peninsula to the north of Antarctic Sound was roughly charted by Jules Dumont d’Urville on 27 February...
1838, who believed that it and Joinville Island formed one island, which he named “Terre Joinville.” Discovery of Larsen Channel in December 1902 by Otto Nordenskjöld’s Swedish Antarctic Expedition proved the existence of two islands rather than one, the channel being named for the captain of this expedition’s ship, Carl Anton Larsen.

See also: Antarctic Sound; Dumont d’Urville, Jules; Joinville Island; Larsen, Carl Anton; Nordenskjöld, Otto
East Siberian Sea (Arctic Ocean)

This sea marginal to the Arctic Ocean lies on the continental shelf north of Russia between the New Siberian Islands and Wrangel Island. It is connected to the Laptev Sea to its west through Dmitriy Laptev, Eterikan, and Sannikov Straits and to the Chukchi Sea to the east through Long Strait. At 360,000 square miles in extent, it is covered by ice throughout most of the year, particularly in the east.

Near the coast, an influx of warmer water from the Kolyma and Indigirka Rivers helps maintain more open water, permitting use by shipping. During the mid-seventeenth century, this route was much used following the discovery of the Kolyma in 1638. Annual convoys were organized, which sailed down the Lena River from Yakutsk and then east through the East Siberian Sea to trading settlements on the Yana, Indigirka, Kolyma, and other Rivers. The convoys ceased in the 1680s as sable populations were hunted out and the hunters moved south from the Arctic coast to the Kamchatka Peninsula and the rivers flowing into the Okhotsk Sea. By the time that the Great Northern Expedition was organized in the 1730s, knowledge of the northern waterway was so far forgotten that Dmitriy Laptev believed it impossible for any vessel to reach the Kolyma, until he was persuaded under duress from his superiors to make the attempt.

Adolf Erik Nordenskiöld and Otto Shmidt both experienced problems with the particularly heavy ice found in Long Sound and farther east, where a stream of ice from the New Siberian Islands joins that from Wrangel Island. It was ice there that prevented Nordenskiöld from completing his first transit of the Northeast Passage in a single season, and although Shmidt’s Sibiryakov did manage this feat, it was only after incurring very severe ice damage. Shmidt was less fortunate when attempting to repeat their voyage in Chelyushkin the next year. Forced to winter in the ice, it sank.

From the eighteenth century through the late 1930s, it was considered possible that much of this sea might be occupied by “Andreyev Land.” Numerous expeditions searched for it, including those of Mathias von Hedenström (1808–1811), Ferdinand von Wrangel (1820–1824), George De Long (1879–1881), and Boris Vil’kitskiy (1912 and 1914). Vilhjalmur Stefansson laid plans to look for it in the 1920s. The last serious investigation was mounted in 1934 by the Soviet icebreaker Krasin.

See also: Bear Islands; De Long, George; Hedenström, Mathias von; Laptev, Dmitriy; Nordenskiöld, Adolf Erik (1878–1880); Northeast Passage; Shmidt, Otto; Stefansson, Vilhjalmur; Vil’kitskiy, Boris; Wrangel, Ferdinand von

Eckener, Hugo

(1868–1954)

The German airship Graf Zeppelin conducted a highly successful demonstration flight in 1931, during which several largely unexplored archipelagoes in the Russian Arctic were photographed from the air for the first time. The expedition was led by the airship’s designer, Hugo Eckener.

The international Society Aeroarctic was founded in Berlin in 1924 to promote the exploration of the Arctic by means of airships. Fridtjof Nansen was its president from 1926 until his death in 1930. Society activities included publishing the journal Arctis and holding conferences at Berlin (1926) and Leningrad (1928). By 1931, there were 400 members in twenty-two countries. By the late 1920s, it was clear that airships and airplanes would revolutionize polar exploration. What was less evident was which form of air transport offered the greatest potential. The debate, of course, was not limited to polar exploration, but the Arctic and Antarctic did provide opportunity for spectacular flights demonstrating the advantages of one form over the other. They also offered the possibility of notorious disasters, and the cause of airships in the Arctic suffered a severe setback when Umberto Nobile’s airship Italia crashed returning from the North Pole in 1928. For supporters of the airship, however, it was an aberration. As against the airplane, the airship was relatively tried and tested and offered a stable platform from which a range of scientific and survey work could be conducted. It also had a much longer range, and repairs, when necessary, could be effected without having to land. It was these reasons that had made Roald Amundsen so eager to employ an airship rather than an airplane in his highly successful crossing of the Arctic Ocean in 1926.

As president of Aeroarctic, Nansen campaigned for the establishment of a scientific station in the central Arctic Ocean, set up and maintained by airships. The idea was in advance of its time, and nothing came of it. Eckener succeeded Nansen as president in 1930. He had no interest in drifting ice stations but was eager to mount an expedition to show off the advantages of the airships built by his company for Arctic research and thus counteract adverse publicity resulting from the Italia disaster. In 1929, he had circumnavigated the world in the famous Graf Zeppelin and he now planned a similarly newsworthy venture in the Arctic. Plans were underway to fly Nansen to the North Pole, but on his death they were revised to a survey flight across the Russian Arctic, much of which had yet to be fully explored, particularly the high Arctic archipelagoes of Franz Josef Land, Novaya Zemlya, and Severnaya Zemlya. The bulk
of the costs would be paid for by the governments of Germany and the Soviet Union.

**The Graf Zeppelin’s Flight over Arctic Russia, 1931**

At 235 meters long, and with a hydrogen gas capacity of 84,000 cubic meters, *Graf Zeppelin* was considerably larger than the Italian-built *Norge* and *Italia*. The airship had been constructed in 1928 with demonstration flights in mind and was capable of accommodating twenty passengers and a crew of forty. On this flight, forty-six were on board. Rudolf Samoylovich of the Arctic Institute of Leningrad led an international team of eight scientists, including Lincoln Ellsworth (geographer), Cl. Aschenbrenner (geodesist), and Ludwig Kohl-Larsen (zoologist). The radio operator was Ernst Krenkel, later one of four on the ice station North Pole 1 (see Papanin, Ivan). There were also three journalists, among them the subsequently well known Arthur Koestler. Although Eckener did not anticipate difficulties, he was mindful of what had befallen *Italia* and ensured that on board *Graf Zeppelin* were carried twelve four-man tents (all colored red and with sewn-in groundsheets), sleeping bags for everyone on board, twenty-three sledges, five boats, and a large store of emergency provisions. To ensure that the whole event attracted as much publicity as possible, initial plans included a rendezvous with the submarine *Nautilus* at the North Pole (see Wilkins, George Hubert). When it proved impossible to arrange, the schedule was revised to include an exchange of mail with a Soviet icebreaker in Franz Josef Land.

On 24 July 1931, *Graf Zeppelin* took off from Friedrichshafen, Germany, flying east at about 300 meters height. After a brief stop at Berlin, they arrived at Leningrad the next day. Departing from there at 8:00 A.M. on 26 July, they reached Archangel at 4:00 P.M., from where Eckener’s course took them almost due north above the White and Barents Seas. Dinner was being eaten as *Graf Zeppelin* crossed the Arctic Circle. At 2:45 A.M. the next morning, Franz Josef Land was in view. There they were to meet the icebreaker *Malynin*, which they could see below them making its way toward the Soviet meteorological station on Hooker Island. The mail was brought out in a boat, one of those on board being Nobile. As a reminder of past disasters, his presence was something of an embarrassment for Eckener, but the mail was exchanged—to fetch good prices from philatelists, no doubt, and recoup expedition expenses—and half an hour later, *Graf Zeppelin* was able to depart, not without first being nearly blown into nearby ice. The lack of appropriate mooring facilities in the Arctic presented an enduring difficulty for their operation here.

Eckener next took the airship above the western and northern islands of Franz Josef Land to conduct a photographic survey from 1,000 meters. *Graf Zeppelin* was equipped with two photogrammetric cameras. Geodesist Aschenbrenner had designed a panoramic camera with nine lenses, which was capable of capturing whatever could be seen as far as the horizon. The other was a double camera, taking photographs simultaneously in two directions. With the aid of these pictures, mapping of the three archipelagoes was considerably improved. At Franz Josef Land, for example, Eckener was now able to prove Frederick Jackson mistaken in reporting “Albert Edward” and “Harmsworth” islands west of Franz Josef. Neither exists. While the photogrammetric survey continued, other scientists busied themselves in sending up self-broadcasting radiosonde balloons, one of which ascended to 10,000 meters, where it recorded −40°C (−40°F).

Early in the morning of 28 July 1931, *Graf Zeppelin* left Franz Josef Land, heading east for Severnaya Zemlya. It had been discovered as recently as 1913, but at this date only the eastern and southern coasts were known. The exact extent west was unclear, though a four-man party led by Georgiy Ushakov was even now conducting a comprehensive land survey. Arriving there at 5:30 A.M., Eckener sought to photograph the west coast, which for the most part was unfortunately obscured by fog and cloud. He was, however, able to establish that at least one channel cut through it and therefore that it did not form a single landmass. Eckener’s photogrammetric results complemented Ushakov’s ground survey and represented his expedition’s most valuable contribution to knowledge of the Arctic.

*Graf Zeppelin* next followed the coast of the Taymyr Peninsula as far as Dikson before crossing the Kara Sea to the northeastern tip of Novaya Zemlya. Conditions were better than on the outward journey, and on his way south Eckener was able to photograph the east coast, another little-known region. At 3:00 A.M. on 30 July, *Graf Zeppelin* was over Leningrad, but Eckener continued on in expectation that bad weather was soon to set in. A number of passengers disembarked at Berlin, before he arrived back at Friedrichshafen at 4:00 A.M. on 31 July 1931, to once more attach *Graf Zeppelin* safely to its mooring-mast.

In six days, Eckener had flown more than 8,000 miles. In addition to the important photogrammetric results, his scientists had conducted an extensive program, including pioneering use of radiosondes. *Graf Zeppelin* had proved itself an eminently suitable scientific platform, especially for magnetic, meteorological, and photographic work. Eckener remained president of Aeroarctic until 1937, when the society was dissolved. Despite the success of his expedition, elsewhere airships were subject to a series of disasters: The British R101 crashed and exploded in 1930, high winds led to the loss of the U.S. dirigibles *Acron* and *Macon* in 1935, and in 1937 the German *Hindenburg* blew up. During World War II, airplane technology advanced so rapidly that only enthusiasts retained an interest in airships thereafter.

*See also:* Airships; Amundsen, Roald (1926); Ellsworth, Lincoln; Franz Josef Land; Jackson, Frederick (1894–1897); Nansen, Fridtjof; Nobile, Umberto; Novaya Zemlya; Papanin, Ivan; Samoylovich, Rudolf; Severnaya Zemlya; Ushakov, Georgiy (1930–1932); Wilkins, George Hubert (1931)
Edward VII Land

This peninsula of Marie Byrd Land forms the eastern termination of the Ross Ice Shelf, and its northernmost point, Cape Colbeck, marks the eastern margin of the Ross Sea. Edward VII Land was discovered by Robert Falcon Scott on 30 January 1902. It was next visited by Ernest Shackleton in January 1908, when he searched in vain for a suitable wintering site before being forced to break his promise to Scott and winter instead on Ross Island. Dense pack ice had prevented Shackleton exploring west of 162°14’W, and dense ice also

References and further reading:

Ecuador

The least known of Antarctic territorial claims was put forward by the Constitutional Assembly of Ecuador, which passed a motion on 27 February 1967 laying claim to “Territorio Ecuatoriano Antártico”, a sector extending to the South Pole between 84°30’ and 96°30’ W. This claim was not supported by the Ecuadorian government. Corresponding to the meridians occupied by the Galapagos Islands and their surrounding territorial waters, the claim overlapped with that of Chile—between 53° and 90° W—and would have taken in parts of Marie Byrd and Ellsworth Lands, both previously claimed for the United States.

Ecuador ratified the Antarctic Treaty on 15 September 1987 and achieved consultative status on 19 November 1990. The first expeditions, from 1987 to 1991, were undertaken by the Ecuadorean navy, which established a refuge hut, República del Ecuador, in 1988 at Hennequin Point on King George Island and opened the summer station Pedro Vicente Maldonado on Greenwich Island in March 1990. Scientific expeditions began with the opening of this station and have continued most years since, with logistical support provided by Chile.

See also: Chile; Ellsworth Land; Greenwich Island; King George Island; Marie Byrd Land

Edge Island (Svalbard)

Located at 77°40’N, 22°30’ E, at 1,942 square miles, Edge Island is the third-largest in the Svalbard Archipelago, measuring some 60 miles north-south and 47 miles east-west. Although possibly first sighted in 1613 by the English whaler Thomas Marmaduke, it was more likely not seen until the following year by the Dutchman Joris Carolus, who was exploring on behalf of Noordsche Compagnie, or else two years later by an English expedition led by Thomas Edge (ca. 1588–1624), for whom the island is named. On this occasion, the first landing probably took place from a pinnacle, whose crew killed 1,000 walruses here. The official Norwegian name is Edgeøya.

Though clearly not the first such expedition, the earliest detailed account of a Pomor hunting expedition to Svalbard describes how four men from Archangel—Aleksey Khimkov, Ivan Khimkov, Stepan Shchipachev, and Fedor Verigin—were marooned on this island from 1743 to 1749. Landing to check out the suitability of an existing hut as a wintering site, these four were separated from their vessel when ice forced it unexpectedly out to sea. With all their equipment on the ship, they managed to survive for six years by hunting reindeer, bears, and foxes with improvised weapons and keeping off the effects of scurvy by drinking reindeer blood. Verigin refused to drink blood and died of scurvy shortly before the others were rescued by a Russian vessel driven off course by a storm. A number of Pomor hunters’ huts survive on Edge Island, some possibly dating from as early as the sixteenth century. The huts were usually occupied for one year only, and the island continued to attract Russian hunters until the first decades of the nineteenth century.

Norwegian hunters started coming here soon after 1800, and Balthasar Keilhau observed many huts on Edge Island in 1827, when he visited the island to make geological, botanical, and other studies. In 1847, the walrus hunter E. Lund made the first documented voyage through Freeman Strait, between Edge and Barents Islands.

Scientific expeditions visiting the island in the nineteenth century include those of Adolf Erik Nordenskiöld, briefly in August 1864; Willy Kükenthal and Alfred Walter, whose ship Berentine was wrecked near King Ludvig Island off the south coast on 11 June 1889; and the Russian/Swedish Arc of Meridian Expedition in 1899–1900, which conducted a full program of geodetic and astronomical research, with stations at Cape Lee and Whales Point.

When the expedition led by Gino Watkins arrived here in 1927, the coast was well-known but not the interior. Watkins’s traverses, made in the course of an outline topographic survey, are the first documented. The expedition also conducted useful geological, zoological, and botanical studies. The first aerial photographic survey was organized in 1936 by Norwegian Svalbard Expeditions (see Hoel, Adolf). Scientists from the Norwegian Polar Institute have conducted research since 1948.

See also: Hoel, Adolf; Nordenskiöld, Adolf Erik (1864); Pomor Contribution to Arctic Exploration; Svalbard; Watkins, Gino (1927); Whaling and Arctic Exploration

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predicted Victor Campbell’s Eastern Party of Scott’s second expedition in February 1911 from making their planned survey of this region. Kristian Prestrud led the first exploring party, sledging from Framheim on the Bay of Whales in November 1911, at the same time as his expedition leader Roald Amundsen was making his historic journey to the South Pole. In January of the following year, Kaiman Maru, of Nobu Shirase’s expedition, managed to find an anchorage in Sulzberger Bay (76°56’S, 155°55’W). Two shore parties were landed, one of which succeeded in reaching the foothills of the Alexandra Mountains. On his first significant flight east from Little America, Richard Byrd discovered the Rockefeller Mountains on 27 January 1929. Soon afterward, a party of three led by Byrd’s second-in-command, Laurence Gould, was marooned here for several days when their aircraft was lifted into the air and smashed in a storm. For later expeditions, the Rockefeller Mountains were to provide a convenient place to establish depots of food and aviation fuel in support of sledging parties traveling from the Bay of Whales on their way to work farther east in Marie Byrd Land. Additional geological studies were conducted during the U.S. Antarctic Service Expedition in November and December 1940 (see Siple, Paul), and a meteorological station was briefly maintained on an island in Sulzberger Bay (76°56’S, 155°55’W). Two shore parties were landed, one of which succeeded in reaching the foothills of the Alexandra Mountains. On his first significant flight east from Little America, Richard Byrd discovered the Rockefeller Mountains on 27 January 1929. Soon afterward, a party of three led by Byrd’s second-in-command, Laurence Gould, was marooned here for several days when their aircraft was lifted into the air and smashed in a storm. For later expeditions, the Rockefeller Mountains were to provide a convenient place to establish depots of food and aviation fuel in support of sledging parties traveling from the Bay of Whales on their way to work farther east in Marie Byrd Land. Additional geological studies were conducted during the U.S. Antarctic Service Expedition in November and December 1940 (see Siple, Paul), and a meteorological station was briefly maintained here in 1947 during Operation Highjump, providing weather forecasts to assist air operations based at Little America IV.

See also: Amundsen, Roald (1910–1912); Byrd, Richard (1928–1930); Campbell, Victor; Gould, Laurence; Marie Byrd Land; Operation Highjump; Ross Ice Shelf; Ross Sea; Scott, Robert Falcon; Shackleton, Ernest (1907–1909); Shirase, Nobu; Siple, Paul (1940–1941)

Egede, Hans

(1686–1758)

The Norwegian-born Hans Egede was the founder of the Lutheran mission to Greenland. In addition to his pastoral work, he carried out extensive explorations of the then little known coast of West Greenland.

After a spate of voyages organized early in the seventeenth century by King Christian IV of Denmark to look for the long-lost Norse colonies founded by Erik the Red, Greenland was largely ignored by European explorers. The Englishman James Hall led an expedition there in 1612 to a supposed silver mine discovered during John Cunningham’s expedition of 1605, and as early as 1614 Dutch whalers were reported to have investigated whaling possibilities off the west coast, but regular visits by Dutch whalers did not begin until the first decade of the eighteenth century. The joint kingdom of Denmark and Norway did not forget its historic connection with Greenland, but the sporadic attempts made to resume regular intercourse all proved short-lived. Henrik Müller of the Danish Customs Department sponsored three trading expeditions by David Dannell in 1652, 1653, and 1654. Dannell reached as far north as 67°58’N on the west coast near Agto. He also made several determined attempts to land on the east coast, but like so many others was unable to penetrate the stream of ice borne south by the East Greenland Current. Dannell’s cargo of narwhal tusks, fish, and skins obtained by trade with the Inuit was insufficient to make these voyages profitable, and their lack of success meant that few more were attempted until 1708, when a merchant from Bergen, Norway, Hans Mathias, initiated a series of annual trading voyages to West Greenland.

With their cargoes of skins and blubber, these voyages proved no more profitable than their predecessors but did significantly influence the career of the young Norwegian pastor Hans Poulsen Egede in that one of those visiting Greenland was Egede’s brother-in-law, Niels Rasch. His account of a benighted people who lived in ignorance of the Christian God inspired Egede to believe that his true life’s work lay not with his parishioners of Vågan in northern Norway but as a missionary to Greenland. His particular hope was to rediscover the Norse settlers, who were believed to have long forsaken Christianity for abject paganism, and he believed that the natives encountered by Rasch and others in West Greenland were of mixed Norse and Inuit descent.

For ten years, Egede sought permission to establish the Greenland mission. First applying to the bishops of Bergen and Trondheim and then to King Frederick IV, in 1718 he determined to leave his parish rather than abandon his dream and moved to Bergen, where he had highest hopes of finding merchants prepared to sponsor a trading settlement to which his mission might be attached. It was from this port in southern Norway that the annual voyages to the Norse colonies had departed, and memories remained of the valuable goods brought back—white falcons, walrus tusks, narwhal horns, smoked salmon, and so on. They were luxury products, and restoration of such trade could bring wealth to many. The problem was that memories were fresher of the many recent loss-making voyages to Greenland, and it was only after the king intervened to arrange a meeting to discuss Egede’s proposal that eight merchants were finally persuaded to come together to form the Bergen Greenland Company.

The Foundation of the Greenland Mission, 1721–1736

On 12 May 1721, Egede set out accompanied by his wife, Gertrud, and four children in the company’s recently acquired vessels Haabet (Hope) and Anna Christine. Rasch had suggested that the best place for the mission was likely to be about 64°N, near the vicinity of present-day Nuuk, where conditions similar to those in Norway might be anticipated. Egede hoped to grow barley; graze cattle, goats, and sheep; and otherwise supplement the provisions brought annually from Norway by hunting and fishing. Rounding Cape Farewell on 4 June, they were soon afterward beset in pack ice. Not until 3 July did Egede reach his intended destination, landing on an island on the north side of the entrance to Godthåbsfjord. Naming this island “Hope Island”—now Iglulituerinertit (the place from which the houses have been removed)—there he built his
intended home, a hut 16 meters long and 5 meters wide. It was designed to accommodate thirty-seven and included a separate room for Egede and his family. On 21 July Anna Christine departed, obtaining nothing at all from the local Inuit, who had already exchanged what they wanted that year with Dutch whalers. It returned to Bergen with just half a barrel of blubber purchased from Inuit farther south.

Hope Island was far from an ideal site for the mission. Battered by storms and frequently shrouded in fog, it was sparsely vegetated and so damp that peat turves could barely be dried sufficiently for use as fuel. As soon as the hut was ready, Egede set out in Haabet to explore for a better location, in the process coming into frequent contact with parties of Inuit, with whom good relations were soon established. When it became apparent that these newcomers intended to remain through the winter, however, the Inuit first descended on the island en masse to try to persuade them to leave and then decided that the best way to deal with their uninvited visitors was to keep well away from them. This did not help Egede and his companions to survive what proved to be a hard winter, made worse by the poor trading and lack of success of the hunting parties. Scurvy broke out, and Egede was almost persuaded to return home before the arrival of the supply ship on 8 June 1722 changed his mind. Haabet returned to Bergen with its pitiful cargo of blubber, fox, and sealskins, reducing the Bergen Greenland Company to near-bankruptcy. Egede and his family remained behind, together with just eight others.

The following spring and summer Egede continued his explorations. In addition to looking for a better location, he was seeking traces of the Western and Eastern Norse Settlements and indeed succeeded in finding a relic from the Western Settlement in a ruined stone house at Pisagsarfik during his thorough exploration of the complex of fjords in the vicinity of Godthåbjord. On 9 August 1723, he set out with two boats on a major voyage to the south. Believing that the Eastern Settlement was to be found on the east coast, he hoped to reach this coast by means of Frobisher Strait, which his map showed as a channel extending east to the sea, and it became clear that reaching the east coast would be much more difficult than the overland hike of at most 16 miles depicted on his map. Indeed, Frobisher Strait is not to be found in Greenland at all but on the southwestern coast of Baffin Island. Martin Frobisher’s explorations in the 1570s were misplaced as the result of a series of cartographic misunderstandings, which were not finally corrected until the nineteenth century. With his provisions running low, Egede turned back on 26 August. Following the route inside the skerries, ironically he did now discover traces of the eastern settlement, becoming the first European to see and describe the ruined church at Qaqortoq, as well as inspecting other remains at Irigítut and Kvanefjord. So certain, however, was he that the Eastern Settlement lay on the east coast that he assigned these finds to its western counterpart. Hope Island was reached on 13 September.

In late February 1724, during the coldest part of the winter, Egede set out again, accompanied by twenty-two men in two boats. This time he headed north past Manitsqoq and then northeast before penetrating inland to the head on a long fiord at Kangerdlugssuatsiaq. Here he was close to the Inland Ice. Strong northerly winds and heavy snow determined his decision to return on 16 March.

Egede’s extensive travels, during which he had seen many signs of past Norse occupation, convinced him that he had now explored the entire extent of the Western Settlement. He remained convinced, however, that the Eastern Settlement had yet to be reached. These conclusions prompted the Bergen Greenland Company to instruct one of its ships, Egte Sophia, to follow the ancient Norse sailing route to Greenland, hoping by this means to make a landing on the east coast. Hans Faæster, the captain, was to inspect every fiord and harbor, to discover from local inhabitants where the churches and cathedrals were to be found, and to learn whatever he could of the inhabitants, who were believed to be of pure Norse descent. Anticipating that they would speak Old Norse, Faæster was given very basic instruction in this language. Egte Sophia was no more able to reach East Greenland than earlier expeditions but did return with a good cargo of blubber and sealskins.

When Egede learned of Egte Sophia’s failure, he proposed that the company establish a settlement at 61°N to serve as a base from which further exploration to the east could be attempted, either overland and across the Inland Ice, or else by following the coast round Cape Farewell. His suggestion was not taken up until 1742, when Frederikshåb (Pâmiut) was founded. From there, in 1751, Lars Dalager made the first extended journey by Europeans over the Inland Ice, the first brief sortie having been made from Godthåb by Claus Paars in 1729. It was to Godthåb (Good Hope)—today Nuuk—that the captain attempted that year with Dutch whalers. It returned to Bergen with just half a barrel of blubber and sealskins. It had already exchanged what they wanted that year with Dutch whalers. It returned to Bergen with just half a barrel of blubber and sealskins.

Eglinton Island (Canada)

Located at 76°00‘N, 118°00‘W, this member of the Parry Islands lies between Prince Patrick and Melville Islands,
Eglinton Island is inaccessible by sea throughout the year to all but powerful icebreakers.

See also: Bernier, Joseph-Elzéar; Franklin Search Expeditions; Kellett, Henry (1852–1854); Parry Islands

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Elephant Island (South Shetland Islands)

Famous as the site of the enforced wintering in 1916 by twenty-two members of Shackleton’s 1914–1917 expedition under the leadership of Frank Wild, Elephant Island is one of the bleakest and most precipitous of the South Shetland Islands. Located at 61°10’S and 55°14’W, it is 24 miles long and 12 miles at its widest. It was discovered and roughly charted by Edward Bransfield in early February 1820, being further charted in February 1821 by Fabian von Bellinghausen, who called it “Mordvinov Island,” for Admiral Mordvinov of the Imperial Russian Navy. The present name was originally “Sea Elephant Island” and was given by the English sealer Robert Fildes after the many elephant seals seen here in 1820–1821. In the following season, both Nathaniel Palmer and George Powell were known to have landed shore parties, and it was from Elephant Island that they commenced their cruise together, which resulted in the discovery of the South Orkney Islands on 6 February 1821. Between 22 and 26 January 1830, Jeremiah Reynolds and two boats from the Palmer-Pendleton expedition (1829–1831) were temporarily marooned here. Camping under their upturned boats, they investigated what they could of the very rugged coast while waiting for conditions to improve so that they could be picked up.

The next recorded landing was made by Sir Ernest Shackleton at Cape Valentine on 15 April 1916, Elephant Island being the first land reached by the expedition after the sinking of Endurance, which had been crushed in the ice of the Weddell

Launching the boat for the relief journey (Scott Polar Research Institute)
Sea and abandoned at $69^\circ 5'\text{S}, 51^\circ 30'\text{W}$. Since it was clear that nowhere on Cape Valentine was safe from high tides and the danger of rocks falling from the beetling cliffs above, the party transferred their camp on 17 April to Point Wild, where Frank Wild had discovered a safer site. From here on 24 April, Shackleton embarked with five others in the James Caird on his epic voyage to South Georgia. The remaining twenty-two men, under Wild's leadership, endured increasingly hostile conditions in a hut constructed out of two upturned boats laid on top of stone walls abutting boulders, with tent and sail material strapped across the top. Penguin and seal provided a monotonous and barely adequate diet, with occasional treats from the surviving ship stores arranged by Wild to maintain morale. Wild set great store by morale, and the party was never allowed to lose heart. Each day began with Wild's cheery announcement, “Lash up and stow! The Boss may come today,” and not uncommonly ended with sea shanties sung to the accompaniment of Leonard Hussey's banjo. As plans were laid for a desperate attempt to reach Deception Island, the Chilean ship Yelcho was sighted on 30 August. Shackleton had returned, and the 105-day ordeal was over.

In March 1922, the Shackleton-Rowett expedition led by Wild effected landings at Cape Lookout and Minstrel Bay, revisiting sites with haunting memories for the many survivors aboard from the Endurance expedition. Wild was naturally particularly eager to land at Point Wild but was prevented from doing so by heavy surf.

Subsequent visits have been relatively few, the island being both difficult to land on and with an all but inaccessible interior. Brief landings are recorded by small British, Argentine, Chilean, and U.S. parties, but the next extended visit did not take place until 1970, when a British Joint Services expedition led by Malcolm Burley carried out a wide range of topographic and other studies from 6 December 1970 to 27 March 1971 and achieved a number of first ascents, including Mount Pen-...
is 500 miles long and 300 miles wide and has an area of 75,767 square miles. The island was named in 1852 by Edward Inglefield for Francis Leveson-Gower, first earl of Ellesmere (1800–1857), then president of the Royal Geographical Society. Much of the interior is rugged, with mountains rising to 2,603 meters, and there are several ice caps. At 83°07'N, Cape Aldrich is the northernmost point of Canada. Ellesmere Island is 533 nautical miles from the North Pole. Only North Greenland is closer.

Long colonized by the Inuit and probably visited by at least one Norse expedition, the first European explorers to see it were William Baffin and Robert Bylot in 1616. They recorded landing near Jones Sound in 1616, but it is not known whether they landed here or on Coburg or Devon Islands. Ellesmere was next seen in 1817 by those aboard Larks and Elizabeth, when they discovered the rich whaling grounds of the North Water polynya. John Ross followed in 1818. The first certain landing was made in 1849 on the south coast by the whaler John Gravill. In addition to giving the island itself its name, Edward Inglefield also named Victoria Head, Cape Albert, and Cape Sabine in 1852, when he sailed to 78°28'N through Smith Sound.

Elisha Kent Kane referred to Ellesmere as “Grinnell Land,” a name today reserved for that part of the island first explored during his expedition by Isaac Hayes and William Godfrey, who sledged in 1854 from Cape Sabine to Cape Frazer at 79°45'N. In 1861, Hayes claimed to have reached 81°35'N, in which case he should have reached Lady Franklin Bay. Since this is not apparent from his account, it is widely believed that he went less far, and probably no farther than 80°14'N. Grant Land was seen but not explored by Charles Francis Hall in 1871.

Exploration of northern Ellesmere was begun by George Nares. In 1875–1876, HMS Alert wintered at Cape Sheridan and HMS Discovery in Lady Franklin Bay. A sledging party led by Pelham Aldrich charted 250 miles of the north coast, getting as far as Alert Point. Others explored the vicinity of Lady Franklin Bay, where Conybeare and Archer fiords were discovered. The U.S. Army officer, Henry W. Howgate, initially obtained the backing of the U.S. Congress to establish a temporary colony in Lady Franklin Bay, from where he planned to make an attempt on the Pole. Support was subsequently withdrawn and the project dropped. Howgate’s plans, however, did result in Lady Franklin Bay being chosen as the site of the U.S. International Polar Year station, which was maintained from 1881 to 1883 by the expedition led by Adolphus Greely. Although primarily concerned with scientific observations at the station, Greely’s men also undertook several important exploratory journeys. Greely himself discovered Lake Hazen in 1882, and James Lockwood became the first explorer to reach the west coast, when he crossed from Archer Fiord to discover Greely Fiord in 1883. For an account of how Greely came to consider it necessary to lead his men south to winter at Cape Sabine, where many of them starved, see the entry under his name.

The south and west coasts were first explored by Otto Sverdrup between 1898 and 1902. Wintering near Cape Sabine at Fram Haven, in 1899 Sverdrup crossed to Bay Fiord on the west coast from Blagler Bay, a route subsequently used by many expeditions and known subsequently as the “Sverdrup Pass.” At the same time, Gunnar Isachsen sledged across the Prince of Wales Ice Cap from Leffert Glacier to the vicinity of Strathcona Fiord. The next three winters were spent on the south coast in Jones Sound at Harbour Fiord (1899–1900) and Goose Fiord (1900–1902). In 1901, Sverdrup sledged along the south coast and north through Hell Gate to explore the west coast as far as Greely Fiord. Victor Baumann simultaneously investigated the Baumann Fiord area, while Ivar Fosheim and Oluf Raanes examined Cañon Fiord. In the next year, Sverdrup extended his explorations beyond Greely Fiord to the Keybolte Peninsula.

Although Robert Peary spent a considerable time on Ellesmere between 1898 and 1909, in comparison with his major discoveries in North Greenland, he contributed little to knowledge of its geography, apart from one journey in 1906. Peary’s single aim at this time was to reach the North Pole, and his many winterings on the island were all made for this purpose: Cape D’Urville (1898–1899), Fort Conger (1899–1900), Cape Sabine (1901–1902), and Cape Sheridan (1905–1906, 1908–1909). On return from a claimed farthest north in 1906, Peary made his one significant exploring journey, traveling along the north and northwest coasts of Ellesmere between Yelverton Bay (Aldrich’s farthest west) and the Keybolte Peninsula (Sverdrup’s farthest north).

Peary’s journey completed outline knowledge of the island’s coastline, though much remained to be learned concerning the extent and branches of some of the longer fiords. The next contribution was made in 1915 by Walter Ekblaw on the expedition led by Donald MacMillan. During an extended survey of the Greely Fiord region, Ekblaw discovered Borup and Tanquary Fiords and the Osborn Mountains. Two years later, MacMillan made the first land-based survey of the southeastern region between Cape Sabine and Clarence Head.

Although these are the major expeditions, reference should also be made to others visiting Ellesmere Island in the first decades of the twentieth century. From 1899 to 1901, Robert Stein wintered at Fort Magnesia near Cape Sabine. He had planned to explore the west coast but was forestalled by Sverdrup. In 1904, Albert Low landed briefly at Cape Sabine to take possession of the island for Canada. Frederick Cook crossed from Greenland via Sverdrup Pass in 1908 on his claimed way to the Pole. Less well-known is Godfred Hansen’s remarkable journey along the east and north coasts in 1920 to lay depots for Roald Amundsen’s planned voyage across the Arctic Ocean. Hansen left caches at Fort Conger, Cape Columbia, and Cape Richardson. Knowledge of the northern interior was extended during 1934–1935 by the Oxford University Expedition, led by Dr. Noel Humphreys. Harry Stallworthy and A. W. Moore made
the first ascent of Mount Oxford, climbing to 2,210 meters in the mountains northwest of Lake Hazen, while Humphreys and David Haig-Thomas crossed the watershed between Bay and Vendom Fiords. Haig-Thomas led an expedition of his own two years later, during which John Wright and Richard Hamilton improved on MacMillan's survey of southeastern Ellesmere. Further explorations were conducted by the Danish Thule and Ellesmere Land Expedition in 1939–1940. Despite having the misfortune to have its promising investigations cut short by the outbreak of World War II, this expedition nevertheless accomplished the first detailed investigations of the west coast since Sverdrup's travels there.

As elsewhere in the Canadian Arctic, an important role was performed by the Royal Canadian Mounted Police. Craig Harbour on the south coast was established by Joseph-Elzéar Bernier in 1922. Bache Peninsula, on Flagler Bay, was opened in 1926 as a direct response to MacMillan's refusal to apply for permits to explore Canadian territory in 1925. The station was also well-placed to control Inuit hunting parties from North Greenland, muskoxen being a protected species under Canadian law since 1917. Lengthy patrols were conducted from both posts, with Stallworthy's search for the missing expedition of Hans Krüger in 1932 particularly noteworthy (see under Axel Heiberg Island). Craig Harbour was open intermittently—1922–1926, 1933–1940, 1951–1956—until it was replaced by Grise Fiord. Bache Peninsula closed in 1933. Alexandra Fiord was opened opposite Bache Peninsula in 1953. Grise Fiord. Bache Peninsula closed in 1933. Alexandra Fiord 1922–1926, 1933–1940, 1951–1956—until it was replaced by Heiberg Island). Craig Harbour was open intermittently—1922–1926, 1933–1940, 1951–1956—until it was replaced by Grise Fiord. Bache Peninsula closed in 1933. Alexandra Fiord was opened opposite Bache Peninsula in 1953.

During Operation Nanook, meteorological stations were established in 1947 at Eureka (79°59'N, 85°56'W) in Tanquary Fiord and in 1950 at Alert (82°30'N, 62°20'W) at Cape Sheridan. Equipped with landing strips, they have since served as logistical centers for a number of expeditions—particularly adventurers attempting to reach the North Pole, whose preferred departure point from North America is the Ward Hunt Ice Shelf, one of a series of ice shelves first investigated by Geoffrey Hattersley-Smith and R. G. Blackadar in 1953. Ice shelves fringe a large proportion of Antarctica's coastline, but in the Arctic they are found uniquely off Ellesmere. Hattersley-Smith later led many other expeditions to the island, including a Canadian International Geophysical Year expedition (1957–1958) and its successor Operation Hazen (1959–1961), during which wide-ranging studies were conducted of Lake Hazen and its surrounding region, and Operation Tanquary (1962–1970), which carried out a similar program from a field station near the head of Tanquary Fiord.

See also: Adventurers; Bernier, Joseph-Elzéar (1922–1925); Cook, Frederick (1907–1909); Greely, Adolphus; Hall, Charles Francis (1871–1873); Hayes, Isaac; International Geophysical Year; International Polar Years; Kane, Elisha Kent; Low, Albert; MacMillan, Donald (1913–1917, 1925); Nares, George (1875–1876); Nares Strait; Peary, Robert; Queen Elizabeth Islands; Sverdrup, Otto (1898–1902)

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Ellsworth Land (Antarctica)
Ellsworth Land forms an extensive region of West Antarctica, stretching east from Marie Byrd Land, with the Bellingshausen Sea to the north, the Antarctic Peninsula to the northeast, and the Ronne Ice Shelf to the west. This region was discovered by Lincoln Ellsworth and Herbert Hollick-Kenyon during the first transcontinental flight from the tip of the Antarctic Peninsula to the Bay of Whales, 22 November to 5 December 1935. Landing at 79°12'S, 104°10'W, Ellsworth claimed the area for the United States and named it “James W. Ellsworth Land” for his father.

Ellsworth's sighting apart, it was one of the very last areas of Antarctica to be explored. The Eights Coast on the Bellingshausen Sea was only discovered from the air in February 1940 by Richard Byrd; previous attempts to get close to this coast had been thwarted by the customarily heavy ice pack. Much of Ellsworth Land remained unexplored by air or land until late in the 1950s and 1960s.

On his 1935 flight, Ellsworth noted numerous ranges of mountains, among them an apparently small but very high range some way east of his flight path. Naming it the Sentinel Range, he estimated the height of its highest mountains at 4,000 meters and named the highest of these Mount Mary Louise Ulmer for his wife. Now known simply as Mount Ulmer, this mountain is in fact just 2,775 meters—altitudes are difficult to estimate from the air—but nearby mountains, hidden in cloud, did indeed rise to over 4,000 meters, and the range only appeared small because he saw it end on. In fact, it extends for 200 miles. Antarctica's highest mountain, the Vinson Massif (4,897 meters)—78°35'S, 85°25'W—remained undiscovered until January 1958 when it was seen during a flight from Byrd Station in Marie Byrd Land.

The Sentinel Range and the Heritage Range to its south together form the Ellsworth Mountains. Situated southwest of the Ronne Ice Shelf, these mountains occupy a position in some ways analogous to the Transantarctic Mountains south of the Ross Ice Shelf, ponding back the high ice plateau and concentrating the flow of ice through the massive Minnesota Glacier that separates the two ranges. The first ground survey of the Sentinel Range was made in January 1958 by a party led by Charles R. Bentley, which had traveled overland from Byrd Station.

The eastern margin of Ellsworth Land is marked by the Pensacola Mountains, an isolated extension of the Transantarctic Mountains rising to 2,135 meters. This range was first seen by a U.S. plane on 13 January 1956 during a nonstop recon-

The U.S. Antarctic program has conducted the great majority of work in this region, and such other studies as have been made by other nationals have generally been in collaboration with U.S. parties. They have worked out of Byrd Station and two stations located in Ellsworth Land—Eights (formerly Sky-Hi), 1962–1965 at 75°14'S, 77°10'W, and Siple, 1969–1991, at 75°56'S, 84°14'W.

The presence of Antarctica's highest mountains has attracted numerous mountaineering expeditions. Vinson Massif was first climbed on 20 December 1966 by a U.S. party led by Nicholas Clinch. Organized by the American Alpine Club with support from the National Geographic Society and U.S. Navy, the latter making it one of very few mountaineering expeditions to Antarctica to receive government support, this expedition also achieved first ascents of Mount Tyree (4,852 meters), Mount Shinn (4,660 meters), and Mount Gardner (4,587 meters), as well as several other peaks in the Sentinel Range. In November 1987, a Canadian-registered private company, Adventure Network International (ANI), established a camp in the Patriot Hills (80°19'S, 81°20'W). Extensive nearby blue ice—that is, areas where snow does not accumulate, leaving just hard bare ice—provides a landing strip where wheeled aircraft can land, bringing parties of mountaineers and other adventurers. Patriot Hills is the only private camp and air facility on the Antarctic continent.

See also: Adventurers; Byrd, Richard (1939–1941); Ellsworth, Lincoln (1935–1936); United States

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Ellsworth, Lincoln

(1880–1951)

Those who visit the American Museum of Natural History in New York will see a case of curiosities commemorating the achievements of Lincoln Ellsworth, millionaire and pioneer polar aviator. Among sponsors of polar expeditions, Ellsworth was unique in insisting on being also a participant, collaborating with Roald Amundsen in flights toward and over the North Pole in 1925 and 1926; with Sir Hubert Wilkins in the latter's abortive attempt to explore the Arctic Ocean in a submarine; and, most significantly, in leading four expeditions to Antarctica, during which he eventually achieved his great ambition of being first to fly across the continent.

The son of a very wealthy industrialist with mining interests, it was not until he was forty-four years old that Lincoln Ellsworth began his career as a polar explorer, when he was persuaded to join Roald Amundsen in an attempt to make the first flight to the North Pole. Amundsen needed a sponsor, but James W. Ellsworth, Lincoln's father, was still hopeful that his son would at last join him in the family business. Surprisingly, however, he took to Amundsen and imposed only one condition on his son: he was to give up tobacco. The story of this expedition and its successor—the flight in the airship Norge over the North Pole—are told under Amundsen's name. These expeditions over, Ellsworth believed that he had exorcized the polar bug and instead devoted himself to collecting fossils in Labrador and the Grand Canyon. In 1931, however, his interest was revived when he was invited to participate as Arctic navigation expert on Hugo Eckener's flight through the Soviet Arctic in the airship Graf Zeppelin, as well as by collaboration with Sir Hubert Wilkins in an unsuccessful attempt to take a submarine under the sea ice north of Spitsbergen (see Wilkins, George Hubert).

An Ice Cataclysm Ends Preparations for the First Transantarctic Flight, 1933–1934

Close collaboration with Wilkins led to discussion of the enormous but as yet unrealized potential of airplanes for exploring the still essentially unknown interior of Antarctica. One goal, in particular, attracted them both: to make the first transcontinental flight. A flight from the Bay of Whales on the Ross Sea coast to the Weddell Sea coast would accomplish a number of important objectives. It should be possible to establish whether these two seas were connected, thus splitting Antarctica in two, a question that Sir Ernest Shackleton, among others, had been unable to resolve. It might also be possible to confirm whether the Queen Maud Mountains, discovered by Amundsen in 1911 and clearly a continuation of the mountains found in Victoria Land, were themselves continued by other mountains to the Antarctic Peninsula. If so, a more or less continuous mountain range would encircle the Earth from Alaska southward, through the Rockies and Andes, and then across Antarctica. Clearly, this was a flight worth making but one that in Ellsworth's initial plan involved considerable risks, since it relied on his plane being able to fly 3,400 miles round trip in order to take off and land at the Bay of Whales. If the plane was forced down anywhere and unable to continue, the crew would almost certainly be too far from potential rescuers to reach safety.

The key members of Ellsworth's team were expedition organizer Wilkins, who had made the first Antarctic flight in 1928 and had himself nursed hopes of flying across Antarctica, and chief pilot Bernt Balchen, who had piloted Richard Byrd's first flight to the South Pole. Wilkins was responsible for selection and purchase in Norway of a strongly-built 400-ton wooden fishing vessel, renamed Wyatt Earp after the famous frontier marshal of the American West and a particular hero of Ellsworth, with whose spirit he wished to enthuse all mem-
bers of his expedition. Northrop Corporation was commissioned to construct a specially built all-metal, low-wing monoplane powered by a Wasp 600-horsepower engine, the first plane built by Northrop and the prototype for its highly successful Gamma class. Named Polar Star, it had a top speed of 230 miles per hour but could reduce its landing speed to 42 miles per hour, using a system of flaps. The low wings were an advantage for polar conditions in that it was necessary to dig only a shallow trench for the body of the plane for the wings to rest on the snow. So stored and with snow heaped on top, a plane could be secured firmly against the strongest winds. Polar Star’s greatest asset, however, was its enormous range when fully loaded—7,000 miles—the greatest of any contemporary airplane.

On 10 December 1933 Wyatt Earp set out from Dunedin, New Zealand, for Antarctica and the Bay of Whales, which it reached on 9 January 1934 after a slow twenty-two-day passage through the pack ice surrounding the open water of the Ross Sea. Polar Star was next lowered onto the bay ice beside the ship. Three days later Ellsworth and Balchen made a successful short trial flight, heading due south along the route taken by Amundsen toward the South Pole. With everything working perfectly, Ellsworth was ready to attempt the transcontinental flight the next morning, but it was not to be. At 4:00 a.m., loud cracks and thunder rolls woke the crew, who climbed out on deck to see the whole face of the ice shelf breaking up. With great waves washing out from under the shelf, the formerly placid bay was soon a turbulent mass of heaving ice blocks above which Polar Star hung suspended by its wings from two ice floes. After six hours of hard work, they managed to rescue the plane but found it severely damaged. With its work barely begun, Ellsworth had no alternative but to call his expedition off until the plane could be repaired by its makers in California.

Further Disappointments Postpone the Planned Transantarctic Flight, 1934–1935

Forced to reconsider his plans, Ellsworth now decided to move his operations base to the Antarctic Peninsula on the other side of the continent. There the possible flying season began one month earlier, but a more significant factor was Ellsworth’s increasing skepticism about the wisdom of attempting a round-trip of over 3,000 miles in length. With the Bay of Whales as a comparatively safe and well-supplied destination where he could await pickup by Wyatt Earp, taking off from the peninsula meant that a much less risky one-way flight could be made.

Dunedin was left behind on 19 September 1934 on a slow passage eastward across 4,000 miles of Southern Ocean, before Deception Island was reached on 14 October. Arriving in a blizzard, they found the lower slopes of the island coated in thick snow, which offered an excellent surface for air operations. Unfortunately, Ellsworth was prevented from taking advantage of this when a connecting rod broke on Polar Star, one of the few essential pieces of equipment for which there was no spare. Wyatt Earp returned from Chile with a new one on 16 November, but by that time Deception Island was again unusable as an airfield, with too little snow on the beach Wilkins had taken off from in 1928. Clearly another base would have to be found, and on 27 November, with Polar Star back on board Wyatt Earp, they sailed across Bransfield Strait and south along the Antarctic Peninsula until ice in Bismarck Strait blocked their path. Having seen no suitable snow or ice surfaces and with no possibility of reaching Ellsworth’s intended destination of Adelaide Island, Wyatt Earp was turned about and headed north and through Antarctic Sound to the east side of the peninsula, before finally reaching Snow Hill Island on 3 December. Here at last, where Nordenskjöld’s Swedish Antarctic expedition had wintered in 1902 and 1903, Ellsworth found a perfect surface for air operations in the gentle and crevasse-free slopes of the island’s ice cap.

Two days later, with good weather at Snow Hill and a favorable report from Little America, where Byrd’s second Antarctic expedition was based, Ellsworth was ready to make the transcontinental flight, but his pilot, Balchen, no longer seemed enthusiastic. Balchen was concerned about Ellsworth’s intention to make the flight to the Bay of Whales in several hops rather than one, fearing that two men unaided might not be able to clear a runway to take off again once they had landed. This issue remained unresolved, with Ellsworth intent on landing to establish ground control for his air photographs and to make scientific observations but unwilling to sacrifice fuel and equipment to accommodate a third person. Meanwhile, Balchen judged the typical overcast weather unsuitable for flying, apart from a brief test flight on 18 December, the first they had been able to make in their substantially refitted and improved plane. Abandoning hope of ever becoming airborne, on 3 January 1935 Ellsworth was making preparations to leave Snow Hill Island, when the weather at last showed signs of clearing. Pointing this out to Balchen, Ellsworth was relieved finally to receive his pilot’s agreement, and soon afterward they were in the air heading south. Again, however, Ellsworth did not complete his long-awaited transantarctic flight. They had been flying for just one hour when Ellsworth looked up after writing some observations in his diary, to note that the high mountains of the Antarctic Peninsula previously to his right, were now on his left. Without informing him, Balchen had turned around and was heading back to Snow Hill Island. Ahead, Ellsworth could see a minor squall but no sign of the “bad weather” Balchen gave as his reason for not continuing on. Balchen’s one comment to Wilkins on landing was, “Ellsworth can commit suicide if he likes, but he can’t take me with him” (Ellsworth 1938, 276).

Not until the end of March was Wyatt Earp able to make its way to open water beyond Antarctic Sound. Ellsworth now had a lot to think about. He had spent much of his considerable for-
tune attempting to make the first flight across Antarctica, and it was a dream he was not yet willing to give up. However, if even Balchen—the most highly regarded of all polar aviators—was unwilling to assist him in the attempt, the question he had to ask himself was, was there any suitably qualified pilot who would?

Across Antarctica at Last, 1935–1936

In the Canadian Airways employees Herbert Hollick-Kenyon and J. H. Lymburner, Ellsworth believed he had found not one but two suitable pilots and decided to take both of them with him: Hollick-Kenyon as chief pilot and Lymburner as reserve. They proved to be a happy choice.

By 2 November 1935, Wyatt Earp was again off Deception Island, though with heavy pack ice blocking the narrow entrance to the island’s caldera harbor, the ship could not make its way in to anchor for another two days. This time Ellsworth had decided to switch his operating base from Snow Hill to Dundee Island on the northern side of Antarctic Sound. Although Snow Hill Island was in many ways a good location, Ellsworth felt that the risk of being cut off and forced to winter there was simply too great, as indeed had nearly happened earlier in the year. With Dundee Island much closer to the open water of Bransfield Strait, this risk would be much reduced, and in any case its ice cap looked just as suitable as Snow Hill’s for air operations.

Selecting a low ridge at the sheltered northwestern end of the island for their base, Ellsworth and Hollick-Kenyon took off on 20 November 1935. At last all appeared to be going well, but ninety minutes out, Hollick-Kenyon noticed that the glass to the fuel gauge had broken. Only a thin and bulging cellulose film held the gasoline back from flooding the cockpit. Ellsworth had no choice but to order return to Dundee Island. The next day, conditions were again perfect, and at 4:16 A.M. Polar Star took off. Three and a half hours later, Ellsworth and Hollick-Kenyon were above the glacier named by Wilkins “Stefansson Strait,” the limit of previously discovered land. From there until they neared Little America, all that they saw would be their discovery. In what Ellsworth was to describe as “the greatest hour of my life” (1938, 294), magnificent mountains...
climbing to over 3,000 meters now came into view, which he named the Eternity Range, designating the individual peaks Faith, Hope, and Charity. All promised well until they found themselves flying into strong headwinds. Exercising his own judgment, Hollick-Kenyon looked for a place to land to wait out the storm, first on the Weddell Sea coast and then in the deep and probably sheltered “Stefansson Strait.” Eventually, however, and much to Ellsworth’s bitter disappointment, he decided that there was no safe alternative to Dundee Island, where they landed some eleven hours after taking off. Ellsworth not surprisingly now considered dropping Hollick-Kenyon for Lyman burner but changed his mind after speaking with his pilot, who explained that Polar Star had used up so much fuel in fighting the headwinds that it was doubtful whether they could have reached the Ross Sea. A return to Dundee to refuel really had been the best option.

The next day again brought fine weather. At 4:21 A.M. on 22 November 1935, Ellsworth and Hollick-Kenyon took off, crossing “Stefansson Strait” some four hours later, and climbing to 4,000 meters above the newly discovered Eternity Range in a gentle southeast breeze with visibility of 150 miles in each direction. It took three hours to cross the mountains, which rose to at least 3,000 meters in three parallel ranges separated by high plateaus. After the mountains came a broad expanse of essentially featureless polar ice sheet, studded occasionally by nunataks, the tops of mountains buried deep in ice. Eight hours after takeoff, with 950 miles still to go, the radio broke down. Ellsworth was unconcerned and instructed Hollick-Kenyon to continue. There was no way he was going to turn back now! Some time afterward, a small but high mountain range appeared ahead, rising to 4,000 meters. Ellsworth named it the Sentinel Range and named its highest peak Mount Mary Louise Ulmer for his wife.

Two hours later and thirteen hours into a flight which was anticipated as lasting just fourteen hours, Hollick-Kenyon thought he saw signs of a water sky ahead. The sky above ice is brilliant white. In comparison, above water it appears dark, an indicator used by many sailors to find open water when navigating in heavy ice. Hollick-Kenyon's sighting appeared to indicate that they were close to the Ross Sea and thus not far from their destination of Little America. It was not the case. The “water sky” soon dissipated itself in cloud. Unsure of where they were, with conditions now worsening, Ellsworth decided that it was time to land, which they achieved without difficulty on hard, compact snow. Calculating their position at 79°12'S, 104°10'W, Ellsworth found that they were still 670 miles from their destination and right in the center of land unclaimed by any nation. Raising the American flag, he named the area extending from 80°W to 120°W “James W. Ellsworth Land” in honor of his father.

Here at “Camp I,” they remained for nineteen hours before flying on for just thirty minutes and then being forced down again in poor visibility. Unsure of exactly where they were, Ellsworth now made thirty separate observations of the sun’s altitude, obtaining a confusing spread of values indicating that something was wrong with his sextant, but he was unable to identify what. Three days later, on 27 November 1935, “Camp II” was left behind on a short flight lasting fifty minutes before very thick weather forced another landing. No sooner were they down on the ground at “Camp III” than a blizzard struck, continuing for seven days, during much of which time they were trapped in their tent. Hollick-Kenyon repaired the radio, but after he sent one brief message, the magneto burned out. Meanwhile, Ellsworth had succeeded in tracing his sextant’s problem to the working loose of the index error-adjustment screw. Now when the sun briefly reappeared, he was able to obtain a good fix for their position. They were at 79°58'S, 114°45'W, still more than 500 miles from their destination. Shoveling out Polar Star from under the drifts in which it was buried, to their very considerable relief they were finally able to take off on 4 December, flying for four hours above increasingly-crevassed ice descending toward its outfall in the Ross Sea, before finding a suitable place to land. The weather was magnificent, but they needed to check their fuel tank and make exact calculations of their position—79°15'S, 153°16'W—before concluding their journey. They were 125 miles from Little America, with just about enough fuel to make it. Excited by the prospect of reaching their destination, they slept little that night. By 9:00 A.M., they were in the air with the Ross Sea in full view before them. Just 4 miles from their calculated position for Little America, Polar Star finally ran out of gas and glided down to a soft landing.

The next problem was how to locate Little America. Byrd’s station near the Bay of Whales was no longer occupied and largely buried under deep snowdrifts. The most visible features would be the high wireless masts and a few stovepipes. Still, Ellsworth was confident that having landed so close to the station, they would experience no problems in finding it. They spent two days scanning the horizon for clues as to where it might be and trudging through the snow toward likely looking objects—a petrol can and a high-pressure ridge—before he concluded that a more lengthy search would be necessary and loaded the tent and some provisions onto their sledge. With thick fog limiting visibility to 30 meters, they had to rely entirely on a pocket compass for direction and eventually reached Little America only after first locating the edge of the Ross Ice Shelf and then following it west. It was 15 December, the twenty-third day after their takeoff from Dundee Island.

Little America had been abandoned by Byrd in February 1935, and although it was not particularly hospitable, it did at least provide shelter for the two aviators as they awaited rescue. Ellsworth had made arrangements with Wilkins for Wyatt Earp to reach the Bay of Whales in late January 1936. Rescue, however, was to come from another quarter. Much to Ellsworth’s surprise, on 15 January 1936 an aircraft sent by the British research vessel RRS Discovery II flew overhead, drop-
ping supplies at Little America together with a letter instructing him to go to Bay of Whales, where a shore party was to land the next day. Ellsworth’s foot was badly frostbitten and showing signs of gangrene. Hollick-Kenyon was therefore sent ahead while Ellsworth waited until six men from Discovery II could reach him. Just three days later, Wyatt Earp arrived in the Bay of Whales. “Rescue” by Discovery II caused Ellsworth some embarrassment. The decision to send this ship had been taken when radio transmissions ceased, despite assurances from Wilkins that all was probably well and that Wyatt Earp had been provided with instructions to cover all eventualities. Nevertheless, while Polar Star returned in Wyatt Earp, Ellsworth sailed back to Melbourne in Discovery II to thank the Australian government for its assistance.

The first transantarctic flight by Ellsworth and Hollick-Kenyon was much more than an episode in record breaking. What they had seen and photographed bore major implications for the geography of Antarctica. In particular, the discovery of the Eternity and Sentinel Ranges, in between the Weddell and Ross Seas, provided crucial evidence against these two seas being joined and in favor of an Earth-encircling mountain range extending down through the Americas and across Antarctica.

**Secret Instructions Extend U.S. Claims in Antarctica, 1938–1939**

Ellsworth returned once more to Antarctica. Accompanied again by Wilkins, with Lymburner as chief pilot, he sailed in Wyatt Earp from Cape Town, South Africa, on 29 October 1938. On board were two planes: a small Aeronca seaplane for short-range reconnaissance flights and a Northrop Delta, an improved version of the Northrop Gamma-prototype Polar Star, for use on a single flight several hundred miles inland.

Although the official policy of the United States at this time was neither to claim territory in Antarctica nor to recognize the claims of others, the State Department had watched the 1930s sovereignty race with growing concern. Thus it was that, without announcing any change in policy, the U.S. consul in Cape Town was authorized to communicate secret instructions to Ellsworth that he was to claim for the United States all lands visited and disregard existing Australian claims. Instead of making for Enderby Land as had been announced, he was to head farther east to Princess Elizabeth Land, where he was to fly inland as far as he could and claim all land falling within 150 miles of his flight path.

Piloted by Lymburner, Ellsworth took off on 14 January 1939 from some distance off the Antarctic coast in Prydz Bay. Flying due south at an estimated position of 72°S, 79°E, he dropped the American flag together with a copper cylinder containing a document stating the claim of the United States to the “American Highland,” consisting of almost 175,000 square miles of land claimed by Australia in 1933 as part of the Australian Antarctic Territory. Ellsworth’s covert role caused particular embarrassment for Wilkins, with loyalties—as an Australian—to his country but also to Ellsworth as expedition leader. As a patriotic American who had already made extensive territorial claims on behalf of the United States on his 1935–1936 expedition, Ellsworth was not unwilling to take on this role, though he had not previously been required to disregard prior claims. Apart from putting Wilkins in a difficult situation, the expedition subsequently aroused some controversy since it amounted to a direct challenge to the widely accepted view that a claim to coastline also implied a claim to the hinterland; in the case of Antarctica, the latter claim was interpreted as extending to the South Pole. This view was not shared by the United States, and Ellsworth may have been set up to provoke a test case. The covert instructions given to Richard Byrd, instructing U.S. Antarctic Service Expedition staff to take appropriate actions for the claiming of land but not to declare them publicly, make it evident that this was a consistent policy adopted on presidential authority rather than an isolated act.

In 1939, Ellsworth announced plans for an expedition to explore Ellsworth Land, the large area discovered on his transantarctic flight, but his preparations were cut short by the outbreak of World War II. He never really gave up his hopes of going back to Antarctica, but realistically they came to an end when he suffered a head injury in taking a fall while hiking. He lived his later life in relative obscurity, dying—as he had lived—a modest man.

**See also:** Airplanes; Airships; Amundsen, Roald; Byrd, Richard; Deception Island; Dundee Island; Eckener, Hugo; Ellsworth Land; Princess Elizabeth Land; Ross Ice Shelf; Shackleton, Ernest (1914–1916); Snow Hill Island; United States; Wilkins, George Hubert

**References and further reading:**


**Emerald Island (Canada)**

Located at 76°55'N, 114°00'W, this member of the Parry Islands was discovered in April 1853 by a sledging party led by Leopold McClintock during Henry Kellett's Franklin search expedition. It was named by McClintock for his native land, Ireland, this name being judged particularly appropriate because of its position adjacent to Prince Patrick Island (St. Patrick is Ireland’s national saint). Emerald Island has an area of 250 square miles. McClintock first observed the island on his outward journey to Prince Patrick Island. On his way back, he made the first landing and then followed the southern shore back to Melville Island. It was not seen again until 1914 by Vilhjalmur Stefansson, who returned two years later to...
survey the east coast. Emerald Island is inaccessible by sea throughout the year to all but powerful icebreakers. See also: Franklin Search Expeditions; Kellett, Henry (1852–1854); McClintock, Leopold; Parry Islands; Prince Patrick Island; Stefansson, Vilhjalmur (1913–1918)

References and further reading:

Enderby Brothers

Commercial enterprises played a significant role in the exploitation of both polar regions. Foremost among them for the importance of its contributions to Antarctic discovery was the London-based shipping, whaling, and sealing concern founded by Samuel Enderby, which in 1785 was responsible for sending the first whaling expedition to the southern seas.

With Enderby masters especially instructed to bring back natural history specimens right from the beginning of the South Seas operation, a tradition of contributing to knowledge as well as to commerce was established early. Geographical discovery soon followed, when first the Auckland Islands were discovered by one master (Abraham Bristow, 1806) and then Bouvet Island was rediscovered by two more (James Lindsay and Thomas Hopper, 1808). In 1825, another Enderby master, George Norris, once more rediscovered Bouvet but named it “Liverpool Island,” reporting nearby two more islands, “Thompson Island” and “The Chimneys,” neither now existing but thought to have been genuine sightings of land temporarily elevated above sea level by volcanic activity.

On the death of Samuel Enderby, the founder’s son, in 1830, control passed to his three sons Charles, Henry, and George. Geographical exploration now received an even higher priority, and Charles and George were both founding members of the Royal Geographical Society established that same year, Charles also being a member of the society’s council and business adviser. A series of voyages followed during which significant geographical discoveries were achieved, but at the cost of considerable financial losses. In 1833, John Biscoe returned from circumnavigating Antarctica, having found new land but with only thirty seal skins on board (see Biscoe, John). The voyage of the *Hopefull* and the *Rose* in 1833–1834 was similarly financially disastrous but without Biscoe’s redeeming discoveries. On this expedition Lieutenant Henry Rae, the naval representative insisted upon by the Admiralty in return for guaranteeing payment of a proportion of any losses incurred by the Enderbys, fell out with his colleagues and took over command of the expedition when *Hopefull’s* captain, William Lysle, resigned in the Falkland Islands. On 1 January 1834, *Rose* was crushed in pack ice north of Clarence Island in the South Shetlands, and although its crew was saved, Rae called off the expedition, which had been intended to continue Biscoe’s investigations. Undeterred, the Enderbys next sent out John Balleny (1838–1839), though with their own resources now too reduced to bear the entire cost themselves, majority shares in the two vessels were sold to seven other London merchants. Like Biscoe, Balleny returned having made significant discoveries but with an almost empty hold (see Balleny, John). One final exploring expedition was sent out by the Enderbys in combination with the same group of merchants. In July 1840 Henry Mapleton was sent south, possibly to explore the Antarctic coast between Enderby Land and Kemp Land, though his instructions do not survive. This expedition was abandoned when Eliza Scott lost its rudder in a gale off Tristan da Cunha and, when surveyed at St. Helena, where Mapleton had withdrawn for repairs, was found too seriously damaged to continue the expedition.

Charles Enderby took great pride in the discoveries made by Enderby vessels. Biscoe’s findings were announced to the Royal Geographical Society only three days after his return to London, and Balleny’s results were not delayed much longer. Enderby also reported findings made by vessels of other companies, and in the case of Peter Kemp in particular this practice has led to some confusion because Kemp was employed by Daniel Bennett and Sons and not by the Enderbys. The fortunes of the Enderby brothers were hit hard by their loss-making expeditions and by the declining market for whale oil. A gambler to the last, Charles Enderby decided to risk all on the establishment of a whaling settlement at Port Ross on the Auckland Islands— islands discovered by the Enderby master Bristow in 1806 and in 1849 leased by the British government for thirty years to the Enderby subsidiary, the Southern Whale Fishery Company. In 1850, 300 British colonists were landed with the intention of establishing a permanent community, but the whaling did not prosper, crops failed in the poor soil and rare sunshine, and few vessels called to sustain the anticipated demand for ship repair facilities. The history of the Auckland Island settlement properly speaking falls outside the scope of polar exploration discussed in this encyclopedia, except for being the last brave throw of a family who contributed much to Antarctica’s exploration. Even in the final spasms of their dying colony, the Enderbys were capable of dispatching one more vessel, *Brisk*, captained by Thomas Tapsell, which, while resupplying the Auckland Islands, sighted the Balleny Islands in February 1850 and then sailed westward along the course followed by Charles Wilkes, but in a higher latitude, without sighting the land Wilkes had so controversially reported in 1840. See also: Auckland Islands; Balleny, John; Biscoe, John; Bouvet Island; Enderby Land; Kemp Land; Kemp, Peter; Sealing and Antarctic Exploration; Wilkes, Charles

References and further reading:


**Enderby Land (Antarctica)**

Enderby Land forms that part of East Antarctica lying between 45° and 55°E, with Prince Olav Coast to the west and Kemp Land to the east. Reaching as far north as 65°50’S, it is the most northerly point on continental Antarctica apart from the Antarctic Peninsula. On 25 February 1831, land was discovered here by the British sealer John Biscoe, who named it for Enderby Brothers, the whaling and sealing concern commissioning his voyage. Enderby Land was not visited again for nearly 100 years, until, in 1929–1930, a race developed between the Norwegian Hjalmar Riiser-Larsen and the Australian Sir Douglas Mawson to see who could reach this region first in order to annex it for Norway or the British Empire, the prize being the quantity of whales to be found offshore. Riiser-Larsen was first here, sighting parts of western Enderby Land from the air on 7 December 1929 and landing on the sea ice off Cape Ann on 22 December, when he raised the Norwegian flag. His claim was immediately repudiated by the Norwegian government, which had previously reached an agreement with Great Britain accepting the British claim to Enderby Land, though unfortunately, no one had told Riiser-Larsen. On 13 January 1930, Mawson raised the Union Jack on Proclamation Island (65°50’S, 53°30’E), where he read a text proclaiming the claim of the British Empire to sovereignty of all territories south of 65°S and between 47°E and 73°E. The next day, Riiser-Larsen and Mawson met and came to an amicable agreement that 45°E should mark the divide between Norwegian and British activities.

In February 1947, Enderby Land was photographed from the air by Western Group during Operation Highjump. The first ground survey was made in 1959–1960, when an Australian dogsledging party landed at Proclamation Island from Thala Dan to conduct a topographic and geological survey across to Edward VIII Gulf in Kemp Land. The region was included in the trimetrogon aerial survey of the Australian Antarctic Territory initiated in 1961–1962. In January 1963, the major Soviet station Molodezhnaya was opened at 67°40’S, 45°51’E. Named for the “young people” (molodezh) who built the station, in 1972 it supplanted Mirnny as the headquarters of Soviet and later Russian Antarctic activities. Subsequent studies have largely been carried out by Soviet and Australian scientists, the major Australian study being the comprehensive survey of Enderby Land begun in 1974 under the leadership of Graeme William McKinnon. Continuing through much of the 1970s, it included topographic and air surveys, in addition to geological, geophysical, and biological studies, at first from a camp in the Knuckey Hills and then from a base established on Mount King.

**See also:** Australia; Antarctic region; Great Britain; Norway; Operation Highjump; Riiser-Larsen, Hjalmar; Russia; Whaling and Antarctic Exploration

**References and further reading:**


**Erik the Red**

(ca. 950–ca. 1002)

Eiríkr Thorvaldsson, generally known as Erik the Red or Eiríkr Raude from the color of his hair—though it might equally have applied to his temper—instigated and led the Norse colonization of Greenland. Originally from Jæren in southwestern Norway, as a young man Erik was banished to Iceland for manslaughter. The first Norse settlers had reached Iceland around 860, and by the time Erik arrived, most of the best land had already been claimed. However, he married well and appeared to have established himself successfully in his new home, until he became involved in a feud with a neighbor, in which several men were killed, and he was again banished.

**Erik the Red Explores the Coast of West Greenland, 982–985**

Being still banished from Norway, Erik determined to explore for new land to the west that had been first seen about 877 by Gunnbjörn Ulfsson. “Gunnbjörn’s Skerries” lay off the coast of East Greenland, most likely near present-day Ammassalik or farther south near Cape Farewell. It is possible that hunting parties seeking polar bears and walrus may have visited this region in the intervening period, and a fragmentary tale survives of two Icelanders, Snæbórn and Rolf, who actuallywintered there with their families. In any case, that land existed to the west of Iceland was well-established by 982, when Erik decided to explore its possibilities for colonization.

The most authoritative source for Erik’s voyage is Landnámabók (The Book of Settlements). It records him as setting out from the Snaefell Peninsula and reaching the coast of East Greenland, from where he sailed south round Cape Farewell in his search for habitable land. Next, heading northwest up the relatively benign coast of West Greenland, he found many promising sites deep within the inner fiords in the present-day districts of Nanortalik, Julianehåb, and Narssaq. It is probable that during this first year he explored as far north as Ikerssuaq (ca. 61°N), before returning south to winter on “Erik’s Island” in Julianehåbsfjord. The following summer, he based himself in Eriksfjord (Tunungsfjær), which he clearly found particularly promising, before wintering on “Erik’s Holm” some way farther south. In 984, Erik sailed much farther north, past Ikerssuaq and possibly as far as Disko Island, before return-
ing to winter on “Erik’s Island,” where he remained until the period of his banishment was over and he could return to Iceland, which he reached during the summer of 985.

The thoroughness of Erik’s explorations can be judged from his success in identifying the very best places for the Norse to colonize, reserving the best of all for his family and himself. Appreciating that this land would need “a good name” in order to attract colonists, Erik called it Greenland, and indeed, in contrast to the overgrazed landscape of Iceland, Greenland did offer plentiful green pasture in the inner recesses of its long fiords.

**The Norse Colonization of Greenland, 986**

The following summer after his return to Iceland, Erik set out again for Greenland, accompanied this time by a fleet of twenty-five ships. He was clearly a persuasive advocate of the advantages of life in the new colony, and indeed for many of those sailing with him, much better land would be available to them than they could hope to find still unoccupied in Iceland. In addition to the colonists themselves and their wives and children, the heavily loaded knars carried their livestock and all the supplies necessarily to establish the new colony. Only fourteen ships reached Greenland, the other eleven foundering or else being forced back to Iceland.

Erik knew exactly where he wanted to settle and made directly for Eriksfjord, where he established his farmstead Brattahlid (Steep Slope) on the western shore of the inner fiord near the present-day site of Narssarsuaq. Some colonists made homes for themselves nearby in similarly sheltered places, founding with Erik the Eastern Settlement, which reached from the southern tip of Greenland north to 61°N. Others sailed farther north, where the Western Settlement was established near present-day Nuuk (formerly Godthåb), occupying the area between 63° and 66°30’N. Conditions were by no means harsh to those hardened to life in Iceland and Norway. Not only did the dwarf willow scrubland provide good pasture for their cattle and sheep, but berries, fish, birds, and caribou were plentiful to vary their diet. Erik himself prospered as leader of the Eastern Settlement and de facto leader of the Western Settlement, and among the large family that he and his wife Thjodhild raised were three sons—Leif, Thorvald, and Thorstein—and a daughter—Freydis—all of whom were to participate in later voyages of exploration.

Since life apparently was so good for early Norse settlers in Greenland, why did they need to explore further? The most important resource that they lacked was wood, and although it had been a problem too in Iceland, Iceland at least was supplied by regular voyages from Norway. For most of the time, the Greenland Norse had to make do with driftwood and turf, both for heating and as building materials out of which to erect accommodation sufficient to protect themselves and their livestock from the long, harsh winters. Fine ships, however, could not be constructed out of driftwood, and it was this lack that prompted Erik to plan one further voyage of exploration.

A latecomer to Greenland, Bjarni Herjólfsón, had followed in the wake of the main fleet migrating with Erik from Iceland in 986. Sailing initially too far south, he had reported sighting well-wooded land before managing to make his way northward to finally locate the Norse settlement. Erik discussed plans to visit this land with his eldest son Leif, but shortly before sailing, his horse stumbled badly, and this he interpreted as an omen that he should remain at home. How Leif E discroston went on to land on the coast of mainland North America is told in the entry under his name. We don’t know exactly when Erik died, but it was some time after Leif’s return with news of his most encouraging voyage.

**See also:** Greenland; Eriksson, Leif; Norse Arctic Exploration

**References and further reading:**


**Eriksson, Leif**

(d. ca. 1020)

Once the Norse colonies had been established on West Greenland by Erik the Red, it was only a matter of time before they explored farther west to discover the islands of the Canadian Arctic and mainland North America. Although of major significance as the first European landing on and temporary settlement in North America, the voyage of Leif Eriksson is marginal to the history of polar exploration and hence receives brief treatment here.

**The Norse Reach North America, 1001–1002**

Leif Eriksson was Erik the Red’s eldest son. Since his name is not mentioned in accounts of his father’s explorations of West Greenland, it is probable that he remained in Iceland during the period of Erik’s banishment. Leif’s own expedition was most likely instigated by Erik, who had planned to participate himself but withdrew when he interpreted the stumbling of his horse as an omen that he should stay home. The expedition’s primary but not exclusive purpose was to search for sources of timber for the wood-starved colony, which otherwise had to rely on driftwood and what little timber could be imported at great expense from Norway. Erik and Leif knew that wooded land lay somewhere to their southwest since it had been seen by Bjarni Herjólfsón in 986. Since Bjarni was then intent on reaching Greenland, he did not land but reported two separate sightings of wooded land and one of bare mountains covered by an ice cap. This last was almost certainly Baffin Island and thus the first European sighting of the Canadian Arctic.

The story of Leif Eriksson’s voyage is told in two Iceland sagas: *Grønlandes saga* (Saga of the Greenlanders) and *Eirikr saga* (Saga of Erik the Red). The former is the more detailed and
regarded by scholars today as the more straightforwardly factual. According to *Grænlendinga saga*, Leif made three landfalls after sailing west from Greenland. The first consisted of nothing but bare rock stretching upward to glaciers. This he named "Helluland" (Land of Stone Slabs). Almost certainly it was Baffin Island, with Leif’s landing the first by a European in the Canadian Arctic. Finding nothing there of potential use to the Norse colony, Leif headed south out of the Arctic to reach first a low wooded land fronted by extensive sandy beaches, which he named “Markland” (Land of Forests)—central Labrador—and beyond to “Vinland.” Since the discoveries of Helge and Anne Stine Ingstad in 1960 at Anse-aux-Meadows, most archaeologists are now convinced that it was at this site at the tip of northern Newfoundland that Leif wintered and that the wild vines he reported were found on a more southerly excursion, probably in the vicinity of the St. Lawrence estuary.

Not surprisingly, when Leif returned the following year to Greenland, bringing with him not just timber but grain, wine, and other products from fertile Vinland, others were encouraged to organize expeditions to seek to colonize this new land. How they were prevented from doing so by conflict with the native peoples already living there is a story better told elsewhere. An account of subsequent explorations farther north in Greenland and the Canadian Arctic is given in the entry for Norse Arctic exploration.

*See also:* Baffin Island; Erik the Red; Norse Arctic Exploration

**References and further reading:**
Farthest North

Over 300 years before anyone accomplished a similar feat in the southern hemisphere, on 19 June 1596 Willem Barents crossed the 80th parallel to achieve 80°11'N off Spitsbergen. In this region the warm waters of the Gulf Stream ensure that in most summers it is possible to approach 80°N, and until 1875 all successive farthest norths by ship were to be accomplished there. Barents had no intention of reaching the North Pole, whereas Henry Hudson was seeking to sail as far north as possible when he achieved about 80°23'N on 16 July 1607. Vasiliy Chichagov had similar ambitions in reaching 80°26'N on 23 July 1765 and 80°28'N on 16 July 1766, as did Constantine Phipps when achieving 80°48'N on 27 July 1773. In contrast, the whaler William Scoresby Sr. undoubtedly could have exceeded his 81°30'N on 25 May 1806, had his prime concern not been the hunting of whales. Indeed, since the mid–seventeenth century, there had been reports of whalers reaching very high latitudes in these much-fished waters, and although some undoubtedly are apocryphal, it is possible that in exceptional years, whalers may have sailed farther north than any of the documented voyages.

All of the above were achieved under sail, but on 19 September 1868 Adolf Erik Nordenskiöld reached 81°42'N in the steamer Sofia. Steam power similarly enabled Charles Francis Hall and George Nares to force their way through Nares Strait to reach 82°11'N on 30 August 1871 and 82°28'N on 1 September 1875, respectively. Fridtjof Nansen, in contrast, relied on an entirely different method when Fram was frozen into the ice north of the New Siberian Islands and allowed to drift across the Arctic Ocean to achieve its highest latitude of 85°55'N, 66°31'E on 15 November 1895. This latitude was exceeded by the Soviet icebreaker Sedov, which was drifted to 86°39'N, 48°22'E in August 1939, the record for any vessel until June 1957, when the nuclear submarine USS Nautilus got to 87°N. Nautilus reached the North Pole itself on 3 August 1958, the first surface vessel to repeat this feat being the Soviet icebreaker Arktika on 17 August 1977.

As the impossibility of sailing to the Pole became increasingly apparent, attempts were made to travel north over the ice, initially in the expectation that once across a relatively narrow belt of pack ice, open water would be discovered. This hope inspired Edward Parry to reach 82°45'N on 23 July 1827 before turning back, when it became obvious that the ice was drifting south faster than he could travel north. The strong southerly drift off Spitsbergen discouraged further attempts in this region, and when the record was next broken, it was north of Ellesmere Island, where Albert Markham reached 83°20'N on 12 May 1876 during the expedition led by Nares, and then along the coast of northwestern Greenland, where James Lockwood achieved 83°24'N on 15 May 1882 during Adolphus Greely’s expedition. Fram’s high-latitude course meant that Fridtjof Nansen’s starting point of 84°04'N already exceeded the existing record, enabling him to reach 86°13'N on 8 April 1895. Subsequent expeditions were large-scale affairs, powered by dogs and assisted by several supporting parties. Much of what Robert Peary liked to refer to as the “Peary system” had in fact been earlier put into practice by the Duke of Abruzzi’s expedition, during which Umberto Cagni reached 86°34'N on 25 April 1900 after setting out from Franz Josef Land. This latitude was probably exceeded by Peary in 1906, when he claimed to have achieved 87°06'N on 21 April. He certainly got beyond it on his last expedition, though doubts remain as to whether he actually reached the Pole on 6 April 1909.

The first record farthest north by air was established by the balloonist Salomon Andrée, who reached 82°56'N before being forced down on the ice on 14 July 1897. Following the failure of Walter Wellman’s airship expeditions, the next attempt to reach the Pole was made in 1925 by Roald Amundsen and Lincoln Ellsworth in two Dornier-Wal seaplanes. They too were forced down on the ice but not before achieving 87°44'N. In the following year Amundsen and Ellsworth returned to Spitsbergen, accompanied by Umberto Nobile as pilot of the airship Norge. Shortly before they were able to take off, they were anticipated by Richard Byrd in a Fokker tri-motor. Recent evidence suggests that Byrd did not in fact reach the Pole on 9 May 1926 as claimed, making Amundsen, Ellsworth, and Nobile the first to see it three days later during their flight across the Arctic Ocean to Alaska.

Farthest South

Before the South Pole could itself be reached, it was gradually approached as vessels and expeditions achieved progressively higher latitudes in their attempt to reach as far south as possible. Francis Drake had no intention of achieving his record farthest south in October 1578, when he was blown by a storm probably to 57°S. Reports that he and the Dutch navigator
Dirck Gerritsz reached latitudes close to the Antarctic Circle are not to be believed (see Gerritsz, Dirck). In contrast to Drake, James Cook certainly was seeking a high southern latitude on 30 January 1774, when he achieved 71°10'S in the Bellingshausen Sea. Cook’s record was not surpassed until 20 February 1823, when the British sealer James Weddell reached 74°15'S in the Weddell Sea, during a year when this sea was exceptionally ice-free. Weddell’s record was in turn bettered by James Clark Ross in the Ross Sea, first in February 1841 and then again on 23 February 1842, when he set the new record at 78°10'S. On 16 February 1899, Carsten Borchgrevink discovered an embayment in the Ross Ice Shelf—later known as the Bay of Whales—in which he managed to reach 78°34'S. The conformation of the Bay of Whales changes from year to year with the movement of the surrounding ice. In January 1911 Amundsen was fortunate to reach the bay just after a massive recent breakout of ice and as a result was able to sail in Fram to 78°41'S. That remains the record today.

The first meaningful land record was set by Borchgrevink in February 1899, when he sledged south from the Bay of Whales across the Ross Ice Shelf to reach 78°50'S. Albert Armitage bettered this by 13 miles when he reached 79°03'S in the same area in February 1902. This record was short-lived, being improved upon by his expedition leader, Robert Falcon Scott, on 30 December in the same year. Scott’s record of 82°17'S was surpassed by Ernest Shackleton, who reached 88°23'S on 9 January 1909, only 97 nautical miles from the Pole itself, which was finally reached by Roald Amundsen on 14 December 1911 and by Scott on 17 January 1912.

Aviation “record souths” have less meaning than their northern counterparts, basically because Richard Byrd’s flight over the South Pole on 29 November 1929 was achieved so early in the history of Antarctic aviation as itself to be also the first attempt to fly as far south as possible. The earlier flights of Sir George Hubert Wilkins in 1928 had different objectives, with Wilkins pointedly leaving priority at the Pole to Byrd.

See also: Amundsen, Roald; Armitage, Albert; Bellingshausen Sea; Borchgrevink, Carsten; Byrd, Richard; Cook, James; Gerritsz, Dirck; Ross Ice Shelf; Ross, James Clark; Ross Sea; Scott, Robert Falcon; Shackleton, Ernest; South Pole; Weddell, James; Weddell Sea; Wilkins, George Hubert

Fiala, Anthony (1869–1950)
If ever a man tried to buy the North Pole it was William Ziegler. Having spent $250,000—equivalent to many millions today—on one futile expedition, he funded the American explorer Anthony Fiala to lead another. Fiala was not incompetent, but it takes more than money to reach the Pole.

A Fortune Squandered in Franz Josef Land, 1903–1905
Major Anthony Fiala had served as photographer and second-in-command during the Baldwin-Ziegler expedition (1901–1902), led by Evelyn Baldwin and sponsored by the New York businessman William Ziegler (1843–1905). Few expeditions can have been so generously funded, but Baldwin achieved effectively nothing. Given the objective of reaching the North Pole or at least bettering the record farthest north of 86°34'N, set in 1900 by the Duke of the Abruzzi, Baldwin had laid three depots north across Franz Josef Land but had then been forced to cut short his expedition when no one was prepared to spend another winter with him. Ziegler had been bitterly disappointed, but he learned that, unlike Baldwin, Fiala had been liked and respected and therefore chose him to lead another attempt on the Pole. Ziegler also decided that his next expedition would be an all-American affair and at considerable expense paid for a crew of experienced whalers under the veteran master Edwin Coffin to cross the Atlantic to Tromsø, Norway, where the expedition’s ship, America, was moored. It was testament to the esteem with which Fiala was regarded that, despite their very unhappy experiences under Baldwin, several members of the previous expedition volunteered to go again, including the artist and assistant scientist Russell Williams Porter, medical officer Dr. Charles L. Seitz, quartermaster Charles E. Rilliet, and assistant electrical engineer Anton Vedoe. One of the many complaints against Baldwin had been that he had prevented the scientists from doing any worthwhile work. This time, the scientific program was drawn up by the National Geographic Society and coordinated by William John Peters, leader of several geological expeditions to Alaska and Fiala’s second-in-command.

After refitting at Trondheim and taking on the 183 dogs and five Siberian ponies surviving from the first expedition, America set out on 23 June 1903 for Archangel, Russia, where furs for clothing and an extra twenty-five dogs and twenty-five ponies were taken on. Since plenty of coal would be needed to get the ship through the ice surrounding Franz Josef Land, before America headed north its supplies were topped up at Vardø. Difficult ice conditions meant that Cape Flora, Northbrook Island, was not reached until 12 August. Fiala’s aim now was to head north, if possible, to Rudolf Island, where Abbruzzi’s Italian expedition had wintered in 1899–1900. To do so, America had to be forced through the ice-congested British Channel. Fiala was lucky in that 1903 was a year of comparatively light ice. He had a harder time of it than Abbruzzi, but by 31 August America had reached 82°14'N before turning back to anchor in Teplitz Bay. Places affording greater shelter had been seen farther south, but for the attempt on the Pole, Fiala needed to winter as far north as he could, which meant Rudolf Island and Teplitz Bay. There, Fiala was able to augment his supplies with those left behind by Abbruzzi and Baldwin. A wooden hut was erected to accommodate the sixteen members of the shore party, alongside tents affording shelter for the dogs and ponies. With electric lighting provided by a cable linking the hut with a generator onboard America, arrangements were apparently in place for a comfortable winter. This illusion
was soon shattered when the men’s misgivings concerning America’s exposed situation in Teplitz Bay were amply justified. On 22 October the ship broke loose in a storm and by 21 December was sunk, crushed in intense ice pressure. Preparations continued for the polar journey, however. The loss of America was not a terminal blow to his plans, since Fiala knew that his men could make their way south with the aid of two large depots laid by Baldwin. Several bases offering food and shelter had been set up by earlier expeditions in southern Franz Josef Land, most notably at Cape Flora by Frederick Jackson and on Alger Island by Baldwin.

Beginning in February 1904, provisions were carried by sledge to Cape Fligely, the northern tip of Rudolf Island, from where the Polar Party was to set out. In essentials, Fiala’s plan was similar to that which had enabled Umberto Cagni on Abruzzi’s expedition to reach 86°34’N, except that Fiala had more men—twenty-six versus twelve—and included sixteen ponies as well as nine dog teams. Three supporting parties would turn back at intervals, leaving Fiala to lead a six-man party to the Pole. This was not to be. The first attempt began on 7 March, only to be abandoned within four days, when manifest inadequacies in the equipment forced an early return. On 25 March a second attempt was made. It was even briefer, just two days, before the sledges failed. It seemed that Cagni had been lucky in finding relatively smooth ice off Rudolf Island. In 1904, it showed every sign of intense pressure, piling up in great ridges all around the island. Fiala realized that his sledding arrangements would have to be radically altered. Since doing so would undoubtedly take time, his next attempt on the Pole must be delayed until next year. By now, many in the party were disaffected, and knowing from Baldwin’s unhappy expedition just how debilitating division could be, Fiala opted to lead those wanting an early return south to Cape Flora. Fourteen men volunteered to stay on another year to assist him with the polar journey.

On 30 April, Fiala set out with the remaining twenty-five, many of them crew unsettled by the loss of their ship, though some of the scientists too had lost their taste for sledding. They reached Cape Flora on 16 May. There, shelter was found for the ship’s officers and crew in Jackson’s log cabin, while the field and scientific staff put up in “Little Italy,” a small portable hut left behind by Abruzzi. What with the provisions they had brought as well as those remaining from previous expeditions, food was initially plentiful. The supply ship Frithjof was expected in the summer, and Fiala planned to return to Rudolf Island once it had arrived. Unfortunately, the ice this year was exceptionally bad, and despite making two determined attempts, Frithjof was unable to reach Franz Josef Land. Faced with the unwelcome prospect of another Arctic winter, they made belated attempts to supplement their food stocks by hunting walruses, a meat that would normally have been fed only to the dogs but would provide the bulk of their diet.
through the coming months. Fights broke out among the sea-
men, and some of the scientists turned “ship's lawyers” and
refused to take orders from Fiala, arguing that all contracts
were off with the sinking of America. It was with considerable
relief, though also with some concern, that Fiala finally left
Cape Flora to make his way back to Rudolf Island, where he
arrived on 25 November, having traveled much of the way in
winter darkness.

Plans were now completed for one last attempt to reach the
Pole. The basic strategy remained the same—three support
teams and a Polar Party—but with fewer men and no ponies
now available, the Polar Party was reduced to two, with two
men making up two of the support teams and four the other.
Fiala set out on 15 March 1905. After eight days, he had
reached 82°N, only to be confronted by an open lead cutting
through ice crisscrossed by pressure ridges. Going on would
be daunting, and Fiala could not get out of his mind his
responsibility to the men left behind at Cape Flora. At this
point, therefore, he turned back for the last time. On 26 May,
Rudolf Island was left behind as Fiala led his men south.
Unknown to him, just two days earlier, his sponsor Ziegler had
died, blissfully ignorant that his second expedition had proved
no more successful than his first.

Rather than rejoining the dissidents at Cape Flora, Fiala
opted instead to await the arrival of the relief ship at Camp
Ziegler, Baldwin’s base on Alger Island. An instruction was
passed to Cape Flora that, unlike last year, every effort should
be made to accumulate food by collecting birds' eggs and hunt-
ing. In expectation that the relief ship might again not get
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passed to Cape Flora that, unlike last year, every effort should
be made to accumulate food by collecting birds' eggs and hunt-
ing, in expectation that the relief ship might again not get
through. Probably no one was more relieved than Fiala when,
on 30 July, the powerful Scottish whaler Ternova—the
same ship used by Robert Falcon Scott in 1910–1912—was
seen steaming toward Cape Flora.

Although Fiala had achieved little more than Baldwin, at
least he was viewed as having made a genuine attempt on the
Pole and, with Ziegler dead, did not have to face recriminations
from that quarter. Some useful survey work had been con-
ducted on the numerous sledging journeys, and the resulting
map showed a significant increase in knowledge of the central
region of Franz Josef Land, where “Zichy Land” was shown to
consist of a number of separate islands. A certain amount of
scientific work had been done also. After Fiala, Franz Josef
could no longer be regarded as the most promising location
from which to sledge to the Pole, a conclusion that was to be
challenged only by Georgiy Sedov.

See also: Abruzzi, Luigi, Duke of; Alger Island; Baldwin, Evelyn; Franz Josef
Land; Jackson, Frederick (1894–1897); North Pole; Northbrook Island;
Rudolf Island; Scott, Robert Falcon (1910–1912); Sedov, Georgiy

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Fiennes, Ranulph
(1944–)
The British explorer Sir Ranulph Fiennes was never one to set
himself easy targets. Inevitably, he was not always successful,
and he never managed an unsupported journey to the North
Pole despite five attempts. He did, however, achieve the first
unsupported crossing of the Antarctic landmass and will be
remembered most of all for his extraordinarily ambitious
Transglobe Expedition. Not content with reaching both Poles
on a single journey—the first to do so—Fiennes also navigated
the Northwest Passage and completed the first circum-
navigation of the Earth by its polar axis.

The posthumous son of a baronet, Sir Ranulph Twisleton-
Wykeham-Fiennes was brought up in South Africa before
joining the British Army. His employment by the Special Air
Service (SAS) was abruptly terminated when he was per-
suaded to blow up a film set, which traditionalists viewed as
desecrating a particularly beautiful English village. In 1970,
Fiennes left the army and adopted exploration as his career,
hoping to specialize in desert travel—his real love—but soon
appreciating that only polar expeditions would attract the nec-

The Transglobe Expedition, 1979–1982
To go around the world the hard way, through both Poles, was
first suggested by Ranulph’s wife, Ginnie, in 1972. The plan
involved keeping as close as possible to the Greenwich merid-
ian (0° longitude) and traveling 38,500 miles across four con-
continents. It took seven years to organize and three to complete.

On 2 September 1979, Fiennes began his epic journey from
Greenwich, sailing across the English Channel to France in the
expedition vessel MV Benjamin Bowring. From there, he and
his two companions in the overland team—Oliver Shepard
and Charles Burton—made their way across land and sea to
Antarctica, where they arrived on 5 January 1980 close to the
South African base SANAE III on Princess Martha Coast.
Their first winter was spent at Ryvingen in the Borg Massif,
some 270 miles inland. Fiennes, Shepard, and Burton reached
Ryvingen by skidoo, and Ginnie was one of the party flown
ahead to build the base, which consisted of four prefabricated
cardboard huts. By 28 October temperatures had risen to
–51.11°C (–60°F), intensely cold but at last warm enough for
the three men to set out on their skidoos, leaving Ginnie
behind to operate the radio.

Traveling for ten to twelve hours each day, the three skidoos
kept 1 mile apart, allowing Fiennes in front to check that they
were following the correct angle of travel by a quick back bear-
ing. Of the 1,200 miles to the South Pole, 900 miles had never
previously been traversed. This was true exploration, but in
truth there was little to see, with nothing but ice between
Ryvingen and the Pole, which was reached on 15 December
1980, Ginnie now joined them to set up a temporary radio station at the Pole so as to maintain contact as they began the second stage of the continental crossing eight days later. In order to follow the most direct route possible, Fiennes had chosen to descend through the Transantarctic Mountains to the Ross Ice Shelf by means of the little-known Scott Glacier. Picking their way through fields of crevasses, they got through without major mishap and on 11 January 1981 reached Scott Base, Ross Island, to complete the 2,200-mile crossing in seventy-six days. Antarctica had only been crossed once before, and Fiennes’s journey was significantly longer than that made by Vivian Fuchs in 1958.

As Benjamin Bowring voyaged north through the Pacific Ocean toward Alaska, Shepard decided to drop out of the expedition for personal reasons. The organizing committee in London was insistent that a new third member be appointed, but Fiennes and Burton wanted to carry on by themselves and finally had their way. To get to the North Pole, they were to be taken to the mouth of the Yukon River, Alaska, which they were to ascend 1,000 miles in inflatable boats before crossing to the Mackenzie River, which they would then descend to the Arctic Ocean. These plans were just the start, and after numerous adventures, they arrived at Tuktoyaktuk on the Arctic coast on 24 July 1981 to begin the next part of their journey, through the Northwest Passage and then up to Alert on Ellesmere Island by means of a tortuous 3,000-mile route. To keep to their schedule, they had to complete the journey in thirty-five days because after that the sea would freeze and they would have to abandon their boat, an open fiberglass whaler. Fiennes had made arrangements for caches of fuel to be deposited at various points along the way where they would travel east through Dolphin and Union Strait, Dease Strait, and Queen Maud Gulf before they rounded King William Island and headed north through Peel Sound to Barrow Strait. There in mid-August they met up with Ginnie at Resolute on Cornwallis Island. Fiennes had hoped to reach Ellesmere Island by means of the most direct route through Wellington Channel, but it was frozen over, as was much of Lancaster Sound to the east. The southern side of this sound, however, remained unfrozen, and their only hope of completing the journey to Alert was through this area and up the east coast of Devon Island, then west through Jones Sound, and north to Alert. Although they still had 1,000 miles to go, there was a slim chance that they could get through before their route froze up. The journey to Tanquary Fiord proved even more hair-raising than the first part of the voyage, but by 30 August they had reached the head of the fiord. All that remained before the winter rest was a 200-mile walk across northern Ellesmere Island to Alert, where they would find a Canadian meteorological station and shelter.

Joined by Ginnie, Fiennes and Burton spent four months at Alert, preparing themselves for the last and most arduous part of their journey. In 750 days they had traveled through 314 degrees of latitude and now had just 46 degrees to go to complete the first polar circumnavigation. On 13 February 1982, Fiennes and Burton set out on their skidoos to Cape Columbia, where they constructed a ramp of ice blocks to ease their crossing of the tide-crack and onto the pack. Their task was to travel 825 miles to the Pole and then beyond, south toward Spitsbergen, where Benjamin Bowring would wait to pick them up. Within a few days, they were forced to abandon their skidoos and resort to man-hauling for the first 100 miles, until they were through the worst of the pressure-ridged ice. On 10 April, they were at the Pole but not yet at the conclusion of their journey. They had, however, become the first men to reach both Poles, the first of the expedition’s major objectives. Now, they had to complete the first polar circumnavigation. Heading south along the 15°E meridian, they changed over to traveling at night so that their shadows formed natural sundials indicating the way they had to go. Although Benjamin Bowring was ice-strengthened, it was not an icebreaker and hence was unlikely to be able to get north of 82°N. Just 180 miles past the Pole, Fiennes and Burton were halted by increasingly fragmented ice and on 25 April, they decided to wait it out on the
most solid floe they could find. The ice was soon too soft for an aircraft to land, and since they were also far beyond helicopter range, there they remained for ninety-nine frustrating days, until 3 August, when Ginnie reported that Benjamin Bowring had forced its way to within 17 miles of their floe, which was now in imminent danger of breaking up. Fiennes and Burton took to their canoes and made a hazardous voyage through narrow leads and across melting ice floes until at last on 4 August, at 12:14 A.M., they climbed aboard the ship. Although it took twelve days to get out of the ice, the hard part of the expedition was now over. All that remained was to sail south along the 0° meridian to reach Greenwich on 29 August.

In completing the first circumnavigation of the Earth by its polar axis, Fiennes and Burton became the first men to reach both Poles, as well as the first to cross both Antarctica and the Arctic Ocean. It was largely in consequence of his achievements during the Transglobe Expedition that *The Guinness Book of Records* hailed Fiennes in its 1984 edition as “the world’s greatest living explorer.”

**Unsupported toward the North Pole, 1986–1990**

To reach the North Pole without the support of dogs, airlifts, or any other form of outside aid was, in Shepard’s words, “the ultimate polar challenge;” which, with the aid of new techniques and materials, might now just be possible. The original idea was Shepard’s. Fiennes had been planning an expedition to Oman to look for a city buried under sand for 2,000 years. Deciding that the desert could wait, Fiennes and Shepard based themselves through the Arctic winter on Ward Hunt Island, north of Ellesmere Island, where Shepard conducted scientific studies, and the two men calculated how best to pull heavy weights across very rough ice. The farthest anyone had gone toward the Pole on an unsupported expedition was 98 miles, achieved in 1968 by Hugh Simpson. Shortly before their planned departure in late March 1986, Shepard was summoned back to London and had to be replaced at short notice by Dr. Mike Stroud. Stroud was a largely unknown quantity to Fiennes, though he knew of him by reputation. A qualified doctor and former member of the British Antarctic Survey, he had joined Robert Swan’s Footsteps of Scott Expedition in 1983 in the hope of walking to the South Pole, only to be assigned duties requiring his presence at base camp. Stroud was small but stocky, and at first glance, Fiennes considered him unlikely to be able to pull the 172-kilogram sledges. Stroud, however, proved to be enormously powerful for his size. The two men formed an effective team, and despite Fiennes falling through the ice and getting frostbitten feet, they passed Simpson’s record fifteen days out. Nine miles later, Fiennes decided to call up a plane. His frostbitten toes were becoming gangrenous and required immediate hospital attention.

Two more attempts were made from Ward Hunt Island. In 1988, they failed to get as far as in 1986. In 1989 they got somewhat farther, before a fall opened up the skin graft over Fiennes’s frostbitten toe. The disadvantage of the Ellesmere Island route was that although it was 100 miles closer to the Pole than alternative starting points, ice drift meant that they might wake up to find themselves 7 miles south of where they had gone to sleep. If they set out from Severnaya Zemlya, however, the Transpolar Drift would carry them toward the Pole, lengthening the distance traveled each day and continuing the journey for them while they slept. Fiennes now approached the Soviet leader Mikhail Gorbachev for permission to set out from Arctic Russia. It was granted, subject to local arrangements being handled by the experienced adventurer Dmitry Shpavo.

Three other teams were attempting unsupported expeditions to the North Pole in 1990. A Canadian party led by Jack McConnell gave up after two weeks from severe frostbite. The veteran Russian Vladimir Chukov had achieved 87°37’N in 1987 and now managed to reach the Pole, but only after one of his team had been airlifted out. Two Norwegians, Børge Ousland and Erling Kagge, also reached the Pole, with one member airlifted out. Having reduced their initial loads to 136 kilograms, Fiennes and Stroud made good progress, despite Stroud being forced to trudge on foot after the seventh day, when the binding broke on his ski. Time and again they fell through the ice but managed to keep going for 447 miles to reach 88°N. Here, they ran out of food just 89 miles short of the Pole.

Whereas Chukov accepted that his expedition could not count as unsupported, Fiennes was surprised to learn that Ousland and Kagge were insisting that their polar journey was unsupported. He made some unguarded comments on his return and found himself portrayed in the press as a bad loser. As far as the media were concerned, it was a great story, Scott against Amundsen and Great Britain against Norway all over again, with the Norwegians once more coming out on top. From Fiennes’s perspective it unfortunately meant no more funding for unsupported expeditions to the North Pole. Instead, next year he took time out from polar exploration to discover the long-lost city of Ubar in western Oman.

**Unsupported across Antarctica, 1992–1993**

Dreamed up by Fiennes’s Transglobe Expedition colleagues Burton and Shepard, the idea of this expedition was that humans could achieve what machines and dogs could not and cross the Antarctic continent without any form of outside aid. By the early 1990s, several parties had succeeded in crossing the continent: Fuchs in 1955–1958, Fiennes himself in 1980–1981, and two expeditions in 1989–1990—the two-man team of Reinhold Messner and Arved Fuchs and Will Steger and Jean-Louis Étienne’s International Trans-Antarctic Expedition. All had been supported by airdrops, motor vehicles, or dogs. Estimating that the 1,700-mile journey would take 108 days, Fiennes calculated that he and Stroud would have to pull loads far in excess of the highest
previously recorded by a man-hauling party: 115 kilograms each by Edward Wilson, Apsley Cherry-Garrard, and “Birdie” Bowers on the aptly-named “worst journey in the world.”

In fact, when they set off across the Filchner Ice Shelf on 1 November 1992, Fiennes and Stroud were pulling loads of 220 kilograms, and it was all they could do to move them. Since they were too heavy to drag over the 1,000-meter-high Berkner Island, Fiennes chose a route along the western edge of the island through a maze of crevasses. They managed just 4 miles the first day. Three days out, Stroud’s sledge crashed through a snow bridge, dropping him 6 meters down on a ledge with a gaping chasm below. The sledge missed his head and smashed into two against the side of the crevasse. Fortunately, neither Stroud nor the sledge runners were damaged, so they could go on. After twenty-six days, they were across the ice shelf and on land. Now they began to climb. To reduce weight, they had discarded all their warm clothes early on, and in the higher altitudes the cold became excruciating whenever they laid up to rest. Stroud, now head of applied psychology at the British Army Personnel Establishment, was conducting physiological studies that involved taking blood and urine samples each night to evaluate the effect of extreme stress on their bodies. For Fiennes, it was a high price to pay for Stroud’s company.

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Fiennes had always won such competitions before, but now he was not going to be beaten by Stroud! Sixty-eight days out, they reached the Pole on 16 January 1993, Fiennes becoming the first man to do so twice overland. There, they paused briefly to make tea, before carrying on without visiting the U.S. station, since to have received anything there would have invalidated their claim to be unsupported. Weakened by weight loss, diarrhea, feet abscesses, and skin rubbed raw in their upper thighs and crotch, they struggled on against exhaustion and hypothermia. Their equipment was breaking down, and they soon had to manage without ski sticks. On 2 February they reached the Beardmore Glacier. This marked the completion of their 1,000-mile journey across the polar plateau. Ahead lay a 3,000-meter descent to the Ross Ice Shelf and a 400-mile haul to Scott Base on Ross Island, where arrangements had been made for them to be picked up on 16 February by the last ship to leave Antarctica. Could they make it? Three days later, they had exceeded 1,245 miles, the previous record for an unsupported journey, achieved by Ernest Shackleton in 1908–1909. On 7 February, they completed the crossing of the Antarctic landmass as they stepped from land onto the Ross Ice Shelf. Their goal remained Scott Base, but it was just too much to ask: 337 miles short of their objective, Fiennes called for assistance. They were running short of food, and their physical condition was very poor. Fiennes had a foot infection that antibiotics could not control. He could not take his boot off for fear that he would not get it back on. Both men were suffering from low blood sugar (hypoglycemia), which would put them into a coma if left untreated.

Fiennes was not done with polar exploration. Indeed, he was on something of a treadmill. Since leaving the army, he had made his living by conducting annual expeditions and surviving on the proceeds of the resulting books and lectures. He had also raised several million dollars for charities. Despite being fifty-two years old, when he heard that one of his Norwegian rivals at the North Pole, Ousland, was planning to attempt the first solo unsupported crossing of Antarctica, he felt obliged to compete. His crossing in 1992–1993 had been somewhat overshadowed by Kagge’s rapid solo journey to the Pole, and Fiennes considered it high time for a Briton to come out on top in the continuing rivalry with Norwegians. Unfortunately, it was not to be. Fiennes’s kite proved far inferior to Ousland’s parasail, and as the Norwegian raced ahead to complete his crossing, Fiennes was forced to pull out half way to the Pole with kidney stones.

In 2000, Fiennes made a last attempt to complete an unsupported journey to the North Pole. Now aged fifty-six, he planned to pull two sledges with a total weight of 230 kilograms. Doing so entailed relaying one sledge at a time. Optimistically, he could expect to make 500 meters a day for the first three days, 1.4 miles each day for the next thirty days, and then 4.5 miles until the fifty-eighth day, when he would leave behind the second sledge to make 11 miles each day thereafter. At this rate, it would take eighty-five days to reach the Pole. Although Ousland had reached the Pole unsupported from Severnaya Zemlya in 1994, no one had yet made a solo unsupported journey from Ellesmere Island. In any case, he had contracted to write a book on the project and must now carry it out. For Fiennes, however, it was to prove one expedition too many. Ice conditions were very bad, much worse than in previous years. Several days out, his sledge slipped into the sea, and its trace became caught beneath the surface. To free it, he took off his outer mitt and got his left hand badly frozen in the icy water before the sledge could be recovered. Standard procedure to restore circulation was to whirl his hands around, forcing the blood back into his fingers by centrifugal force. Perhaps because of his age, this now had no effect. His fingers...
were badly frostbitten, and there was nothing he could do. At best, he faced amputation. With extreme grit he hauled himself and his sledge back to Ellesmere Island, from where he summoned help by radio.

The life of the professional polar explorer is exceedingly hard. Each expedition depends first upon an effort of imagination to conceive of something new to attempt. Unless spectacular and challenging, it has little chance of winning sufficient backing, since polar expeditions are expensive. Then follows the expedition itself—in theory the pleasurable part, though some of Fiennes's journeys sound more like exercises in masochism. Afterward come the books, lectures, and public engagements to pay off the debts, and then preparations for the next expedition. One thing that polar exploration does not fit one for is everyday life. The lucky ones are those who have an alternative career or private means to fund their polar habit.

See also: Adventurers; Fuchs, Vivian; North Pole; Northwest Passage; Ousland, Borge; Shackleton, Ernest (1907–1909); Shparo, Dmitriy; South Pole; Steger, Will (1989–1990); Unsupported Expeditions; Wilson, Edward

References and further reading:

Filchner, Wilhelm
(1877–1957)

Only in 1985 was the full truth learned concerning Wilhelm Filchner's Second German Antarctic Expedition. A scheming and malevolent captain systematically undermined the authority of his expedition leader, effectively aborting the latter's plans to establish a winter station and enforcing his early withdrawal from Antarctica with his program barely begun.

An Expedition Divided in the Weddell Sea, 1911–1912

As a young man, Lieutenant Dr. Wilhelm Filchner obtained leave from the Imperial German Army to travel in Russia and, in 1903–1904, to lead an expedition to Tibet. From 1909, he laid plans for an expedition to Antarctica, and after obtaining the patronage of Prince Regent Luitpold of Bavaria, he raised money through a public lottery. With none of his selected team at this time possessing previous polar experience, Filchner first led a training expedition to Svalbard in 1910, taking with him six others who were planning to go with him to Antarctica. Of them, only the scientists Dr. Erich Barkow and Dr. Erich Pryzbyllok eventually accompanied the expedition, though Dr. Heinrich Seelheim deputized for Filchner as expedition leader before resigning in Buenos Aires.

The ambitious objective of Filchner's Antarctic expedition was to discover whether land or frozen sea was to be found between the Weddell and Ross Seas, and thus whether Antarctica was one continent or two. His original plan called for two ships, each landing parties that, kept in contact by wireless, would approach from either side and meet in the middle. Lack of money restricted him to one ship, the 344-ton Norwegian-built barque *Bjørn*, which was renamed *Deutschland*. In command Filchner appointed Captain Richard Vahsel, second officer of *Gauss* during Erich von Drygalski's Antarctic expedition, an appointment very much forced upon him by influential naval circles. Although Vahsel's Antarctic experience would clearly be useful, he came with a dubious reputation and was described by the captain of *Gauss* as “greedy for power and an out-and-out schemer” (Filchner 1994, 202).

On 3 May 1911, the expedition sailed from Bremerhaven, Germany, under Seelheim's leadership, Filchner remaining behind to make final arrangements. At Buenos Aires, Seelheim resigned; Vahsel having made it clear that either he or Seelheim must go. *Deutschland* was now staffed by naval officers who owed their appointment and thus their loyalty to Vahsel rather than Filchner. On 18 October, the expedition reached South Georgia, where it was given a warm welcome at Grytviken by the whalers led by Carl Anton Larsen. The whalers had much to teach about the ice conditions likely to be encountered farther south, particularly in the Weddell Sea, about which no one knew more than Larsen.

Warned that it was too early in the season to have hope of finding open water in the Weddell Sea, on 1 November Filchner set out on an exploratory voyage to the South Sandwich Islands to study whether their geology confirmed the hypothesis put forward by William Speirs Bruce of a link between these and other island groups in the “Scotia Arc” with the Antarctic Peninsula and South America. Soon after *Deutschland*‘s return to South Georgia on 11 November, the third officer, Walter Slossarczyk, committed suicide. It was already clear that it was not a happy ship. Filchner now acquired an ally among the ship's officers when Alfred Kling arrived from Buenos Aires with Manchurian ponies. Alerted to potential problems with Vahsel since Seelheim's forced resignation, Filchner prevailed upon Kling to remain as watch-keeping officer.

On 11 December 1911, *Deutschland* sailed for Antarctica with thirty-three men on board, together with eight ponies and seventy-five dogs. In addition to Filchner, the scientific team comprised two of his Svalbard colleagues, Barkow (meteorology) and Pryzbyllok (astronomy, magnetism), together with Dr. Wilhelm Brennecke (oceanography) and Dr. Fritz Heim (geology, glaciology). They were accompanied by the Austrian mountaineer Felix König.

Considerable ice was met south of 57°30'S. From 62°S, *Deutschland*‘s progress was intermittent, spending long periods trapped in the ice, interspersed with occasional days of open water. On 18 January 1912, a particularly good day, the ship made 51 miles, and when Weddell's farthest south of
74°15'S was passed on 29 January, like Weddell, Filchner was in the open sea. From the quantity of icebergs, he calculated correctly that not only must there be much more open water farther south, but also that the Weddell Sea extended considerably farther than previously realized. Soundings showed a distinct shallowing in the depth of water, a sure indication that they were approaching land, which was finally sighted on 30 January. Now the weather was clear, and with the sun shining brightly, they approached ice cliffs over 30 meters high. Behind the cliffs rose slopes of ice and snow to well over 600 meters. This was a new discovery, far south of Bruce’s Coats Land, and Filchner named it Prince Regent Luitpold Coast for the expedition’s patron. The ice front continued to the south-southwest, and this area Filchner named for the kaiser, though the kaiser was later to insist that it be named for Filchner himself. The expedition reached its farthest south in an embayment in the ice at 77°44’S, which Filchner named for Vahsel. It was the most likely site for a winter station yet seen. Inland, however, travel conditions were found to be difficult across the heavily crevassed surface, and Vahsel Bay was only finally adopted after two further attempts to find somewhere more suitable.

Problems between Filchner and Vahsel now intensified, with Vahsel refusing to allow his sailors to help in setting up the station in Filchner’s preferred location, claiming that it would be impossible to move the 90 tons of provisions and equipment 2 miles across the sea ice. Ultimately, Filchner was forced to adopt a site selected by Vahsel, not on the ice shelf but on an iceberg, which looked sufficiently large and solid to remain in place for the duration of the expedition. It was not to prove the case. Having almost completed erection of their large hut on “Station Iceberg,” on 18 February 1912 a high spring tide set off a cacophony of explosions, as the iceberg slowly began to shift and then rotate as it moved out into the bay. Two days of frantic activity followed to dismantle the hut and move stores and equipment back to Deutschland. Filchner had by no means abandoned his plans to establish a winter station and to continue scientific studies. On 28 February, Brennecke and Heim were landed at their request to conduct research on the ice shelf. The next day, Deutschland was again caught up in drifting ice, from which it only escaped with difficulty. Vahsel now insisted that Deutschland should sail north for South Georgia just as soon as the two scientists could be picked up, as they were on 3 March. Seeking to lay the blame for the expedition’s failure squarely on Filchner, at Vahsel’s instigation, Brennecke organized a “Great Ship’s Council” at which Filchner was accused of taking the scientists off the ice shelf prematurely and of having made inadequate attempts to land before ordering course set for the north.

Filchner had hoped to follow his newly discovered Luitpold Coast northward to establish its connection with Coats Land. Soon, it became clear that ice rather than he would determine the ship’s course. By 15 March, Deutschland was firmly frozen into the pack and drifting slowly into the Weddell Sea. On board the unhappy ship, there were two distinct factions: Filchner and his few loyal friends, Kling, König, and Pryzbylut; and Vahsel, backed by virtually everyone else. It was a poisonous atmosphere in which to endure an Antarctic winter.

As much for relief from this atmosphere as desire for the expedition to yield at least some concrete results, when Filchner found that Deutschland’s course would take it within 40 miles of the position reported for “New South Greenland” by the American sealer Benjamin Morrell in 1823, he decided to make a journey over the ice to try to find it. This winter journey bears some comparison with that famously undertaken by Edward Wilson during Robert Falcon Scott’s second expedition, though Filchner was to enjoy at least some daylight and his lowest temperature—at −39°C (−39°F)—was significantly less cold. Another difference was that Wilson’s base was fixed, whereas Filchner would have to return to a drifting ship, which he might have difficulty in locating. On 23 June 1912, Filchner, Kling, and König set out with two sledges and sixteen dogs, provisioned for three weeks. They found the going exceptionally hard over the rough and broken sea ice. Having gone 31 miles, they turned back at 70°33’S, 44°48’W—Morrell’s position for “New South Greenland”—having seen no sign of land. The return journey was equally hard, though fortunately for most of the way they could follow their own tracks. Would they be able to find the ship? Clearly, it would not be in the same position as when they had left it, and they could guess only at the direction and distance of its drift. With Kling having just a theodolite to navigate by, Deutschland’s mast was spotted in the far distance, 38 miles from its position eight days previously. By 30 June, they were back on board.

For some weeks it had been apparent that Vahsel was ailing, and on 8 August he died, probably as a result of the later complications of syphilis, a disease whose effects might do much to explain his exceptionally malignant behavior. Command of the ship devolved to Wilhelm Lorenzen, again no friend to Filchner. By the end of September, the ice showed signs of opening up, though it was not until 26 November 1912 at 63°37’S, 36°34’W that Deutschland was finally released. Reaching South Georgia on 19 December, Filchner had to enlist the help of Larsen’s whalers to protect him from his crew, who appeared intent on physical violence and had to be housed onshore well away from the ship. Filchner now placed Kling in command of Deutschland and returned to Germany in an unsuccessful attempt to raise money for a second season.

Although not altogether without achievements, having discovered the Luitpold Coast and the Filchner Ice Shelf and proving that “New South Greenland” was not where Morrell had reported it and probably did not exist, Filchner’s Second German Antarctic Expedition is unfortunately remembered today chiefly for the intense animosity among its participants. Filchner had no taste for further polar exploration, preferring to return to the areas where he had first traveled in Central Asia and the Far East, where he was to journey extensively. Not until
after his death did he sanction release of a memoir telling the full truth concerning his Antarctic expedition.

See also: Bruce, William Speirs; Coats Land; Drygalski, Erich von; Filchner-Ronne Ice Shelf; Larsen, Carl Anton; Morrell, Benjamin; Shackleton, Ernest (1914–1916); Weddell, James; Weddell Sea; Wilson, Edward

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Filchner-Ronne Ice Shelf (Antarctica)

Situated with the Antarctic Peninsula to its west and Coats Land to its east, the Filchner-Ronne Ice Shelf occupies a position at the head of the Weddell Sea analogous to that of the Ross Ice Shelf at the head of the Ross Sea. Although of similar size and significance, it was discovered and explored very much later than the Ross Ice Shelf because it was so much more difficult to approach through the ice-strewn Weddell Sea.

The Filchner Ice Shelf was discovered by Wilhelm Filchner in January 1912. Although he named the feature initially for the German kaiser Wilhelm, the latter insisted that it be named instead for its discoverer. Filchner had attempted to establish his winter station in Vahsel Bay on a tabular iceberg. When it started to move, he was forced to make a hurried evacuation. It was to Vahsel Bay that Sir Ernest Shackleton was heading when his ship *Endurance* became caught up in the ice within sight of land and never released, before eventually being crushed some way to the north. The area was not visited again until Finn Ronne flew over it on 21 November and 12 December 1947. Based at Stonington Island in Marguerite Bay on the west coast of the Antarctic Peninsula, Ronne flew east along the ice front, hoping to reach Moltke Nunatak, the farthest point west charted by Filchner. That he was unable to achieve, but he did demonstrate the sheer extent of the ice shelf lying south of the Weddell Sea, and when it was subsequently discovered to consist not of one but of two ice shelves, separated by Berkner Island, the larger western ice shelf was named for his wife, Edith.

A number of stations have operated here since the 1950s, all but one being on the Filchner Ice Shelf, which is considerably easier to approach than its western counterpart. The first to be established was the Argentine General Belgrano at 77°59'S, 38°44'W. Opened in January 1955, it continued to operate until 1980, when it was replaced by General Belgrano II (77°46'S, 38°11'W) near Bertrab Nunatak and General Belgrano III (77°54'S, 45°49'W) at the northern end of Berkner Island. Belgrano II remains in use, but Belgrano III was closed in 1984. Shackleton (77°59'S, 37°10'W) was built at Vahsel Bay in January 1956 by the advance party of Vivian Fuchs's Commonwealth Trans-Antarctic Expedition. Fuchs set out from here on 24 November 1957 on the first crossing of the continent, and Shackleton was evacuated shortly afterward on 27 December 1957. The U.S. International Geophysical Year (IGY) station Ellsworth (77°43'S, 41°07'W) was opened in January 1957 under Finn Ronne's leadership. It was from Ellsworth that Berkner Island was discovered from the air and subsequently explored by field parties. At the conclusion of IGY in January 1959, Ellsworth was transferred to Argentina and continued to operate until December 1962.

In 1975, the Soviet summer station Druzhnaya (Friendly) was set up near the ice front of the Filchner Ice Shelf at 77°34'S, 40°13'W. A radio-echo sounding survey from here to the Pole was made the following year, and geological parties later worked in the Shackleton Range in Coats Land. In January 1982, Druzhnaya II was opened 400 miles west on the Ronne Ice Shelf at 75°36'S, 57°52'W, and the two Soviet bases were operated simultaneously during the following summers until 1986, when Druzhnaya was one of three stations carried out into the Weddell Sea on tabular icebergs when a major calving event took place. Fortunately, Druzhnaya was not occupied at the time, and the most valuable equipment was salvaged by a Soviet ship that managed to land some of its crew on the iceberg. The other two stations lost were General Belgrano and Shackleton, both closed for some years previously.

Apart from Druzhnaya II, the only other station ever to have been established on the Ronne Ice Shelf was the West German summer station Filchner (77°08'S, 50°34'W), which was opened in January 1982. In January 1999, it was removed from a tabular berg on which it too had broken off.

See also: Antarctic Peninsula; Argentina; Coats Land; Filchner, Wilhelm; Fuchs, Vivian; Germany; International Geophysical Year; Ronne, Finn; Russia; Shackleton, Ernest (1914–1916)

References and further reading:

Finland

Ruled by the king of Sweden until 1809 and subsequently a grand duchy of Russia until 1917, Finland has had little opportunity to establish a tradition of polar exploration, despite much of it lying north of the Arctic Circle. Adolf Erik Nordenskiöld, one of the greatest of all explorers, was born in Helsinki in 1832 and might have continued his career there, had he not fallen out with the Russian authorities and decided to seek employment in Sweden instead. Today, Finland takes a prominent role in Arctic research, though its stations are maintained on the European mainland and thus fall outside the scope of this book. The only exception occurred during the International Geophysical Year (IGY), when Finland mounted a joint expedition with Sweden and Switzerland to North East Land.
Finland’s involvement in Antarctic affairs began on 5 May 1984 with ratification of the Antarctic Treaty, and consultative status was achieved on 9 October 1989. Coordinated by the Finnish Institute of Marine Research, national expeditions have been undertaken on an occasional basis since 1988–1989, when the summer station Aboa was opened in the Vestfjella inland of the Princess Martha Coast. This station has since been operated through several summers, usually in combination with the Swedish and Norwegian stations in the same region, working together as a combined “Nordenskiöld Base” with logistics provided by a joint Nordic expedition.

See also: International Geophysical Year; Nordenskiöld, Adolf Erik; North East Land; Princess Martha Coast

**Foster, Henry**

(1796–1831)

The desire to map the world more accurately resulted in the first expedition to Antarctica undertaken purely for scientific purposes. It was led by the highly promising young British naval officer Henry Foster.

The earth is not a perfect globe. Because of rotational forces, it is relatively swelled at the Equator and squashed at the Poles. There are other slight unevennesses in its shape, all of which, unless taken fully into account, result in its inaccurate depiction when mapped. These variations may best be discerned by measuring the pull of gravity in different areas of the world. Thus, for example, at the Equator where the Earth’s surface is farthest away from its center, gravitational pull should be less than at the Poles, where the surface is closer to the center. Measurements of gravitational pull can be obtained using a pendulum, and a British program of gravimetric observations was initiated in 1818 at the request of Astronomer Royal John Pond. As a result, Edward Sabine accompanied the Arctic expeditions of John Ross (1818) and Edward Parry (1819–1821) so that these expeditions, both chiefly concerned with the search for the Northwest Passage, could also undertake a full program of pendulum observations. This program was continued in voyages by Douglas Clavering to West Africa in 1822 and to northern Norway, Spitsbergen, and East Greenland in 1823. On the last voyage, Sabine was assisted by Midshipman Henry Foster, whose ability and diligence so impressed the Royal Society that he was elected a fellow in 1824. Promoted to lieutenant, Foster next accompanied Parry’s third Arctic expedition (1824–1825), being awarded for his work the Royal Society’s prestigious Copley Medal.
A Scientific Expedition to the South Shetland Islands, 1828–1831

The British Admiralty was now eager to extend pendulum observations to the South Atlantic. Widely recognized as one of the Royal Navy’s leading scientific officers, Foster was the natural choice to lead the expedition, for which purpose he was promoted to commander and given charge of the 234-ton barque HMS Chanticleer.

With instructions to carry out pendulum, magnetic, meteorological, and other natural history studies throughout the South Atlantic, Chanticleer’s voyage was by no means chiefly concerned with the Antarctic, though the Royal Society did draw attention to the particular importance of conducting measurements in the South Shetland Islands and still farther south, if these regions could be reached. In any event, Chanticleer’s one Antarctic station was Deception Island in the South Shetlands, where it remained from 9 January through 8 March 1829. Finding safe anchorage at Pendulum Cove within the island’s caldera, Foster and his officers conducted a range of studies, in which they were assisted by William Webster, the expedition surgeon, whose published narrative includes insightful comments on the island’s fauna and geomorphology. An accurate map of the island was compiled by Lieutenant Edward Nicholas Kendall, a veteran of Arctic expeditions with George Lyon (1824) and John Franklin (1825–1827). A meteorological log was maintained and a self-registering thermometer left behind. The latter was found by the sealer William Smyley in 1842. The lowest temperature recorded was –20.3°C (–4.5°F), and for long afterward it was believed to be the lowest temperature that might be experienced in an Antarctic winter. Of course, that is far from the case; Deception’s climate being mild compared to that of the continental mainland.

Previous to selecting Deception as the most suitable site for his station, Foster had investigated possible alternative sites farther south. In particular, on 7 January 1829 he and Kendall had landed on Hoseason Island, naming it “Cape Possession” and claiming “Clarence Land”—that is, the Antarctic Peninsula and Palmer Archipelago—for Great Britain, naming it for the Duke of Clarence, lord high admiral. During this reconnaissance voyage, Foster also noted a high peak to the south, now known as Mount Parry and located on Brabant Island.

After five days’ struggle against contrary winds preventing exit through Neptune’s Bellows and out into the open sea, they finally left Deception behind on 8 March 1829. Chanticleer then sailed north back to Tierra del Fuego and then across the South Atlantic to the Cape of Good Hope. While engaged in surveying the Isthmus of Panama later in this expedition, Foster fell out of a canoe in the Chagres River and was drowned on 5 February 1831. Command of the expedition devolved to Lieutenant Horatio Thomas Austin, and Webster took charge of the journal. Webster’s narrative of the expedition was originally published in 1834 by Richard Bentley of London. It records an efficiently conducted expedition with few dramas apart from the very regrettable loss of its outstanding leader.

See also: Austin, Horatio; Brabant Island; Clavering, Douglas; Deception Island; Franklin, John (1825–1827); Hoseason Island; Lyon, George; Parry, Edward; Ross, John (1818); South Shetland Islands

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Foxe Basin (Canada)

The inland sea of Foxe Basin lies north of Hudson Bay. It is reached from Hudson Strait through Foxe Channel. Both basin and channel are named for the seventeenth-century navigator Luke Foxe, who was first to reach the basin in 1631. Melville Peninsula, part of the North American mainland, lies to the west, and Baffin Island surrounds the basin to the north, east, and southeast. Throughout much of the year Foxe Basin is covered by dense ice, on average 2 meters thick. It breaks up annually in late June and early July, and the basin is normally navigable by ice-strengthened vessels from late August to mid-October.

In 1613, Thomas Button returned to London, confident that the Northwest Passage would soon be discovered. He had explored the west coast of Hudson Bay without finding any possible entrance but had made observations indicating that the tides at the western end of Hudson Strait set to the northwest, which he believed to be a sure indication that the Pacific Ocean would be found not far off in that direction. First to investigate was Robert Bylot in 1615. He explored Foxe Channel as far as Frozen Strait, and although his (correct) conclusion was that the tides observed by Button were a purely local phenomenon, most explorers continued to believe that the best hope of finding the passage lay through Foxe Channel. In 1631, Luke Foxe reached 66°47’N off the west coast of Baffin Island.

Nearly 200 years later, Foxe Channel was next explored by Edward Parry (1821–1823). Parry succeeded in passing through Frozen Strait to reach Repulse Bay and Melville Peninsula and discovered Fury and Hecla Strait in 1822 with the help of information supplied by the Inuit. In 1836–1837, George Back attempted to reach Repulse Bay by the same route, only to become beset when approaching Frozen Strait, spending the next ten months drifting slowly east in Foxe Channel. Parry had clearly been lucky in meeting comparatively little ice in 1821. Another good year was 1879, enabling the whaling captain John Spicer in Era to make the first significant penetration of Foxe Basin since Parry and discover the Spicer Islands.

By 1900, the Foxe Basin coast of Baffin Island was one of the last unexplored coasts on Earth outside Antarctica. For the process whereby it was finally surveyed in the first four decades of the twentieth century, see the entry on Baffin Island. Donald MacMillan hoped to winter near Fury and Hecla Strait in 1921–1922. Unable to penetrate heavy ice off the
Spicer Islands, he wintered instead in Schooner Harbour on the Foxe Peninsula, southwest Baffin Island. Sailing with Bob Bartlett in Effie M. Morrissey; George Putnam was more successful in 1927. After surveying the north coast of this peninsula between Cape Dorchester and Bowman Bay, he then continued north along the east coast of Melville Peninsula to Fury and Hecla Strait.

On 2 September 1932, uncharted land was seen from CGS Ocean Eagle off the west coast of Baffin Island, deep within Foxe Basin. For some reason, the sighting was overlooked, and the land was not seen again until 1948, when it was observed from the air by a Royal Canadian Air Force Lancaster. Prince Charles, Air Force, and Foley Islands were visited for the first time in 1949 by Thomas Manning in the motorboat Nauja. That was the last major discovery of land in the Canadian Arctic.

As yet only icebreakers have succeeded in navigating Fury and Hecla Strait. The first west-east transit was made in early September 1948, and the first east-west transit in mid-September 1956. No ship has sailed through the entire Northwest Passage via this strait, for which the generally very heavy ice in the Gulf of Boothia presents an additional difficulty.

See also: Back, George (1836–1837); Baffin Island; Bartlett, Bob (1926–1945); Button, Thomas; Bylot, Robert; Foxe, Luke; Hudson Bay; Hudson Strait; MacMillan, Donald; Manning, Thomas; Middleton, Christopher; Moor, William; Northwest Passage; Parry, Edward (1821–1823)

References and further reading:

Foxe, Luke (1586–1635)
The search for the Northwest Passage was resumed in the 1630s by two English expeditions led by the strikingly contrasting pair of Luke Foxe and Thomas James. The roughest Foxe proved to be much the more effective explorer, but all the plaudits went to the cultivated and articulate James.

Searching for the Northwest Passage in Foxe Basin, 1631
A native of Hull, Yorkshire, Foxe had been fascinated by the Northwest Passage since his unsuccessful application to serve as mate on John Knight’s expedition of 1606. It was during one of his frequent visits to a globe maker’s shop in pursuit of this interest that he met the famous mathematician Henry Briggs, first Savilian professor of astronomy at Oxford University, and, like Foxe, an enthusiast for the Northwest Passage, on which he had published a treatise in 1622. Through Briggs, Foxe was introduced to Sir John Brooke, a man with good connections at the court of Charles I, and in 1629 the three together drafted a petition to the king for the loan of a ship. Apart from William Hawkeridge’s futile expedition of 1625, no expedition had searched for the passage since 1616, when Robert Bylot and William Baffin had explored Davis Strait in vain. Charles I now sought the advice of Sir Thomas Button, who remained as convinced as ever that the passage was to be found through Hudson Strait, so long as sufficient attention was paid to the direction of the tides at Nottingham Island at the western entrance to the strait. In 1615, Bylot and Baffin had systematically investigated these tides without finding any indication of a passage, but whether Button was unaware of their conclusions or simply dismissed them, his opinion remained unchanged. Charles now granted his support and put the expedition’s affairs in the capable hands of Sir Thomas Roe and Sir John Wolstenholme, who proved effective in organizing backing among London merchants. News of Foxe’s plans provoked the rival Bristol-based venture led by Thomas James.

On 28 April 1631, Foxe departed from London in the pinna Charles, of around 70 tons, provisioned for eighteen months and manned by twenty men and three boys. Wolstenholme had taken charge of the appointment of officers and crew, and Foxe was later to complain bitterly about the master and the master’s mate, the former apparently used to an easier life in the East India Company’s service. None of his men had participated in any previous Northwest Passage expeditions. As shown by his later meeting with James, Foxe himself was an abrasive character with a truculent sense of humor. He was to prove a skilled seaman, but his personality by no means endeared him to all.

Foxe entered Hudson Strait on 22 June and negotiated the troublesome ice by keeping close to the north shore to reach the strait’s western termination on 10 July. His instructions were next to head northwest following the direction of Button’s reported tide, but with large quantities of ice coming down the channel later to be named for him, doing so was impossible. Since it was to the northwest that new discoveries were most anticipated, this was a setback, but Foxe determined to investigate there when opportunity arose later in the voyage. For now, he turned southwest and followed the southern coasts of Coats and Southampton Islands to reach Roes Welcome Sound on 27 July. In his later published account, on the basis of its strong northerly tide, Foxe was more sanguine of finding a passage there than anywhere else in Hudson Bay. He did not explore it when he had the opportunity, however, and instead relied on Button’s mistaken conclusion that it was a bay. He therefore turned south rather than north. Hugging the coast so that it was never out of his sight, Foxe next sailed along the west coast south to “Port Nelson,” where Button had wintered, and then east along the southern coast to Cape Henrietta Maria, which was most likely the farthest west reached by Henry Hudson in 1610–1611.

It was off this cape on 29 August 1631 that he met his rival, Thomas James. The arrogant Foxe considered that there was nothing to be learned from James and was later to describe the seventeen hours spent in his company as “the worst spent of any time of my discovery” (Christy 1894, 2, 360). James was already looking for somewhere to winter, but Foxe had no
intention of joining him. Several weeks remained for further exploration. The entire shoreline of the bay having now been at least initially explored by Hudson, Button, himself, and now James, Foxe decided to head north in the expectation that ice conditions might be more favorable than they had been earlier in the year. This proved to be the case, and he was able to sail through Foxe Channel in mid-September to become the first to enter Foxe Basin, both these names being later given in his honor. There he was able to explore the west coast of Baffin Island north to 66°47'N, until an outbreak of scurvy forced him to turn back. Although provisioned to winter, he decided not to attempt to reach Port Nelson or some other suitable anchorage farther south, which he might not be able to reach this late in the year, but instead headed back to England, reaching the English Channel on 31 October 1631.

Foxe’s early return was greeted with considerable dismay by his backers. True, he had brought all of his men back alive and healthy, but he had been away only six months and whatever accomplishments he claimed, he had not found the Northwest Passage. No doubt as ever, Foxe was not his best advocate and appears to have responded to criticism by hiding himself away. All hopes of the passage now rested on James, who alone was viewed as prosecuting the search with sufficient resolution. All this was quite unfair to Foxe, the more so when James returned in October 1632, having achieved much less than Foxe and with tales of woe and disaster that, told by the silver-tongued James, evoked sympathy and even applause, regardless of the extent to which he had brought such difficulties on himself. Foxe consoled himself by laboring over his book, which he prefaced with a thoroughly researched account of previous Northwest Passage expeditions, some of which—notably that of Thomas Button—we should now know little of were it not for the information collected by him. Following the failure of Foxe and James to find the Northwest Passage, no further expeditions were to be organized to search for it until James Knight’s expedition of 1719.

See also: Baffin, William; Button, Thomas; Bylot, Robert; Foxe Basin; Hudson Bay; Hudson, Henry (1610–1611); James, Thomas; Knight, James; Northwest Passage

References and further reading:
Foxe, L. 1965. North-west Fox, or Fox, from the North-west Passage. . . . New York: John Reprint Corporation.

France

French involvement in the polar regions dates back to the earliest years of the sixteenth century, when French fishing vessels joined those of the English and Portuguese in the cod fishery off Newfoundland and Labrador. Soon afterward, the Basques came there to whale and by the late 1530s had established a shore station at Red Bay. Since the whales migrated north into Davis Strait as the ice retreated, the Basques may have sailed quite far north, and though there are no documented sightings of Greenland and Baffin Island, it is not unlikely that they saw and even visited these lands, especially the former. Basque whalers were also active off Spitsbergen, when its whaling grounds were opened up in the early seventeenth century. Although some sailed on French vessels, many more were employed as harpooners—a highly skilled profession—on Dutch, English, and Danish ships.

The first French voyages to the Antarctic were made in the eighteenth century, when several expeditions searched for land reported in a high southern latitude by Binot Paulmyer de Gonneville (1503–1505). Because de Gonneville had established a very early French claim, it was hoped that Gonneville Land would offer a valuable territorial acquisition that would compensate to some degree for the loss of France’s North American colonies in the Seven Years’ War (1756–1763). Discovery, however, proved difficult as a succession of expeditions searched in vain, making other discoveries—generally bleak and uninhabitable islands—but not the populated and wealthy land reported by de Gonneville. Thus, Bouvet Island was located by Jean Bouvet de Lozier (1738–1739), the Kerguelen Islands by Yves Kerguelen-Trémarec (1771–1772, 1773–1774), and the Prince Edward and Crozet Islands by Marc-Joseph Marion Dufresne (1771–1773).

At the same time that preparations were being made for Kerguelen-Trémarec’s second voyage, Louis-Antoine de Bougainville proposed an expedition to the Arctic. After conducting a preliminary investigation in the vicinity of Spitsbergen, he planned to establish a station there with one vessel and to attempt in another to cross the Arctic Ocean close to the Pole, where he believed he would find open sea. There was insufficient funding to sponsor both Bougainville and Kerguelen-Trémarec, and Bougainville’s plan was rejected. Jules de Blosseville’s naval expedition to Greenland in 1833 was one of the greatest polar disasters. Sent to conduct magnetic studies and explore the east coast, de Blosseville succeeded in charting the Blosseville Coast between 68°30’N and 69°N, a region not subsequently mapped until 1899. Having returned to Iceland for minor repairs to his ship, La Lilloise, he set out again for Greenland and was never seen again. Eighty-three men were lost. Between 1834 and 1836, three expeditions searched for him, and although they found no sign, they did return with promising scientific results, resulting in the foundation of the Commission Scientifique d’Islande et de Groenland, later the Commission Scientifique de Nord, which organized the first large-scale expeditions to Spitsbergen in 1838 and 1839 under Paul Gaimard. Recherche Bay in Bell Sound takes its name from La Recherche, the vessel employed on these expeditions, as well as on the second and third voyages in search of de Blosseville.

Despite considerable activity elsewhere in the world, France’s contribution to Antarctic exploration during the nine-
teenth century was surprisingly modest, consisting of just one expedition. That one was sent out primarily to explore the South Pacific, to which a brief Antarctic sortie was appended at the personal request of the French monarch, who was piqued that the record farthest south should be held by a British rather than a French citizen. Although Jules Dumont d’Urville (1837–1840) did not sail farther south than James Weddell, he did make the significant discovery of Adélie Land. No more French expeditions were made to Antarctica until Jean-Baptiste Charcot visited the Antarctic Peninsula in 1903–1905 and 1908–1910.

It was left to Louis-Philippe-Robert, Duc d’Orléans, to renew French exploration of the Arctic. His interest aroused by a hunting trip to Spitsbergen in 1904, he subsequently conducted three voyages in Belgica, captained by the Belgian explorer Baron Adrien de Gerlache. In 1905, he reached 77°01′N—the highest latitude to date off East Greenland—and discovered Île de France. In 1907, he explored the sea around Novaya Zemlya, passing through Matochkin Strait to reach the Kara Sea, and then drifting south in heavy ice to Kara Strait, through which he returned to the Barents Sea. On his last voyage, he visited East Greenland, Spitsbergen, and Franz Josef Land. In 1908 and 1914, Charles Bénard was sponsored by the Société d’Océanographique du Golfe de Gascoyne to conduct scientific investigations of the Barents Sea and Novaya Zemlya. In addition to much useful mapping, Vladimir Rusanov achieved the first crossing of the north island on the first expedition, and Bénard himself crossed the southern island on the second. Charcot’s later expeditions between 1912 and 1936 were all to the Arctic. Regularly visiting Iceland, Jan Mayen, and East Greenland on annual voyages in Pourquoi-Pas?, he landed and supplied several expeditions, including the French Second International Polar Year expedition to Scoresby Sound and that of Paul-Émile Victor, the future founder of Expéditions Polaires Françaises (EPF).

Noting the large sums of revenue raised for Great Britain from the granting of whaling licenses by the Falkland Islands Dependencies, the French government reserved mining, hunting, and fishing rights to Adélie Land by French presidential decree on 27 March 1924. The same year French claims were reaffirmed to the Crozet and Kerguelen Islands, where previous attempts had been made to foster commercial activity and which had been visited over a long period by French sealers and whalers, as well as by those of other nationalities, most notably American. The strategic as well as the commercial possibilities of France’s Antarctic possessions were clearly demonstrated during World War II, when the German raiders Atlantis and Pinguin made use of anchorages in the Kerguelen Islands. Following the conclusion of this war, steps were taken to put French claims beyond possible dispute through the establishment of permanently manned stations: Port-Martin in Adélie Land was opened in January 1950 and Port-aux-Français on Kerguelen began operations in January 1951. Port-Martin was largely destroyed by fire on 23 January 1952 and replaced by Dumont d’Urville in 1956. During the International Geophysical Year, a second continental station was maintained at Charcot, close to the South Magnetic Pole. As a claimant state, France was naturally one of the twelve original signatories to the Antarctic Treaty. Since 1963–1964, a station has also been maintained on Possession Island in the Crozet Islands.

For many years, responsibility for logistical aspects of the French Antarctic program was exercised by EPF, the organization founded by Paul-Émile Victor in 1947. Victor himself chose to work in Greenland (for an account of his work there, see the entry under his name). One of those assisting him in 1950–1951 was Jean Malaurie, who later became the most influential figure in French Arctic work in the post-Victor generation. In 1992, EPF was replaced by a state-run enterprise now known as Institut Polaire Français Paul-Émile Victor. This organization has primarily focused on Antarctica, one particularly significant initiative being the establishment of Concordia (1993–), a summer station jointly operated with the Italian Antarctic program to conduct a major ice coring project far inland at Dome C, one of the most elevated areas of the ice sheet. The medical scientist and adventurer Jean-Louis Etienne has done much to maintain popular interest in polar exploration. In 1986, he made the first solo expedition to the Pole unassisted by dogs, and in 1989–1990 was coleader with Will Steger of the first expedition to cross Antarctica by its longest axis.

See also: Adélie Land; Bouvet de Lozier, Jean; Charcot, Jean-Baptiste; Crozet Islands; Dumont d’Urville, Jules; Gerlache, Adrien de; International Geophysical Year; International Polar Years; Kerguelen Islands; Kerguelen-Trémarec, Yves; Marion Dufresne, Marc-Joseph; Prince Edward Islands; Steger, Will (1989–1990); Victor, Paul-Émile

References and further reading:

Franklin, Jane
(1791–1875)
Much of the Canadian Arctic was explored during the middle years of the nineteenth century during an exhaustive search for the lost expedition of Sir John Franklin. Lady Franklin, Sir John’s wife, never visited the Arctic, nor did she write or lecture about it, and yet her influence on the course of polar exploration was greater than that of any other woman, before or since.
It was not unusual for contact to be lost with polar expeditions over a period of years. When nothing had been heard from Sir John for two years, proposals began to be made for a relief expedition. At this date, it was not presumed that he had necessarily gotten into difficulties—after all, he had two fine ships, and his officers and crew were the pick of the Royal Navy—but, nevertheless, there was a possibility that some assistance might be required. Jane Franklin—née Griffin—was Sir John’s second wife. She had initially become acquainted with him as a close friend of his first wife, the poetess Eleanor Anne Porden, who had died young. They married in November 1828, five months before he was knighted for leading two expeditions to chart the Arctic coast of North America. Lady Franklin was an inveterate traveler, and she was an invaluable prop when her husband was appointed governor of the penal colony of Van Diemen’s Land (Tasmania) in 1836. It was not a happy time for Sir John, who returned with his reputation under a cloud and eager to seize any opportunity to restore it. Although fifty-eight, he now volunteered to lead an expedition to discover the Northwest Passage. Shortly before they parted in 1845, Lady Franklin was completing the last stitches of a flag to go with him. Sir John was asleep, and to keep him warm, she placed it over his feet, causing him to wake up and exclaim, “Why, there’s a flag thrown over me. Don’t you know that they lay the Union Jack over a corpse!”

“What the Nation Would Not Do, a Woman Did,” 1847–1859

One of the first to offer to search for Sir John was his former traveling companion Sir John Richardson. Accompanied by Dr. John Rae, he was to investigate the southern coast of Victoria Island in 1847, and Lady Franklin initially thought to go with him. She soon realized, however, that there would be more than enough for her to do in London, where the Admiralty required continuous encouragement to ensure that the search was prosecuted with sufficient vigor. Lady Franklin was an assiduous and highly persuasive correspondent, always aware of exactly which words to use to whom. In general, she believed in getting action by writing to the top. In addition to Admiralty officials and government ministers, others who received letters from her included Nicholas I, tsar of Russia; Napoleon III, emperor of France; Zachariah Taylor, president of the United States; and Lord Palmerston, prime minister of Great Britain. Where those in power proved reluctant, pressure was placed upon them by judiciously drafted questions for members of Parliament and letters to the popular press. The British public was not allowed to forget Sir John, and his wife was a widely respected figure. When it seemed as if the Admiralty wished to abandon the search in 1851, the resulting outcry was such that the largest naval expedition of all was sent out the following year.

Lady Franklin was repeatedly disappointed by the efforts of the search expeditions: by Sir James Clark Ross in 1869, who returned one year early without following his instructions to explore west of Cape Walker; by Horatio Austin in 1851, who also returned one year early, and avowed that nothing more could be achieved; and, most of all, by Sir Edward Belcher in 1854, whose abandonment of four vessels in the Arctic would probably have terminated naval searches for Franklin even if war had not broken out in the Crimea. Not only did these men demonstrate a lack of resolve, but they also confined their searching to regions where Lady Franklin considered there was little likelihood that Sir John would have gone. Knowing him as she did, she was adamant that he would have obeyed his instructions to the letter, insofar as that was possible. Thus, she always considered it probable that he would be found south and probably west of Cape Walker, rather than north of Wellington Channel. In these conclusions, she found private support through spiritualism. In May 1850, a Captain William Coppin passed on to her a message supposedly communicated by the spirit of his deceased four-year-old daughter, “Weesy” (Louise). When interrogated by her aunt as to the whereabouts of Sir John, the following words had appeared in a large, round hand on the opposite wall: “Erebus and Terror, Sir John Franklin, Lancaster Sound, Prince Regent Inlet, Point Victory, Victoria Channel.” How influential Lady Franklin’s dabblings in clairvoyancy were to her thinking continues to be debated, but it is fact that when Leopold McClintock finally discovered where Erebus and Terror had been abandoned, their location was off Point Victory
in Victoria Strait, though Franklin's route had taken him through Peel Inlet from Lancaster Sound, rather than Prince Regent Inlet. McClintock, however, had indeed steamed through Prince Regent Inlet (Lloyd-Jones 2001).

In addition to the expeditions of Ross, Austin, and Belcher, the Admiralty also sent Richard Collinson and Robert McClure to explore east from Bering Strait, and Thomas Moore to wait for Sir John in the vicinity of this strait. But Lady Franklin was not satisfied. Through astutely placed correspondence, she persuaded the Admiralty to fit out the whaler William Penny with two vessels. Another letter—to President Taylor—resulted in the American philanthropist Henry Grinnell sponsoring two more expeditions, led by Edwin De Haven and Elisha Kent Kane. As if all this were not enough, largely at her own expense but with some additional funds raised through public subscription, she also managed to equip five further expeditions, led by Charles Forsyth (1850), William Kennedy (1851–1852, 1853–1854), Edward Inglefield (1852), and McClintock (1857–1859).

In January 1854, Lady Franklin received a letter from Sir James Graham, first lord of the Admiralty, informing her of the government's decision to remove the names of the officers and men of Erebus and Terror from the Admiralty's books; in other words, they were to be officially declared dead. Lady Franklin refused the widow's pension and insisted on abandoning the mourning black in which she was customarily dressed for bright green and pink in token of her belief that her husband was still alive. In her letters, she suggested that this decision might be linked with Parliament's recognition of the discovery of the Northwest Passage by McClure, which she also considered premature, given that he might well have been anticipated by her husband. The year 1854 was a particularly black year for Lady Franklin, since it brought not just the return of Belcher, with no news of her husband and without four of his five ships, but, worst of all, a letter from John Rae in October, stating that he had found objects among the Inuit of Pelly Bay proving the loss of many, if not all, of those with Franklin. The bodies of many white men had been seen close to the mouth of the Great Fish River, which Lady Franklin had long urged should be searched.

Although it was now likely that her husband was dead, along with those with him, Lady Franklin did not forsake her campaign. When the Crimean War ended in 1856, she petitioned the Admiralty for a final expedition to discover the cause of the catastrophe and to bring back written records. Although the government was unwilling to fund another expedition, leave of absence was granted to McClintock and other naval officers volunteering to sail in Fox. The bulk of the expenses had yet again to be borne by Lady Franklin, though some additional funds were raised from the public, her cause remaining a popular one. Unlike Forsyth and Kennedy, McClintock carried out her instructions to explore the region immediately west of Boothia Peninsula, though following Rae it was clear to all that the truth of Sir John's tragedy was to be learned on King William Island. Here, McClintock found bodies and just one critical record, whose brief phrases summarized the achievements and end of the fated expedition. After McClintock, it could not be denied that it was Franklin and not McClure who had discovered the Northwest Passage. As Richardson put it, they had "forged the last link with their lives" (quoted in Woodward 1951, 289).

Lady Franklin's role in polar exploration is unique. Without her, the search effort would undoubtedly have terminated years earlier, leaving much of the Canadian Arctic undiscovered. U.S. involvement in Arctic exploration would not have begun until after the Civil War, and whatever reputation such figures as Kane and Charles Francis Hall would have made for themselves, it would not have been, as polar explorers. The achievements of her own expeditions were also not inconsiderable, particularly those of Kennedy, Inglefield, and McClintock. Although Sir John's disappearance provided the motive for the extended Franklin search, without Lady Franklin it would have been a brief and forgettable affair, rather than the process whereby one of the world's great archipelagoes was discovered and charted.

References and further reading:

Franklin, John
(1786–1847)
The most famous disaster in the history of polar exploration was the loss of 129 men during the third expedition of the British naval officer Sir John Franklin. Heavy loss of life also characterized his first expedition to Arctic Canada, and only his second expedition may be considered in any measure a success. For the British public, however, he was the greatest polar hero of all, and indeed, if courage alone were sufficient for an explorer, he would have few peers.

John Franklin was a seemingly unlikely man to lead such an adventurous career. Mild-mannered, easygoing, and generally agreeable, blessed with successfully happy marriages to two remarkable women, what drove him to take on the most challenging tasks, from which others—perhaps better suited—drew back? For Franklin, adventure began early in life, for no sooner had he joined HMS Polyphemus as a first-class volunteer in 1800 than he was involved in the Battle of
Copenhagen. Franklin was later to serve as midshipman in charge of signals in HMS Bellerophon at the Battle of Trafalgar and in 1814 to be present at the British attack on New Orleans. As if this were not enough, between 1801 and 1804 he had assisted his uncle Matthew Flinders in making the first circumnavigation of Australia, during which he spent six weeks on a sandbank before being rescued after HMS Porpoise was wrecked on a reef.

His experience with Flinders was probably responsible for his selection as second-in-command on David Buchan’s expedition of 1818. Buchan had been assigned the impossible task of sailing across the Arctic Ocean via the North Pole. Typical of Franklin’s adventurous spirit was his willingness to make another attempt to get far north despite severe damage to his ship, HMS Trent, and the evident futility of finding a way through impassable ice. Nor was he abashed on return to Great Britain, submitting a proposal to the Admiralty to lead an expedition that would seek to reach the North Pole by sledge over the ice. Some years later—in 1827—just such an expedition took place, though it was led not by Franklin but by Edward Parry.

**A Nightmare Journey across the Canadian Barrens, 1819–1822**

Second Secretary of the Admiralty John Barrow had been the prime instigator of both Buchan’s expedition and the simultaneous attempt by John Ross to discover the Northwest Passage through Baffin Bay. Ross had been little more successful than Buchan, but that did not deter Barrow from persuading the Admiralty to organize two more expeditions the following year, one led by Parry to Baffin Bay and the other an overland expedition to the mouth of the Coppermine River east along the Arctic coast of North America. Although the natural choice to lead the latter might appear to have been Buchan, based on his previous experience of two lengthy overland journeys in Newfoundland, instead the enthusiastic but overweight Franklin was chosen. Judging by what was to follow, if the offer had originally been made to Buchan, he was right to demur. Franklin was accompanied by the naturalist Dr. John Richardson, midshipmen George Back and Robert Hood, and able seaman John Hepburn. Back and Hepburn had been with Franklin in Trent in 1818.

In 1771, Samuel Hearne had traveled down the Coppermine River to become the first European to reach North America’s Arctic coast. This coast had only been seen once since—by Alexander Mackenzie in 1789—though James Cook had inferred from the westward trend of land beyond Icy Cape, Alaska, that he was close to the continent’s northern limit. On the basis of these three sightings, Barrow concluded that the Arctic coast lay more or less aligned west-east at about 70°N. Franklin’s task was to chart it from the Coppermine River east to Hudson Bay. Instructed to make economies where he could, Barrow did not offer Franklin the full logistical support of the Royal Navy but merely made arrangements with the Hudson’s Bay and Northwest fur-trading companies for him to be conveyed as far north as these companies operated—Great Slave Lake—and to provide him with supplies for his journey to and along the Arctic coast. Whatever these companies’ representatives in London might say, once Franklin and his men had crossed the Atlantic Ocean to reach York Factory, Hudson Bay, on 30 August 1819, he discovered that assembling his expedition came very low on their scale of priorities, competition between the two having become so intense that at its worst Indians were being commissioned to attack and kill each other’s agents.

Franklin’s original plan was to follow Hearne’s route to the mouth of the Coppermine River overland from the northernmost Hudson’s Bay Company (HBC) trading post at Churchill. At York Factory, however, he was advised that at this time of year he would do better to travel to Cumberland House, another HBC trading post on the Saskatchewan River. Unfortunately, only one boat and one man could be provided, meaning that much of his supplies had to be left at York Factory to be forwarded later. After a journey of 700 miles up the Nelson and Saskatchewan Rivers, they reached Cumberland House on 23 October. On 19 January 1820, Franklin, Back, and Hepburn set out on snowshoes for the North West Company (NWC) post, Fort Chipewyan, 857 miles away on Lake Athabasca to the northwest. Arriving there on 26 March, Franklin sought to confirm arrangements with NWC and recruit voyageurs. Meanwhile, Richardson and Hood were to bring the expedition’s provisions by boat in the spring. This, however, was a time of great shortage, made no better by the near open warfare between the two companies, and when Richardson and Hood joined Franklin on 12 July, they brought with them just ten bags of spoiled pemmican. Six days later, they set out in canoes for Fort Providence on Great Slave Lake, arriving there on 29 July to meet the veteran fur trader Willard-Ferdinand Wentzel, who had been commissioned to accompany them to the Arctic coast and had recruited Indian guides, hunters, and interpreters for this purpose. After some hard bargaining between Franklin and Akaitcho, the Indian leader, it was agreed that Franklin should meet up with the Indians farther north up the Yellowknife River, where winter quarters would be established at Fort Enterprise on Winter Lake.

In addition to the Indians, Franklin’s party now consisted of six Europeans, two Métis interpreters, and seventeen voyageurs, the latter accompanied by three wives and three children. It was a formidable number to attempt to feed through the winter in a region where game was scarce, the task being made no easier by shortage of ammunition—much having been left behind at York Factory—and by the Indians’ custom of not hunting on certain days in honor of dead members of their tribe. Relations between Franklin and Akaitcho became tense, and the situation was only saved by a remarkable overland journey by Back who traveled to Fort Chipewyan on snowshoes, a distance of some 1,100 miles there and back,
in the process browbeating the managers of the trading posts he passed through into ensuring that many of the supplies left at York Factory would finally reach Fort Enterprise.

On 14 June 1821, Franklin set out for the Coppermine River, now accompanied by two Inuit interpreters who had been sent on from York Factory during the winter. Establishing good terms with the Inuit was critical to Franklin's plans to explore the Arctic coast, a region with which they alone were familiar. Unfortunately, news of the approach of a large party, including Indians, reached the Inuit, who abandoned their settlement near the mouth of the Coppermine, fearing repetition of the massacre committed by the Indians accompanying Hearne fifty years before. Franklin had no subsequent opportunity to make contact with them. Having reached the coast, Wentzel considered that he had fulfilled the terms of his engagement and hurried south with the Indians, leaving twenty men with Franklin to sail in two large canoes as far east as they could manage. Already supplies were short, but the lack of food did not stop Franklin from exploring the intricacies of first Coronation Gulf and then Bathurst Inlet during a voyage of 555 miles. Faced with rising protests from the voyageurs, for whom the sea was an entirely alien element, and the near exhaustion of provisions, on 18 August Franklin decided to turn back at Turnagain Point on the Kent Peninsula at 110°05'W. Fearing that the increasingly ice-infested sea would be too much for his fragile birch-bark canoes, instead of returning up the Coppermine River, he decided to head up the Hood River, which appeared to lead in the general direction of Fort Enterprise.

Now followed one of the most appalling of all polar journeys. By 4 September 1821, the last piece of pemmican had been consumed, and they had to live off the land. What little game inhabited these far northern regions was migrating south, and only a few caribou could be shot. For the rest, they survived by gathering lichen—referred to optimistically as *tripes de roches*—and by scavenging leftovers from wolf kills. The voyageurs stayed with Franklin only because they believed that he alone knew the way back to Fort Enterprise. This was not true, but it was a convenient fiction to maintain. It was not sufficient, however, to persuade them to continue to carry heavy loads as they weakened, first one canoe and then the other being dropped. Even items clearly essential for their survival, such as the fishing nets, were abandoned. The folly of leaving the canoes was demonstrated when they finally found the Coppermine River but had no means of crossing it. Richardson heroically attempted to carry a line across, nearly drowning in the freezing water. One of the interpreters, St. Germain, saved the situation by laboriously piecing together a fragile craft out of willow and canvas and in this, one by one, they were ferried across. Fort Enterprise was only a few days away, but it was still too far for many in the party, which now numbered eighteen, two men having already been lost along the way.

Once across the Coppermine River, Franklin divided his men into three groups. An advance party consisting of Back and three others went on ahead to seek help from Akaitcho and the Indians at Fort Enterprise. Next followed Franklin, initially with nine voyageurs, leaving behind the much-weakened Hood and Richardson, looked after by Hepburn, who were to wait until help could be brought to them. This rear party was soon joined by the Iroquois Indian Michel Teroahauté, who had been sent back from Franklin's group with three other voyageurs who mysteriously never arrived. Michel, however, was fit and well and able to supply the three Britons with much-needed meat, albeit of an unfamiliar taste. Soon afterward Michel's behavior became increasingly erratic, and on 20 October 1821, while Richardson and Hepburn were scavenging for food, they heard gunfire. They returned to find Hood dead, shot through the back of the head. Michel's explanation that Hood had accidentally shot himself was unconvincing, and thereafter Michel kept his gun handy and made sure that the other two were never able to speak together in private. By now, Richardson had concluded that the strange-tasting meat—wolf meat, according to Michel—actually came from the bodies of the three missing voyageurs and that Michel probably intended the same fate for them. When, therefore, the
latter finally left them to gather *tripes de roche*, after consulting briefly with Hepburn, Richardson shot him as he returned. This was the story communicated to Franklin when the two men staggered into Fort Enterprise on 29 October. Meanwhile, Franklin had reached the fort on 12 October, finding to his horror that despite repeated instructions to Wentzel, no food had been deposited there, and that Back had gone on toward Fort Providence in the hope of making contact with the Indians. Nine men were now dead, and two more died before Akaichoo's Indians reached them on 7 November, to feed and care for the survivors with extreme solicitude and then assist them to Fort Providence, which they reached on 11 December.

Despite fulfilling his expedition’s objectives to only a minimal degree, Franklin received a hero’s welcome when he arrived in Great Britain in October 1822. Although he had surveyed only 555 miles of North America’s Arctic coast, in the process he had traveled 5,500 miles and survived an ordeal whose horror beggared belief. For the British public, Franklin was the man who had eaten his boots, and indeed they had been considerably more nutritious than much of what he and his men had had to survive on.

**The Arctic Survey Continues, 1825–1827**

Undeterred by the extreme travails of his first expedition, it was not long before Franklin—now promoted to post-captain—submitted a detailed proposal to Barrow to undertake a second journey to the Arctic. This time he wanted to travel down the Mackenzie River and then follow the coast east to the Coppermine River and west to Icy Cape, Cook’s farthest east of 1778. The Western Party could be picked up by ship at Kotzebue Bay or, alternatively, could return the way it had come. A major objective of the plan was to establish British claims to this coast before the Russians could do so, expanding north from their trading posts in southern Alaska. Forestalling the Russians had always been of particular concern to Barrow, and Franklin’s proposal fitted well with his other planned expeditions, in which Parry was to make another attempt to sail through the Northwest Passage—this time via Prince Regent Inlet—and George Lyon was to survey the Arctic coast east from northern Hudson Bay. Barrow’s fourfold campaign was completed by Frederick Beechey, who was instructed to investigate the vicinity of Bering Strait while waiting for Franklin and Parry. Richardson and Back again accompanied Franklin, and assistant surveyor Edward Kendall was added to the party when Lyon was forced to make a premature return after a near shipwreck.

With conflict between the Hudson’s Bay and Northwest Companies ended by their coalition in 1821, conditions were much more favorable than in 1819 for the mass transportation of provisions to Great Bear Lake, where Fort Franklin was established ahead of the arrival of the exploring party by chief trader Peter Dease. Franklin’s planning was meticulous, and from the moment his expedition was approved, arrangements were made with HBC to ensure that adequate supplies were taken far north to await his arrival. Franklin himself followed the fur-trader routes overland from New York to Cumberland House, where he arrived on 15 June 1825. From there the Athabasca and Slave River systems led north to Great Slave Lake and the Mackenzie River. On reaching Fort Norman, some 200 miles downstream the Mackenzie, Franklin divided his party. While Back took the supplies to Fort Franklin and Richardson reconnoitered the north shore of Great Bear Lake for a suitable return route from the Coppermine River, Franklin and Kendall continued on to examine conditions at the mouth of the Mackenzie. Reaching there on 16 August, Franklin noted an encouraging absence of ice before heading back to Fort Franklin, where all was found in good order on 5 September. Despite his party now numbering fifty persons, none went hungry, for the plentiful local fish and the provisions brought with them proved more than sufficient for the long winter.

By 22 June 1826, Franklin was ready to depart, sailing down the Great Bear and Mackenzie Rivers in four sturdy 8-meter boats named *Lion*, *Reliance*, *Dolphin*, and *Union*. Reaching Point Separation at the head of the Mackenzie delta on 3 July, Richardson and Kendall were sent east with ten men in *Dolphin* and *Union* toward the Coppermine River, and Franklin and Back headed west with fourteen men in *Lion* and *Reliance*. Not long afterward, they noted a large Inuit encampment on Halkett Island. Mindful that much more was to be achieved with the help of the Inuit than without it, Franklin and his interpreter, Augustus, now approached them in the hope of establishing friendly relations. Unfortunately, when the unimaginable wealth of goods in the boats was spotted, the Inuit swarmed all over them, appropriating whatever they could, not excluding the very clothes they wore. They were only persuaded to desist when the previously patient Franklin threatened to shoot the first Inuk to come within musket range.

On 9 July 1826, they met ice for the first time, that and persistent fog slowing their progress thereafter. For six weeks Franklin followed the coast west, in the process discovering and naming Herschel Island, Camden Bay, and Prudhoe Bay. Near the last, Franklin decided that having covered only half of the distance to Icy Cape, where he was to rendezvous with Beechey, he had no prospect of reaching there before winter set in, and therefore opted to turn back at the Return Islands at 148°52'W. At this point, he was less than 200 miles from a boat sent by Beechey to meet him, a fact naturally he had no means of knowing. After an equally difficult return voyage, by 21 September Franklin’s party was back at Fort Franklin, having surveyed 374 miles of previously unexplored coast.

Meanwhile, Richardson had succeeded in reaching the mouth of the Coppermine River, some 500 miles east of the Mackenzie River on 8 August. Along the coast he had discovered and named Liverpool, Franklin, and Darnley Bays, in addition to making the first European sighting of Victoria
Island and exploring Dolphin and Union Strait. Returning to Fort Franklin via the Coppermine and Dease Rivers on 1 September, Richardson then continued south to study the region’s natural history during an extended journey that included circumnavigating Great Slave Lake.

On his return to Great Britain in late September 1827, Franklin was again welcomed as a hero. Although he had been unable to chart the most westerly parts of the Arctic coast of North America, when taken together with the boat survey conducted by Beechey’s expedition, only a short section now remained to be explored, together with the coast east of Point Turnagain. His first wife, the poetess Eleanor Anne Porden, had died shortly after his departure in 1825, and on 5 November 1828 Franklin married Jane Griffin. Official recognition followed domestic happiness with the award of a knighthood in April 1829. Franklin’s hope had been to complete the survey of the Arctic coast with a third expedition, a project in which he was initially encouraged by the Admiralty, until a sudden change of direction led to the shelving of all plans for further exploration of the Arctic. Instead, he was condemned to spend much time on half-pay before being appointed lieutenant governor of Van Diemen’s Land (Tasmania) in April 1836, an office that he discharged until 1843, when he was dismissed after arousing the hostility of those who objected to his humane administration of this penal colony. The sensitive Franklin felt his disgrace keenly, and when he heard that the Admiralty was planning to resume its search for the Northwest Passage and that Sir James Clark Ross had declined leadership, he grabbed at the opportunity to redeem his reputation by offering himself as leader despite being now aged fifty-eight.

The Great Arctic Disaster, 1845–1848
Following James Clark Ross’s triumphantly successful voyage to Antarctica, the Admiralty was encouraged to organize one more expedition to complete the discovery of the Northwest Passage. A mood of considerable optimism prevailed that the Royal Navy was about to unite Parry’s discoveries through Lancaster Sound in 1819–1820 with those of Franklin, Richardson, Dease, and Thomas Simpson, who had found a near-continuous belt of open water immediately off the North American mainland. The suitability for polar exploration of Ross’s vessels HMS Erebus and HMS Terror was proven, and their capability to navigate ice-congested channels was further improved by the addition of steam engines. Since Parry alone had investigated the region west of Barrow Strait, Franklin’s instructions were necessarily largely determined by what he had seen. Franklin was thus to begin his search at Cape Walker, Parry’s most westerly sighting of land until “Banks Land”: “Thence he is to steer to the southward and westward towards Bering Strait in as straight a line as is permitted by ice or any unknown land. . . . This route offers the best prospect of discovering a North-West Passage, because the ice seen at Cape Dundas, Melville Island, appeared to be fixed and very heavy. But should a permanent obstruction be found to the southwestward of Cape Walker, he is to consider the alternative of passing between Cornwallis Island and North Devon if the strait between them is open.” Following their extended voyage to Antarctica, few members of Ross’s expedition were prepared to join Franklin, a notable exception being Captain Francis Crozier, who was given command of Terror. Barrow’s preferred leader was the young and energetic Commander James Fitzjames, who instead was appointed Franklin’s chief executive officer in Erebus. The vessels were provisioned for three years.

Erebus and Terror sailed from London on 19 May 1845. The transport ship Barretto Junior accompanied them as far as West Greenland, where stores were transshipped off Godhavn. Four men were discharged at this point, reducing the total complement to 129. On 12 July, Franklin continued north. Erebus and Terror were last seen in northern Baffin Bay by the whalers Enterprise and Prince of Wales toward the end of July.
The subsequent course of the expedition must be reconstructed on the basis of two brief messages, oral testimony from Inuit who came in contact with members of the expedition, and the conclusions of archaeologists on the basis of analysis of the bodies and artifacts found on Beechey and King William Islands and in the vicinity of Back River.

The following few facts are certain:

1. After reaching 77°N in Wellington Channel, Franklin circumnavigated Cornwallis Island.
2. He then wintered at Beechey Island. (The cairn messages give 1846–1847 for this wintering but must be in error. The dates inscribed on three graves confirm that Franklin was there in 1845–1846.)
3. On 12 September 1846, Terror and Erebus were beset off Point Victory, King William Island.
4. In May 1847, Franklin sent Lieutenant Graham Gore, mate Charles F. Des Voeux, and six men from Erebus to explore south along the west coast of King William Island, presumably to establish that Victoria Strait connected with Simpson Strait, thus proving the existence of a Northwest Passage.
5. Franklin died on 11 June 1847.
6. The ships were abandoned on 22 April 1848.
7. By this time, nine officers and fifteen men had died, the 105 survivors being led by Crozier. (The scale of the fatalities suggests a severe outbreak of scurvy, though other causes—for example, botulism—have also been proposed.)
8. They began their journey toward the “Great Fish River” (Back River) on 26 April.

So much is certain. Most commentators go beyond these facts to infer that after entering Lancaster Sound, Franklin interpreted his instructions to the letter, first attempting to reach Cape Walker, from where he was instructed to head south and west, and only seeking to sail north through Wellington Channel when he found the first route impossible. Meeting impenetrable ice farther north, he rounded Cornwallis Island before returning to establish winter quarters at Beechey Island, whose suitability for this purpose he must have noted previously. Nothing certain is known concerning the following year before the ships became beset off King William Island, but Franklin’s failure to leave any kind of record at Beechey Island is most easily explained if one assumes that the ice broke up with extreme rapidity, perhaps bearing away the vessels before he had opportunity to deposit one. Why Franklin had not shown the forethought to leave messages before in preparation for just such an event is another matter, and indeed it is an issue on which he has been much criticized, although British expeditions were generally much less punctilious in leaving records than they were to become following the Franklin disaster.

The year 1846 appears to have been exceptionally favorable. Almost every other expedition has found Peel Sound closed by dense ice, but Franklin made his way south through there and Franklin Strait—or less likely, through the even more generally inaccessible McClintock Strait farther west—to reach Victoria Strait, not far from Point Victory. Franklin’s course took him west rather than east of King William Island. As Roald Amundsen proved in 1903, a navigable passage is to be found east of the island, but Franklin knew nothing of it, relying on the accuracy of reports by J. C. Ross and Dease, neither of whom had noted the straits separating King William from the mainland. Instead, Franklin found himself almost immediately beset in the dense ice stream forced south through McClintock Strait from the polar pack. Once frozen in there, there was no prospect of his vessels ever being released.

There has been much speculation concerning the very heavy fatalities, but given the circumstances, whatever role may have been played by lead poisoning, botulism, and other suggested factors, scurvy, malnutrition, and cold would have been quite sufficient to account for the majority of deaths. What perhaps is more inexplicable—and there is much that is difficult to understand concerning the final actions of the survivors—is why Crozier chose to head toward Back River rather than east toward Fury Beach, Somerset Island. In not dissimilar circumstances and after a similar length of time imprisoned in the Arctic between 1829 and 1833, John Ross had been forced to abandon his vessel and had brought back almost all of his crew alive, by surviving off stores left behind at Fury Beach in 1825 by Parry and then making his way north to be picked up by the whalers frequenting Lancaster Sound. True, Ross had considerably reduced the store of provisions available at Fury Beach, and they might not have fed 105 men for long, but anyone familiar with Back’s narrative would know how scarce resources were likely to be near the Back River and also how difficult that river would be to ascend to inhabited regions. Crozier must have been very desperate indeed to have made this decision. Also difficult to explain is his early departure date, when traveling would have been so much easier later in the year. Again, why was the 8-meter boat-sledge weighed down with so many useless objects—cutlery, books, two rolls of lead sheeting, and so on—and why was it pointing back toward the ships when found? Where did the shipwrecks take place? Is it even possible that they were not wrecked at all but later drifted back to Baffin Bay? Certainly, two apparently similar vessels were seen on an iceberg near Newfoundland in 1851. There are sufficient mysteries surrounding Franklin’s last expedition to keep generations of travelers and scholars occupied long into the future.

With no more records to guide us, the narrative of the expedition’s last days are told by the trail of possessions and bodies abandoned along the coast of desolate King William Island. A group of Inuit reported meeting about forty men at Cape Herschel, to whom they sold seal meat before making themselves scarce, fearing that the resources of the area would be insufficient to support themselves and the kabloonas. The lat-
ter were in a bad way, almost out of food and with scurvy undoubtedly rampant. The last survivors made their way across Simpson Strait to Adelaide Peninsula on the mainland. Here, at Starvation Cove, they lay down and died.

The fate of his last expedition inevitably overwhelms everything else in any assessment of Franklin's career. His was an extraordinary life, lived by someone in most respects unexceptional, distinguished only by fearless courage and a determination to carry out orders regardless of circumstance. This blind heedlessness was particularly evident in the conduct of his first expedition but may also be inferred for the third. It is likely that Franklin experienced no great qualms in thrusting his vessels into the icy turmoil of Victoria Strait. Having triumphed over adversity so often in improbable circumstances, he must have had every expectation of doing so once more, but there is only so far that good fortune can take one, and at this point he and all those with him were forsaken. No less than twenty expeditions participated in the search for survivors. None was found, but during the course of their investigations, much of the Canadian Arctic was explored and charted for the first time. An overview of these explorations is given in the entry “Franklin Search Expeditions.”

See also: Back, George; Barrow, John; Beechey, Frederick; Buchan, David; Cook, James (1776–1780); Dease, Peter; Franklin, Jane; Franklin Search Expeditions; Hearne, Samuel; Hudson's Bay Company; King William Island; Lyon, George; Mackenzie, Alexander; North Pole; Northwest Passage; Parry, Edward; Peel Sound; Richardson, John; Ross, James Clark (1839–1843); Ross, John

References and further reading:
The literature on Franklin, especially his last expedition and the searches generated by it, is vast and continues to grow. The following is a very select list.


Franklin Search Expeditions

In polar history, the only analog for the Franklin search is the so-called Heroic Era of Antarctic exploration. During both episodes, intense exploratory activity was focused on regions previously largely ignored, with every venture attracting the enthralled attention of the general public. The great difference between the two is that whereas the goals of the Heroic Era were to reach the South Pole and explore a continent, those of the Franklin search were to find a missing expedition. Both led to great advances in geographical knowledge.

During his lifetime, Sir John Franklin was Great Britain’s most popular Arctic explorer, having become generally known as “the man who ate his boots” following his grim first expedition. At the age of fifty-eight, he volunteered to take command of a voyage to discover the Northwest Passage. Sailing from London in May 1845, he was last seen in northern Baffin Bay in late July. No plans had been laid for a relief expedition, but when concern began to mount two years later, the Admiralty was eventually pressed into action. Since it was not known exactly where Sir John might be in the maze of islands north of continental America, three expeditions were organized: one to follow his course through Lancaster Sound; one to wait for him at Bering Strait; and one to travel overland to the Arctic coastline, where a narrow belt of open water was known to be present in most years and through which Sir John was expected to sail. These expeditions were led by Sir James Clark Ross, Thomas Moore, and Sir John Richardson, respectively. This threefold strategy remained central to Admiralty planning throughout the Franklin search, based on the advice of a group of distinguished naval explorers known as the Arctic Council. Despite Stephen Pearce’s well-known painting showing this council in session, it is thought that its members never met as a body but were rather consulted as individuals.

The ten members were the Arctic explorers Sir George Back, Captain Frederick Beechey, Captain Edward Bird, Sir Edward Parry, Sir John Richardson, Sir James Clark Ross, and Lieutenant-Colonel Edward Sabine, together with three representatives of the Admiralty: John Barrow Jr., Sir Francis Beaufort, and Captain W. A. Bailie Hamilton.

Sir John’s instructions are quoted in the entry under his name, but, in brief, he was to seek the passage southwest of the prominent headland Cape Walker, which marked the last known land before Banks Island. Should doing so prove impossible, he was to explore north through Wellington Channel. When the Admiralty’s three initial expeditions failed to discover any sign of Sir John, public concern for the missing explorers made it mandatory that further expeditions be organized. They followed the same plan: Horatio Austin and William Penny explored from the west, John Rae continued the overland explorations begun with Richardson, and Richard Collinson and Robert McClure were sent to explore east from Bering Strait. Three private expeditions accompanied Austin and Penny: Charles Forsyth, sent by Lady Franklin; Sir John Ross, partly sponsored by the Hudson’s Bay Company; and Edwin De Haven, sponsored by the American philanthropist Henry Grinnell. Much to the disappointment of Lady Franklin.
and her many sympathizers, when Austin and Penny returned the following year, they had discovered no more than where Sir John had spent his first winter, but nothing concerning where he had gone afterward. Furthermore, Austin insisted that there was nothing more to be learned: for all practical purposes, Sir John had vanished. Others—notably Penny—disagreed, but not until another year passed was the Admiralty persuaded to make another attempt to find him. Sir Edward Belcher was sent with five vessels, the largest of all the Franklin search expeditions.

Unknown to the searchers, Sir John had encountered exceptional conditions in 1846, allowing him to sail south through Peel Sound, a channel which, when subsequently inspected by Sir James Clark Ross and members of Austin’s expedition, appeared completely unnavigable. Thus, by 1852, only Lady Franklin believed that there was any need to look for Sir John south of Parry Channel. In 1851, she had sent William Kennedy to Prince Regent Inlet for this purpose, but unfortunately he did not explore sufficiently far south to find Sir John, whose ships had become beset west of King William Island. Indeed, when Kennedy returned it was to report mistakenly that Peel Sound was closed by land. Belcher’s orders were therefore to concentrate his search farther north, the presumption being that Sir John had got into difficulties attempting to obey the second part of his instructions, to explore north through Wellington Channel. Not surprisingly, Belcher found nothing, though sledding parties from his vessels and those of his subordinate Henry Kellett greatly extended the coastal survey work conducted previously by Austin and Penny in particular. A second disaster was narrowly averted when Kellett relieved McClure on Banks Island, the latter completing the first crossing of the Northwest Passage on foot. Belcher’s ignominious return in 1854 without four of his ships concluded the Admiralty’s search effort. Shortly afterward, Rae reached London with conclusive proof that Sir John’s expedition had met a tragic fate west of the Boothia Peninsula, near the mouth of the Back River. At the request of the British government, the Hudson’s Bay Company sent two of its employees—James Anderson and James Stewart—down this river, but they were able to discover little more.

Without Lady Franklin, the Franklin search would have ended at this point, with just Collinson to complete his voyage back to Great Britain. Lady Franklin, however, was determined that the site of her husband’s end must be visited, and in 1857

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Inuit. Table 9 lists some of the more notable attempts. As

1992 Ranford King William Island Private

1967 Project Franklin King William Island Private

1959 Hall Baffin Island Private

1860–1862 Hall King William Island and Melville Peninsula Private

1853–1854); and McClintock. Table 8 is limited to those actu-

ally reaching the Arctic, and thus omits Lady Franklin's fourth

and Kennedy's second expedition, which got no farther than

Valparaiso before it was deserted.

After McClintock's voyage, the location of the disaster was

known, as were the broad outlines of Sir John's voyage. Much

about his expedition, however, remained mysterious, and a

number of explorers have since visited King William Island to

search for more information, especially the location of Sir

John's grave, any kind of written record, and to interrogate the

Inuit. Table 9 lists some of the more notable attempts. As

recently as 1992, Barry Ranford discovered the remains of six

more bodies, but no further documents have ever been found,

and it is now generally assumed that Sir John was buried at sea.

See also: Austria, Horatio; Beechey Island; Belcher, Edward; Collinson,

Richard; Franklin, Jane; Franklin, John; Hall, Charles Francis; Heroic

Era of Antarctic Exploration; Hudson's Bay Company; Kane, Elisha

Kent; Kellett, Henry; Kennedy, William; King William Island;

McClintock, Leopold; McClure, Robert; Man-Hauling; Moore, Thomas

(1848–1852); Northwest Passage; Penny, William; Rae, John;

Rasmussen, Knud (1921–1924); Ross, James Clark (1848–1849); Ross,

John (1850–1851)

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Franz Josef Land (Russia)

Located between 79°46' and 81°52'N and 44°52' and 65°25'E, this

archipelago of 191 islands is the northernmost territory of the

Russian Federation, occupying 6,200 square miles and extending

230 miles from west to east and 145 miles from north to south. Ice

caps and glaciers cover 85 percent of its surface area. It lies

160 miles east of Svalbard and 225 miles northwest of Novaya

Zemlya. Cape Fligely on Rudolf Island is just 475 nautical miles

from the North Pole. Franz Josef Land is named for Emperor

Franz Josef of Austro-Hungary, this name being given by Julius

Payer and Karl Weyprecht, who first came within sight of it on

30 August 1873. The official Russian name is Zemlya Frantsa-Iosifa.

Although discovery is generally credited to Payer and

Weyprecht's Austro-Hungarian expedition, they may not have

been the first to see the islands. Some time in the late

seventeenth century, the Dutch whaler Cornelis Roule is reported as

sailing north from the west coast of Novaya Zemlya to discover

a land of fiords at 84°–85°N. After following its coast for some

distance, he entered a fiord and climbed a mountain from

where he could see open water farther north. He described see-

ing many birds. Although the latitudes are too high, such a

sighting was possible, and there certainly was whaling activ-

ity in the northern Barents Sea in good ice years. A whaler had

no cause to be secretive about any land discoveries made, but

walrus hunters and sealers had every reason not to spread

news of what they had seen, especially if their prey was likely
to be found in large numbers. Thus, although the Norwegian

walrus hunter Nils Fredrik Rønnebeck may indeed (ca. 1865)
have sailed 200 miles east of North East Land in Svalbard to

discover land that he named “North-East Spitsbergen” or

“Ronnebeck Land,” no documentary evidence survives, and the

voyage is known only through the verbal report of a sailor said
to have accompanied Rønnebeck.

The archipelago can be subdivided into three main groups:

a central group including most of the islands, separated from

an eastern group (including Graham Bell Island and Wilczek

Land) by Austrian Sound and from a western group (inclu-
ing Alexandra Land, George Land, and Northbrook Island) by British Channel. These two straits leading north were first named and explored by Julius Payer in 1874 and Frederick Jackson in 1895, respectively. The eastern group and eastern coasts of the central islands were first explored by Payer. The western group includes those islands possibly first seen by Rennbeck, though discovery is generally credited to Benjamin Leigh Smith in 1880, with further explorations conducted by Smith the following year and by Jackson. Payer had depicted the central area as continuous mainland, which he named "Zichy Land." It was afterwards shown by Jackson and Anthony Fiala to consist instead of numerous small islands. Payer also believed the archipelago to be extended farther north by "King Oscar Land" and "Petermann Land." Fridtjof Nansen's failure to see any such land on his journey south in 1895 raised doubts about its existence, and conclusive proof that Payer had been mistaken was provided by members of Georgiy Brusilov's expedition in 1914.

Many of the early expeditions came here not to explore the archipelago but because Franz Josef Land appeared to provide the most promising departure point for attempts to reach the North Pole. Thus Jackson's original intention (1894–1897) was to seek the Pole, and it was only because he found the archipelago to be quite different from previously described—a landmass of possibly continental size stretching toward the Pole—that he found himself constrained to devote his energies to survey work, making a very significant contribution to the mapping of the western islands in particular. Walter Wellman's planned polar journey (1898–1899) was similarly unsuccessful, but his expedition also added to knowledge of Franz Josef Land through the discovery of the easternmost island, Graham Bell Island, and identification of smaller islands such as Alger and Hayes, not shown separately on Payer's map. Payer's "Zichy Land" was finally proved to consist of numerous separate islands by Russell Williams Porter during the expedition led by Anthony Fiala (1903–1905). Other North Pole expeditions were led by Luigi, Duke of the Abruzzi (1899–1900), Evelyn Baldwin (1901–1902), and Georgiy Sedov (1912–1914). As well as these expeditions seeking the Pole from Franz Josef Land, Nansen famously found refuge in the archipelago after attempting the Pole from his expedition vessel Fram, when it became apparent that its drift through the Arctic Ocean would not take it sufficiently far north. Nansen wintered on Jackson Island before his fortuitous meeting with Jackson at Cape Flora, Northbrook Island.

On 15 April 1926 Franz Josef Land was annexed by the Soviet Union. It had previously been considered *Terra nullius* (No man's land). The Soviet claim was based not on discovery or occupation, for there had been very little previous Russian or Soviet activity on the islands, but instead on application of the controversial sector principle, which had first been applied in the Arctic by the British Empire in relation to Canada. No Russian ship visited Franz Josef Land until 1901, when the experimental icebreaker *Yermak*, captained by Stepan Osipovich Makarov, landed a party on Cape Flora on 27 July. Sedov's expedition was here between 1913 and 1914, and during the latter year the archipelago was also reached by members of Brusilov's expedition and the search vessel *Hertha*, looking for survivors from Sedov's and Brusilov's expeditions. During the early Soviet era, activity was restricted to a few hydrographic and biological cruises—*Persey* (1923, 1924), *Yelling* (1925), and *Zarnica* (1927)—and in 1928 the icebreakers *Sedov* and *Krasin* searched the western islands for survivors from Umberto Nobile's *Italia* expedition. During Krasin's voyage, the crew took the opportunity to raise the Soviet flag on George Land and confirm the Soviet claim.

Soviet annexation was initially disputed by Italy, on the grounds that Payer and Weyprecht's expedition was more Italian than Austro-Hungarian, and by Norway, whose hunters had been visiting Franz Josef Land for walrus, seals, and bears possibly as long ago as 1865. In the late 1920s, a race developed between Norway and the Soviet Union to establish the first scientific station as a mark of territorial occupation. Norway's campaign was led by the shipowner and whaling magnate Lars Christensen, who was simultaneously promoting Norwegian claims in the Antarctic. Although a Norwegian expedition was unable to penetrate heavy ice surrounding the archipelago in 1929, the Soviet icebreaker *Sedov* successfully established the first scientific and radio station at Tikhaya Bay, Hooker Island, in August of that year. In 1930, the Soviet Union banned all unauthorized access to the archipelago, though that did not prevent Gunnar Horn in the Norwegian vessel *Bratvaag* from visiting George Land, Northbrook Island, Alger Island, and Alexandra Land that year.

Subsequent exploration and scientific activity has been almost exclusively Soviet and Russian, the chief exception being Hugo Eckener's 1931 overflight in the airship *Graf Zeppelin*, whose main contribution was to take aerial photographs demonstrating, among other things, the nonexistence of Jackson's "Albert Edward" and "Harmsworth" islands. In 1932, the archipelago was circumnavigated for the first time by Nikolay Zubov in *N. M. Knipovich*. The following year, a topographic survey at the scale of 1:200,000 was begun by the Arctic Institute of Leningrad. A second scientific station was opened in 1932 on Rudolf Island, which, from 1936 on, was expanded into a support facility for major state programs involving high-latitude flights and the establishment of the drifting ice station North Pole–1 in 1937 (see Papanin, Ivan). Three hundred people wintered in Franz Josef Land in 1937–1938, when two ships bringing supplies and equipment to assist the search for the missing transpolar aviator Sigismund Levanevskiy were caught in the ice and not released until 31 May 1938 by *Yermak*.

Although Tikhaya Bay was manned throughout World War II, elsewhere Soviet activity ceased, and a secret German meteorological station on Alexandra Land remained undetected.
from September 1943 to May 1944, when it was evacuated following an outbreak of trichinosis. After the war, Tikhaya Bay was finally relieved and Rudolf Island reopened. New stations, essentially for military purposes, were established on Alexandra Land in 1952 and on Graham Bell Island, and a new scientific facility was set up on Hayes Island for the International Geophysical Year (1957–1958). The Hayes Island station soon replaced Tikhaya Bay as the chief location for scientific studies, leading to the latter's closure in 1959. During the Cold War, Franz Josef Land's strategic location led to it being considered "the unsinkable aircraft carrier" of the Soviet Union, following research at Hooker Island into the possibilities of constructing military airfields on and inside ice caps. The adoption in 1956 of intercontinental ballistic missiles as the prime means of delivery for the Soviet nuclear deterrent led to a decline in the importance of the archipelago as a forward base for strike bombers and to a consequent decline in related research. Improved relations with western powers and the poor state of the post-Soviet economy in the 1990s resulted in the closure of all stations except Nagorskoye on Alexandra Land.

See also: Abruzzi, Luigi; Duke of; Alexandra Land; Alger Island; Baldwin, Evelyn; Brusilov; Georgy; Christensen, Lars; Eckener, Hugo; Fiala, Anthony; George Land; Graham Bell Island; Hall Island; Hayes Island; Hooker Island; International Geophysical Year; Jackson, Frederick (1894–1897); Jackson Island; Nansen, Fridtjof (1893–1896); Nobile, Umberto; Northbrook Island; Payer, Julius; Rudolf Island; Sedov, Georgy; Smith, Benjamin Leigh; Wellman, Walter (1898–1899); Wilczek Land

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Frobisher, Martin (1539–1594)
Although John Cabot had searched for the Northwest Passage in 1497 and 1498, as his son Sebastian may also have done in 1508–1509, the three expeditions led by Martin Frobisher in the 1570s should be regarded as inaugurating the first great era of English expeditions seeking a seaway to Cathay and the Far East by sailing north of North America. The third expedition—involving fifteen ships and over 400 men—has been described as the largest Arctic expedition ever, but was in truth more of a mining than an exploring enterprise because Frobisher was believed to have returned from his first expedition with gold.

Frequently described as a pirate, Martin Frobisher certainly sailed close to the wind in his youth, when he was licensed to seize ships operated by French Catholics but was probably none too particular about seizing others, not excluding English vessels. Whatever the legality of his activities, they got him known at court, where he was regarded as a brave and capable captain.

English interest in the Northwest Passage, which lay within the area demarcated as Spanish by the 1494 Treaty of Tordesillas, revived with the accession of Queen Elizabeth I to the throne in 1558. As English foreign policy under Elizabeth took an increasingly anti-Spanish, anti-Catholic line, Spanish antagonism toward English exploration in this region was discounted, and most eager of all to do so was the "Protestant party" among Elizabeth's courtiers and councilors. Sir Humphrey Gilbert had brought the matter to general attention when he debated the rival merits of the Northwest and Northeast Passages before the court in 1565. He later wrote up his arguments in Discourse of a Discoverie for a New Passage to Cataia, which, although published in 1576, had received wide circulation before. Gilbert was eager to lead an expedition himself, but his proposals were expensive and the privileges demanded great, so Elizabeth found him other work to do. License to explore was instead bestowed in February 1575 on Frobisher and the merchant Michael Lok. Lok put up almost half of the funding, with most of the remainder provided by Elizabeth and her courtiers. All three voyages received strong royal backing.

A Voyage to the Northwest Passage Brings Back Gold, 1576
On 7 June 1576, Frobisher set out from Deptford (London) in the 35-ton Gabriel, accompanied by the 30-ton Michael. Southeast Greenland was sighted on 1 July. Unfortunately, one of the charts on board was the "Zeno map," which notoriously depicted the fictitious travels of the Zeno brothers in the late fourteenth century. This map placed Greenland 20 degrees too far west and 6 degrees too far north, in addition to showing a number of nonexistent islands. One of them, "Frisland," was located at the correct latitude for south Greenland, and in consequence Frobisher was misled into thinking that it was the land he had seen.

Soon after sighting land, they encountered pack ice. Michael turned back, but Gabriel was forced to head southwest. On 28 July land was again in view, which, on the basis of the Zeno map, Frobisher identified as Greenland, naming his landfall "Queen Elizabeth's Foreland." It was in fact Resolution Island, at the mouth of Hudson Strait. Frobisher continued north to locate a large inlet, "Frobishers Straits," into which he sailed some 150 miles. He was now certain that he had found the Northwest Passage, with North America to his south, Asia to his north, and Cathay to his west beyond the strait. Unfortunately, he turned back just short of the western termination of the bay and so never learned of his mistake. He had in fact reached Frobisher Bay in southern Baffin Island.

In the openings between the numerous islands, small floating objects appeared in the distance. Initially, they were thought to be porpoises or seals or a strange type of fish, but on closer approach, it was seen that these were men in small boats covered with skins. Most encouragingly for Frobisher, they looked like Tartars, with long black hair, broad faces, and
flat noses, providing further proof that he had reached Asia. Several Inuit bravely ventured onto the ship to be given bells, looking glasses, and other objects, and one volunteered to pilot the ship westward to where the Englishmen expected soon to reach open sea. Frobisher sent this Inuk back to shore to prepare for the journey, accompanied by five of his crew, instructing the latter to land him on a small island some distance from where a large number of his fellows were gathered. His order was foolishly disobeyed. They and their boat were seized and never seen again. The Inuit then made themselves scarce for several days, until one was enticed close to the ship by Frobisher’s ringing of a bell. As he reached out to take it, Frobisher grabbed him and hauled him and his kayak clean out of the water and onto the deck of the ship, where he was taken prisoner as a hostage to be exchanged for his missing men. With still no sign of them and now with no boat to go ashore to search, there seemed little point in remaining further, so after spending just fifteen days in Frobisher Bay, orders were given for Gabriel to set sail for England, accompanied by the solitary Inuk hostage, who sickened and died soon after arrival in Harwich, England, on 2 October 1576.

Frobisher had had very little opportunity to obtain anything from land before his boat was lost. On his return all he had to offer Lok was a heavy black piece of rock, which Lok in turn passed to his wife. She threw it on the fire and then cooled it by pouring vinegar over it, whereupon “it glistered with a bright Marquesset of golde” (Stefansson 1938, 51). Now, Lok took it to four assayers, three of whom said that it contained no gold; the fourth—John Baptista Agnello, an alchemist—came back with powdered gold and asked to be given a larger piece, with the same result. Although others were skeptical, with Agnello offering to buy ore at £30 a ton, Lok signed a contract to deliver 300 tons. Of all this, Frobisher knew nothing, until Lok approached him in March 1577 to lead another expedition.

The First Arctic Gold Rush Begins, 1577

Equipped by Elizabeth with the 180-ton royal warship Ayde in addition to his two vessels of the previous year, Frobisher sailed from London on 25 May 1577. Attempts were made to keep news of the finding of gold secret, but Elizabeth was kept informed, and she and those of her courtiers in the know ensured that the enterprise did not lack funds, the Queen herself subscribing £1,000 in addition to providing Ayde. Frobisher’s achievements during the previous voyage were recognized by his elevation to “High Admyrall of all seas and waters, countryes and places of new dyscovery.” Some 120 men sailed with him, many of them miners. “Frisland” was sighted on 4 July 1577. There, Frobisher spent four days attempting to land but was prevented by offshore ice. By mid-July, he was back at Frobisher Bay. Landing where the original black stone had been picked up, he could not discover anything like it anywhere on the island. Similar stones, however, were found in large quantities on nearby islands. Still nursing hopes of recovering his five missing men, Frobisher attempted to obtain hostages, but the Inuit were now wary of approaching too close. Several were killed before he was able to capture three, including a woman with a young child. With the hostages acting as interpreters, Frobisher managed to understand from local Inuit that his lost crew members were still alive, and on 7 August he sent them a message outlining the terms under which he would hand over the hostages in exchange for the release of his men. No response was received. The season was far advanced, and Frobisher’s instructions were to mine for gold and leave further exploration for a future voyage. By 22 August, nearly 200 tons of ore had been loaded onto his ships. The following day Baffin Island was left behind, with England reached in late September after a stormy passage.

1,000 Tons of Gold Ore Prove Worthless, 1578

With the assayers again optimistic of gold, the expedition’s backers were delighted with Frobisher’s apparent success and soon determined to commission another expedition. Elizabeth now named his discovery Meta Incognita (the Unknown Limit) and drew up plans for a colony. For his next
expedition, Frobisher commanded a fleet of fifteen vessels, including a good proportion of the larger ships in the English fleet, an indication of the importance attached to the venture by Elizabeth. In addition to mining—the expedition’s primary purpose—Frobisher was to leave behind a colony of 100, who were to winter at Frobisher Bay together with three of the ships.

With the fleet assembling some days earlier, on 31 May 1578 all was ready for Frobisher to sail from Harwich. By 20 June “West Friesland” was reached, and this time he was able to land, presumably somewhere on the coast of southwest Greenland. Signs of habitation were noted but no natives seen. Sailing west through ice-infested waters toward Frobisher Bay, the 100-ton barque *Dennys* struck an iceberg and sank. All on board were saved, but the cargo, including part of the prefabricated winter house, was lost. Further incident followed as the fleet was scattered in a violent storm, some ships finding themselves cut off by ice, whereas others were driven out to sea. Eventually, all were reunited, except four that sailed back to England. Now hampered by fog, Frobisher mistook his bearings, initially entering the wrong strait, into which he sailed for twenty days before turning back. It was in fact Hudson Strait. Frobisher wished to explore these “Mistaken straights” further, but his instructions specifically excluded activities other than mining. He must have turned back shortly before the strait opened up into Hudson Bay.

Only on 1 August 1578 did Frobisher reach Frobisher Bay, where he was relieved to find himself preceded by two of his fleet, which he had not seen since the storm. Selecting “Countess of Warwick’s Island”—Kodlunarn Island—as a suitable site for the wintering party, they constructed a small stone house rather than the much larger accommodation originally planned. Frobisher was forced to abandon plans to winter when he saw how little of the prefabricated house remained intact after the journey, as well as how much essential drink and fuel had been carried aboard the ships failing to reach Frobisher Bay. Large quantities of rocks similar to those brought back before were found, and time being short, Frobisher gave instructions for each captain to load his own ship, giving the order for departure on 30 August.

More than 1,000 tons of ore were carried when the ships finally found a way out through storm and ice to the open water of the North Atlantic, straggling home to England in late September and October 1578. One curiosity of the return voyage remains to be explained. The officers of the *Emanuel*—also known as *Buss of Bridgewater*—reported seeing an island on their return journey at 57°30’N, along which they sailed for three days. Later seamen too were to report seeing “Buss Island,” which nevertheless does not exist.

**The Postscript**

What happened afterward? No gold was found in the rocks, and chief backer Michael Lok was sent to a debtor’s prison. Lok berated Frobisher for not ensuring that the miners brought back ore identical to the original black stone. Indeed, so hard was the rock around Frobisher Bay and so little time was available for mining that much of the “ore” probably was just such stone as came readily to hand. Whether the original black stone itself contained gold is of course another question. Although no conclusive proof survives, it does not seem impossible that Agnello was a Spanish agent employed to distract the English from further Northwest Passage expeditions and, if possible, to ensure that the Queen and other backers—largely of the anti-Spanish Protestant party—suffered heavy financial losses. If so, he was spectacularly successful. It is difficult otherwise to explain Agnello’s willingness to give away valuable gold dust in exchange for valueless stone, unless of course the stone actually was gold-bearing, which on the face of it appears unlikely. There is also one piece of supporting evidence. King Philip II of Spain undoubtedly took great interest in the progress of the expedition, of which he was kept well-informed by his assiduous ambassador, Don Bernardino de Mendoza. It has recently been shown that Mendoza actually succeeded in placing a Spanish spy on the expedition (Allaire and Hogarth 1999). Given the state of relations between the two countries at the time, it is conceivable that the hijacking of an English exploratory venture into a search for “fool’s gold” was also the product of Spanish intrigue.

Despite Lok’s strident recriminations, Frobisher himself led an increasingly distinguished career, serving first in Ireland in 1578 and then as vice admiral in 1585–1586 during a privateering expedition to the West Indies led by Sir Francis Drake. In the defeat of the Spanish Armada in 1588, he commanded the largest English ship, *Triumph*, and was knighted for his services. He subsequently commanded other expeditions against the Spanish before dying in 1594 from a wound incurred as he was leading an assault on a fortress outside the French port of Brest.

Only in 1861 was the true location of Frobisher’s *Meta Incognita* rediscovered by the American Charles Francis Hall, while he was searching for the lost expedition of Sir John Franklin. He was led to Kodlunarn Island, where he found the stone hut and other materials. The Inuit still preserved oral memories of Frobisher and were able to inform him of the fate of the five men taken prisoner, who had survived the winter living with the Inuit but had then lost their lives attempting to return to England in a boat they had made. Why did it take so long to rediscover Frobisher Bay? The explanation lies in what cartographic historians refer to as the “Greenland transfer.” The first English terrestrial globe was made in 1592 by Emery Molyneux, who relied heavily on the advice of John Davis for his depiction of Greenland and northern North America. On his own expeditions Davis had noted three great inlets to his west—Cumberland Sound, Frobisher Bay, and Hudson Strait. However, he did not appreciate that the second was indeed that explored by Frobisher, which Frobisher, mis-
led by the Zeno map, had reported as being in Greenland. Although Frobisher’s latitude could be relied upon as reasonably accurate, his longitude could not. The result was that Davis advised Molyneux to locate “Frobisher Straits” at the southern tip of Greenland, where it continued to be shown on maps into the nineteenth century.

See also: Baffin Island; Cabot, John; Cabot, Sebastian; Cartography of the Arctic; Davis, John (ca. 1550–1605); Franklin Search Expeditions; Hall, Charles Francis (1860–1862); Muscovy Company; Northwest Passage

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Fuchs, Vivian (1908–1999)

Once the South Pole had been reached, the next great objective for Antarctic explorers was to cross the continent. Sir Ernest Shackleton had set himself this formidable task in 1914, only to fail without even setting foot on land. Not until 1958 was the crossing made by the Commonwealth Trans-Antarctic Expedition, led by the British scientist Vivian Fuchs.

**The First Crossing of Antarctica, 1955–1958**

In July 1947, largely on the basis of extensive previous expeditionary experience in Africa, the geologist Dr. Vivian Ernest Fuchs was appointed field commander of the Falkland Islands Dependencies Survey (FIDS). He was based at Stonington in Marguerite Bay, becoming one of the “Lost Eleven” when this station could not be relieved the following year. It was during a lengthy sledge journey with Ray Adie at this time that the idea first arose of attempting a continental crossing. For several years, it remained little more than a dream as Fuchs, now director of the FIDS Scientific Bureau, found his time absorbed by other duties. However, he continued to discuss the possibility with others, some of whom responded with enthusiasm, whereas others decried it and suggested that so ambitious a venture should be left to the Americans. Eventually, he received generous backing from the governments of Great Britain, Australia, and South Africa, with New Zealand undertaking to make arrangements for depots to be laid from Ross Island toward the South Pole.

In this last regard Fuchs’s plan was essentially similar to that of Shackleton, who had also made arrangements for depots to be laid south from Ross Island (see Mackintosh, Aeneas). Fuchs too intended to start out from Vahsel Bay, on the southern coast of the Weddell Sea, but his plan differed from Shackleton’s in that he intended to first land an advance party to establish a station. In the following season, a second base was to be set up on the polar plateau, where further supplies and equipment would be deposited before the long journey to the South Pole and across was attempted. Unlike Shackleton, Fuchs had powered vehicles and aircraft available to him, for although dogs too were employed, he was to rely chiefly on mechanized transportation.

On 14 November 1955, Fuchs sailed from London with the advance party in the chartered Canadian sealer *Theron*. On board were two Auster aircraft, a Sno-Cat, several tractors, and twenty-four dogs. At Montevideo, Uruguay, he was joined by Sir Edmund Hillary, leader of the New Zealand expedition that would lay the depots from Ross Island, Hillary’s second-in-command J. H. Miller, and Squadron Leader John R. Claydon. The voyage provided them with invaluable experience of Antarctic conditions. After calling briefly at South Georgia, where wings were fitted to one of the Austers, *Theron* met the pack ice on 22 December. Fuchs had hoped that air reconnaissance would enable him to locate leads of open water, by means of which *Theron* would be able to make its way through the central Weddell Sea rather than following the established but much longer route farther east. Unfortunately, the Auster could only be used where there was sufficient open water to take off, which was seldom, and it took thirty-three days to reach Vahsel Bay, where Shackleton Base was established on 29 January 1956 at 77°57’S, 37°17’W, 2 miles from the ice cliffs forming the edge of the Filchner Ice Shelf.

Assisted by two Ferguson tractors and a Weasel, unloading proceeded rapidly but not without alarms as the pack ice threatened to close in and trap *Theron*, just as Shackleton’s *Endurance* had been caught in 1915. Having made such slow passage through the Weddell Sea, there was no time to help erect the hut or move supplies up to the base from the ice edge, and 300 tons of stores had to be left on the sea ice, including the coal and much of the fuel and food. With ice beginning to form around the ship, *Theron* was ready to depart, but not before two flights were made to reconnoiter the route south that Fuchs and the crossing party would soon follow. Mountains were discovered—first the Theron Mountains and then the Shackleton Range. These discoveries were exciting but worrying in that they presented potential barriers to the southern journey. Unable to wait longer, *Theron* sailed north on 7 February 1956.

The advance party consisted of eight men led by Kenneth V. Blaiklock. In addition to deputy leader Ralph A. Lenton, the others included three meteorologists (R. H. A. Stewart, Peter H. Jeffries, and J. J. La Grange), an engineer (Sergeant Major D. E. L. Homard), a radio operator (Sergeant E. Williams), and a medical officer (Dr. Rainer Goldsmith). Both Blaiklock and Lenton had extensive Antarctic experience with FIDS, Homard had been with Jim Simpson’s British North Greenland Expe-
dition, and La Grange had served on Marion Island with the South African Weather Bureau.

With time only to erect the hut’s framework, all the advance party had for accommodation was the packing crate of the Sno-cat, measuring 6.4 by 3 by 2.5 meters, which had been erected to provide temporary shelter before the base itself could be built. In late March a fierce blizzard set in, keeping the men trapped inside the crate for seven days. When they emerged, they found open water where the sea ice had been, and their entire supply of coal, along with a tractor and many other essential supplies, was lost. Fortunately, the dogs and much of the food had just been moved off the ice, but as a result they had to endure the Antarctic winter in considerable discomfort. Within the crate, ice coated the floor, and their breath and the moisture generated by cooking formed stalactites that hung from the ceiling above their heads. The panels and timber out of which the hut was to be constructed lay buried under vast accumulations of rock-hard snowdrifts. Meanwhile, they slept in two-man tents as temperatures descended to \(-53^\circ C\) \((-63^\circ F)\). Slowly, the panels were dug out, and the hut was pieced together, until on 7 August it was ready for occupation, not long before the return of the sun on 23 August.

Meanwhile, back in England, Fuchs had been making final arrangements, including selection of the crossing party. On 14 November 1956, the expedition sailed south from London in *Maggi Dan*, a newly built Danish polar vessel, to reach Shackleton on 13 January 1957 after a much faster passage through the Weddell Sea. The next task was to establish the advance base—South Ice—some 300 miles closer to the Pole and on the polar plateau itself. Having located a suitable site at 81°40’S, 29°00’W, they made twenty flights in the single-engine Otter to transport sufficient supplies for the three-man party—Dr. Hal Lister (glaciologist), Blaiklock, and Dr. P. J. Stephenson (geologist and glaciologist)—who were to stay at South Ice through the coming winter. As part of the expedition’s contribution to the International Geophysical Year (1957–1958), they were to conduct glaciological studies and take meteorological observations every four hours. Fuchs remained at Shackleton, making preparations to fly out dog teams to survey the newly discovered Shackleton Range and planning to lead four men in three Weasels and a Sno-cat to reconnoiter the route to South Ice.

On 8 October 1957, South Ice was relieved by air. Fuchs set out the same day with deputy leader David G. Stratton, Homard, David Pratt (engineer), and Geoffrey Pratt (geophysicist). It took thirty-seven days to reach South Ice, as time and again vehicles had to be extricated from crevasses with extreme difficulty as they made slow progress across the highly fractured surface of the Filchner Ice Shelf. Meanwhile, a field party was flown to the Shackleton Range to scout out a route for the crossing party up the ice wall extending westward from these mountains, as well as to conduct a topographic and geological survey.

Leaving their transportation at South Ice, Fuchs and his colleagues flew back to Shackleton to set out on the continental crossing on 24 November, ten days after their planned departure date. The crossing party consisted of Fuchs himself, Stratton, the two Pratts, Blaiklock, Homard, Lenton, La Grange, Lister, Stephenson, Dr. Allan Rogers (medical officer), and George Lowe (photographer), traveling in three Sno-cats, two Weasels, and one Muskeg tractor. Each vehicle pulled two heavily loaded sledges. Even though they were now following a marked route, progress was again painfully slow. The vehicles had a top speed of 3.5 miles per hour, and in the warmer temperatures, new crevasses had opened up, into which the tractors repeatedly fell. Miraculously, none was lost, though considerable ingenuity had to be exercised in their extraction. On 21 December 1957, Fuchs was back at South Ice, where he remained for four days to prepare for the coming journey of 550 miles to the Pole.

Blaiklock and Stephenson were sent ahead with the two dog teams as pathfinders, with the vehicles following behind, consisting of four Sno-Cats, three Weasels, and a Muskeg tractor. In addition to food, fuel, and equipment, half a ton of explo-
sives was carried for seismic work, one of the expedition's objectives being to conduct a seismic transect across the continent to assess the depth of the ice sheet and thus the nature of the land beneath the ice. Seismic shots were to be fired every 30 miles. To benefit from the harder snow surfaces when temperatures were lower, they traveled at night. Now sastrugi rather than crevasses impeded their progress, in belts of rock-hard ice ridges 1 meter high extending for 50 miles and more. Each vehicle had to find its own way, dropping down sharply over each ridge as the sledges careered wildly behind. Three vehicles were abandoned before the Pole was reached.

It was as Fuchs was advancing slowly south that he first learned of Hillary's intention to exceed instructions and make for the Pole himself—which he was bound to reach before Fuchs—and then was advised by Hillary that his own progress was so slow that he should consider stopping at the Pole to complete his crossing the following year. Neither of these communications was welcome to Fuchs, who determined to carry on regardless.

The crossing party reached the Pole on 19 January 1958. There they received a warm welcome from the Americans at the newly built Amundsen-Scott Station, and Fuchs met Hillary to discuss plans for the remainder of his journey. Unwilling to delay further, the crossing party set out north toward Ross Island on 24 January. Hillary would join them at Depot 700, 500 miles on. Fuchs still had 1,250 miles to go and was not yet even halfway there.

Despite repeated mechanical problems with the Sno-cats and a scare when Geoffrey Pratt was found unconscious from carbon monoxide poisoning, they reached Depot 700 on 7 February 1958, and Hillary flew in two days later. Reaching Midway Depot on 11 February and Depot 480 six days later, by 23 February Fuchs was at Plateau Depot and above the steep incline of the Skelton Glacier. If anything, progress there was too rapid for comfort as they skidded their way down, blown onwards by katabatic winds that scoured the ice surface slippery smooth. Now the end was in sight as, with their vehicles bedecked with flags, they powered into Scott Base on 2 March, having traveled 2,158 miles in ninety-nine days.

Fuchs received a triumphal welcome, first in Wellington, New Zealand, where he arrived on 17 March, and then in London, where he was knighted. Appointed director of FIDS in January 1959, Fuchs presided over considerable changes as this organization, renamed the British Antarctic Survey in 1962, developed an increasingly sophisticated scientific program until his retirement in 1973. In certain respects, the Commonwealth Trans-Antarctic Expedition may be regarded as the last of the epic Antarctic expeditions, combining science and adventure with the exploration of large areas never before visited.

See also: British Antarctic Survey; Filchner-Ronne Ice Shelf; Hillary, Edmund; International Geophysical Year; Mackintosh, Aeneas; Shackleton, Ernest (1914–1916); Simpson, Jim; South Pole; Weddell Sea

References and further reading:

Furneaux, Tobias (1735–1781)
Today few know the name of the British sailor Tobias Furneaux, but it might easily have been otherwise. As captain of Adventure, sister-ship to Resolution during James Cook's second voyage of 1772–1775, Furneaux came close to making a series of Antarctic discoveries, any one of which would have guaranteed his fame. It was his misfortune to be thwarted each time by unfavorable weather and a course not quite close enough to guarantee discovery. Furthermore, his one great achievement—the first circumnavigation of Antarctica—is generally credited not to him but to his leader.

In the Shadow of Captain Cook, 1772–1775
As second lieutenant in HMS Dolphin (Captain Samuel Wallis), Tobias Furneaux had previous experience of a round-the-world voyage, which must have proved influential in his appointment to captain HMS Adventure. Sailing from England on 13 July 1772, HMS Resolution and Adventure remained in company until 8 February 1773, when they were separated in a snowstorm, having failed to find either Bouvet Island or the Kerguelen Islands but after achieving the first-ever crossing of the Antarctic Circle. While Cook again attempted to get as far south as possible, the more conservative Furneaux headed for Tasmania, considering it too late in the season for further exploration and following a course that took him just 30 miles north of Heard Island, the first of his near-misses. At Tasmania, good charts were made of the eastern coast, though he failed to discern the island's separation from Australia.

Furneaux's instructions were to meet up with Cook at Ship Cove in Queen Charlotte Sound, South Island, New Zealand, and there he waited until Resolution arrived on 13 May. To Cook's evident displeasure, some of Adventure's crew were suffering from scurvy, but rather than allowing the extended period for rest and reprovisioning that Furneaux had apparently expected after ordering topmasts and yards struck down, Cook ordered a winter voyage through the South Pacific, during which large areas were shown to be ocean rather than the widely hypothesized Terra Australis Incognita. On their return, they met severe storms off the entrance to Cook Strait, and although Resolution finally reached Ship Cove, the less handy Adventure was forced to find refuge at Tolaga Bay on the east coast of North Island. The two vessels were not reunited,
Furneaux eventually reaching Ship Cove on 30 November 1773, just three days after Cook’s departure again for the far south. *Adventure* was in no fit state to follow and experienced worse, when a landing party was massacred by Maoris with clear evidence of cannibalism.

From New Zealand, Furneaux followed a more southerly course than Cook through the South Pacific and gave a wide berth to Cape Horn, where he reached south of 60°S as he headed east to search once more for Bouvet Island. In continuous bad weather, with snow, rain, and fog obscuring vision, he sailed 80 miles north of King George Island and 40 miles north of Elephant Island (both in the South Shetlands) and then 70 miles west of the South Orkneys. South Georgia should have been visible for forty-eight hours, but not in the conditions Furneaux experienced. This chapter of near-misses concluded with Bouvet Island, Furneaux’s target, missed by just 15 miles.

Because historians concentrate on what Furneaux did not achieve, the one achievement that is indisputably his is generally overlooked. It was in fact Furneaux rather than Cook who completed the first circumnavigation of Antarctica, when he reached the Cape of Good Hope on 17 March 1774, more than one year ahead of Cook. However, since he sailed under Cook’s leadership and Cook had only delayed in order to undertake further exploration, it is perhaps understandable why Furneaux has not received due credit.

Although Cook’s return was greeted with rapturous acclaim, Furneaux’s was largely ignored. He had discovered nothing and had allowed scurvy to break out in his vessel. His voyage was remembered chiefly for the cannibalism episode, though he also brought with him the Tahitian Omai, the first South Pacific islander to visit Britain. Furneaux was later captured during the American Revolution. His health broken, he died in 1781, aged only forty-six.

See also: Bouvet Island; Cook, James (1772–1775); Heard Island; South Georgia; South Orkney Islands; South Shetland Islands; Southern Ocean; Terra Australis Incognita

References and further reading:
Geomagnetic Poles

Confusingly, in addition to the geographic poles and the magnetic poles, there are also geomagnetic poles. They cannot be observed directly and are located according to theoretical calculations. What they are requires technical explanation, but since they have featured peripherally in polar exploration, a brief account is attempted here. The magnetic poles—or magnetic dip poles—can be identified as the points on the globe where the Earth’s magnetic field is directed vertically upward (in the north), or downward (in the south). These points are not located opposite each other. By contrast, the geomagnetic poles are found at the ends of an imaginary magnetic axis through the center of the Earth. The North Geomagnetic Pole lies at about 78°30’N, 69°00’W in Kane Basin, between northwestern Greenland and Ellesmere Island. The Russian station Vostok (78°27’S, 106°48’E) lies at the South Geomagnetic Pole, where it was opened in 1957. Sited at 3,488 meters above sea level, Vostok is the coldest inhabited place on Earth, the lowest temperature ever registered being –89.2°C (–128.56°F) in 1973. The British adventurer David Hempleman-Adams organized expeditions to the North Geomagnetic Pole in 1992 and 2003.

See also: Hempleman-Adams, David; Magnetic Poles; Nares Strait; Queen Mary Land

References and further reading:

George Land (Franz Josef Land)

Located at 80°30’N, 49°00’E, George Land is the largest island in Franz Josef Land at 1,070 square miles. Although it is possible that it was first seen about 1865 by the Norwegian walrus hunter Nils Rønnebeck, discovery is generally credited to Benjamin Leigh Smith, who surveyed its southern coast from 1894 to 1897. Jackson established its separate insularity in 1897 following a survey of its eastern, northern, and southern coasts. Jackson named it “Prince George Land” for the eldest grandson of Queen Victoria. The official Russian name is Zemlya Georga.

Valerian Al’banov led ten survivors from Georgiy Brusilov’s expedition along the southern coast in 1914. While Al’banov and four of his party traveled in two kayaks, five others skied. The ski party was last seen at Cape Neale. By the time Al’banov reached Cape Grant, they were gone. Learning what had happened from a note left at Cape Flora, I. P. Anufriyev in Hertha landed soon afterward at Cape Grant and searched for survivors along the southern coast as far as Cape Neale.

In 1928, three expeditions searched along George Land’s southern coast for survivors from Umberto Nobile’s Italia expedition: Hjalmar Riiser-Larsen in Hobby and the Soviet ice-breakers Sedov and Krasin. On 22 September 1928, a party from Krasin landed at Cape Neale, where they raised a red flag made of iron and took possession of Franz Josef Land on behalf of the Soviet Union. Plans to erect a hut at the same time were prevented by worsening ice conditions, though materials for the hut and provisions and clothing sufficient for fifteen men for six months were left behind. The Soviet annexation was disputed by Norway, whose continuing interest in the archipelago was demonstrated by Gunnar Horn’s voyage in Bratvaag in 1930. A small hut was erected at Cape Forbes, and stores were left to assist hunting and exploring expeditions. Horn also landed at Cape Nansen on the west coast.

See also: Alexandra Land; Armitage, Albert; Brusilov, Georgiy; Franz Josef Land; Jackson, Frederick (1894–1897); Nobile, Umberto; Riiser-Larsen, Hjalmar; Smith, Benjamin Leigh

References and further reading:

George V Land (Antarctica)

George V Land forms that part of East Antarctica lying between 142° and 155°E, with Adélie Land to the west and Oates Land to the east. It was first explored by Douglas Mawson, who landed at Cape Denison (67°00’S, 142°00’E) on the eastern side of Commonwealth Bay on 8 January 1912 and named the surrounding area for King George V of Great Britain. From Cape Denison, major sledging journeys were undertaken south to 70°37’S, 148°10’E and east along the coast as far as 68°18’S, 150°12’E. It was while crossing the Ninnis Glacier Tongue that Belgrave Ninnis was lost down a crevasse, leaving his sledding companions Mawson and Xavier Mertz virtually without food and the Soviet ice-breaker Krasin

Given the area’s redolent historical associations for Australians, it was not surprising that George V Land was selected for the first Australian attempt in 1948 to establish a station

References and further reading:
on continental Antarctica, despite its hostile climate, which is dominated by cold katabatic winds blowing more or less constantly off the polar plateau. Dense ice prevented HMAS Wy
ditEarpefromreachingthecoast, anditisnotuntil1954that the first Australian station was established, not here but much farther west in Mac. Robertson Land.

The region was first systematically photographed from the air in January 1947 by Western Group during Operation Highjump, and this survey was extended to cover the whole of George V Land in the comprehensive trimetrogon survey of the Australian Antarctic Territory initiated in 1961–1962. With the exception of Mawson in 1912 and 1913, no expedition has ever wintered here, though an Australian summer station was established at Commonwealth Bay in 1985–1986. Away from Commonwealth Bay, George V Land remains one of the less frequently visited regions of Antarctica.

See also: Australia; Australian Antarctic Territory; Mawson, Douglas; Operation Highjump

Gerlache, Adrien de
(1866–1934)
The first expedition of the “Heroic Era” of Antarctic exploration, the Belgian Antarctic Expedition led by Adrien de Gerlache, was notable for two achievements: discovery of a previously unknown channel running south along the west coast of the Antarctic Peninsula and the first wintering south of the Antarctic Circle.

The First Antarctic Winter, 1897–1899
Adrien Victor Joseph de Gerlache de Gomery, a well-connected lieutenant in the Royal Belgian Navy, was one of those volunteering in 1888 to join a proposed Australian-Swedish expedition planned by Adolf Erik Nordenskiöld. When nothing came of it, in 1894 he put forward his own plans to the Royal Geographical Society of Brussels, as a result of which he obtained funds to learn more about polar conditions by visiting Norway and Greenland. After receiving the backing of the society and a relatively small grant from the Belgian government, he raised the remaining funds over several years through public subscription.

On 16 August 1897, Gerlache sailed from Antwerp, Belgium, in the 250-ton steam-whaler Belgica (formerly Patria). Forced by an engine fault to make an embarrassingly immediate return to Ostend, where two of the crew promptly resigned, he set sail again on 23 August, making a slow passage down the Atlantic Ocean before finally reaching Punta Arenas, Chile, on 1 December. There, several sailors deserted and others proved so difficult to control that Gerlache finally had to request assistance from the Chilean police and navy. On board Belgica remained nine Belgians (Gerlache, second-in-command Georges Lecointe, magician Lieutenant Émile Danco, two engineers, and four sailors), six Norwegians (the first mate Roald Amundsen and five sailors), one American (Dr. Frederick Cook), two Poles (Henryk Arctowski, geologist, meteorologist and oceanographer; and Antoni Dobrowski, assistant meteorologist), and one Romanian (Émile Racovitza, naturalist). Many of them went on to enjoy distinguished careers after this expedition introduced them to polar work.

Gerlache’s ambitions initially appear to have been to visit the South Shetland Islands, explore the Antarctic Peninsula south to Alexander Island, and then head toward Victoria Land, where he proposed to land a small wintering party, for which purpose Belgica carried on board a small hut capable of accommodating four. These plans were overtaken by circumstances.

Given Gerlache’s ambitions, a surprisingly long time was spent in Tierra del Fuego, where the expedition remained until 13 January 1898, with few material results apart from the near-wreck of Belgica in Beagle Channel. A local inhabitant, E. L. Bridges, helped lighten the ship so that it could free itself with the high tide. He later wrote critically of the poor seamanship he observed, comments that may have been sharpened by Gerlache’s willingness to publish hearsay stories about his father, the missionary Reverend Thomas Bridges, and also by an episode after the expedition’s return in which an attempt appeared to be made to pass off his father’s lifework—a dictionary preserving all that is now known on the language spoken by the extinct Yahgan Indians—as the work of Cook, one of the expedition members.

Having delayed long in Tierra del Fuego, Gerlache next crossed the Drake Passage slowly to conduct a series of soundings. They were the first soundings undertaken in the passage and demonstrated the presence of a deep basin separating South America from the Antarctic Peninsula, one of the expedition’s most significant scientific results.

Finally reaching the South Shetland Islands on 20 January, Belgica again ran onto a rock but fortunately without serious damage. Two days later, the young seaman Auguste Karl Wiencke was drowned. Ordered to clear the scuppers, which had become blocked with coal dust, he had gone over the side, from where he was washed overboard in a heavy sea. Lecointe gallantly volunteered to be lowered on a rope but was unable to reach Wiencke, who let go of the log line just as he was pulled to the side of the ship. It was thus in low spirits that the expedition reached Hughes Bay on the west coast of the Antarctic Peninsula on 23 January 1898.

Looking about him, Gerlache found himself unable to reconcile what he now saw with the land depicted on his British Admiralty chart. It showed a large gulf containing scattered islands, of which only one—the distinctive Two Hummocks Island—was recognizable. In contrast, Gerlache saw navigable channels stretching to the northwest and southwest with continuous high land to the east (the Antarctic Peninsula), and an archipelago to the west. Believing that the southern channel might provide an important passage to the Pacific, Gerlache chose to explore it further.
Between 23 January and 12 February 1898 twenty landings were made, principally on the islands but also on the mainland along “Belgica Strait,” now known as Gerlache Strait. In brief landings undertaken primarily for surveying purposes, the scientists hurriedly collected geological, zoological, and botanical specimens. On the basis of his observations there and at Tierra del Fuego, Arctowski was able to demonstrate that both areas had previously been more heavily glaciated than they now were, and he proposed the name “Antarctandes,” postulating the close connection between these Antarctic mountains and those of South America. On 30 January, Gerlache and four others landed on Brabant Island, where they remained for seven days while Lecointe explored farther south in Belgica. Although it took place on an island rather than the continent itself, it may be regarded as the first Antarctic sledge journey. From a height of 300 meters, Gerlache was able to see the full extent of the channel he had discovered. Meanwhile, Lecointe sailed Belgica as far as the channel’s southern entrance, somehow resisting the temptation to be first to navigate the spectacular Lemaire Channel, an honor reserved for Gerlache on 12 February.

Sailing south into the Bellingshausen Sea, they crossed the Antarctic Circle on 15 February 1898 and approached within 20 miles of Alexander Island the following day. It was now late in the season. Confronted by increasingly thick pack ice, they were concerned that once stuck, Belgica would not be released. Gerlache was not dissuaded by these fears, and when he discovered relatively open ice on 28 February he headed into it, penetrating some 90 miles. Although he himself was not adverse to wintering in the pack, which would ensure that his expedition rather than that of Carsten Borchgrevink was the first to experience an Antarctic winter, his controversial decision was at least equally motivated by belief that open sea might be found beyond the ice, possibly even the Ross Sea, which he thought might extend far in this direction. It did not, however, and by 3 March, Belgica was firmly stuck, having reached 71°30’S, 85°16’W.

Neither ship nor crew was prepared to winter, and they had a very hard time of it. The scientists could occupy themselves with their studies, but at least one of the crew went mad. Gerlache’s distaste for seal and penguin meat and his refusal to let others eat it led to incipient scurvy. Polar anemia was also widespread, and the popular Danco succumbed to heart disease on 5 June 1898. That the expedition came through this period was almost entirely due to one man, Frederick Cook, who succeeded in persuading Gerlache to eat seal and penguin meat “for medicinal purposes,” an example then followed by the others. It was also at Cook’s suggestion in January 1899, already well into the Antarctic summer, that the crew used ice saws and explosives to cut a channel through the large ice floe in the center of which Belgica was stuck. By now there appeared a real possibility that another winter would have to be endured, one which, with stocks of coal almost as low as morale, they were unlikely to survive. It was through Cook’s channel that Belgica was to escape, finally reaching open water on 14 March at 70°30’S, 103°W.

Belgica’s return to Antwerp on 5 November was greeted with acclaim, and its commander was showered with honors. A great deal had been accomplished with a fraction of the resources available to the major expeditions now being planned by Great Britain and Germany. In addition to the first wintering and the discovery of Gerlache Strait, meteorological and magnetic records had been maintained for over one year south of the Antarctic Circle, and the shallow soundings obtained during Belgica’s drift showed that the ship had been above a continental shelf, indicating the presence nearby of a substantial landmass.

Gerlache subsequently sailed to the Arctic in Belgica on three oceanographic expeditions sponsored by Louis-Philippe-Robert, Duc d’Orléans. He did not visit the Antarctic again, although on one occasion he did set out to go there. After providing helpful advice to the French explorer Jean-Baptiste Charcot on the design of his new ship, Français, Gerlache was
invited to join the latter's expedition. By the time François had reached Brazil, Gerlache was disaffected and decided to return home. His final connection with polar exploration was his involvement in the construction of *Polaris*, a purpose-built polar vessel, sold in 1914 to Sir Ernest Shackleton. Renamed *Endurance*, it became the most famous polar ship of all.

See also: Amundsen, Roald; Antarctic Peninsula; Bellingshausen Sea; Borchgrevink, Carsten; Charcot, Jean-Baptiste (1903–1905); Cook, Frederick; Danco Coast; Gerlache Strait; Heroic Era of Antarctic Exploration; Lemaire Channel; Palmer Archipelago; Shackleton, Ernest (1914–1916)

References and further reading:

**Gerlache Strait (Antarctic Peninsula)**

Gerlache Strait runs north-south between the Palmer Archipelago to the west and Danco Coast, Antarctic Peninsula, to the east. The entrance to this strait is likely to have been seen by sealers and certainly was seen by Jules Dumont d’Urville in February 1838, who mistook its trend for west-east through the peninsula and named it “Orléans Channel.” The strait was first entered on 27 January 1898 by Adrien de Gerlache’s Belgian Antarctic Expedition, and its discovery and preliminary survey through 12 February constitutes the major scientific achievement of this expedition. A more detailed survey of the northern parts of the strait was conducted in January 1902 by Otto Nordenskjöld and in November and December of the same year by Gunnar Andersson, both of the Swedish Antarctic Expedition. It was this expedition that disproved the existence of “Orléans Channel.”

See also: Andersson, Gunnar (1902–1903); Antarctic Peninsula; Danco Coast; Dumont d’Urville, Jules; Gerlache, Adrien de; Nordenskjöld, Otto; Palmer Archipelago

**Germany**

The first German exploring expedition to the polar region was mounted in 1540 in response to sightings of East Greenland by ships blown off course when trading between Hamburg and Iceland. Gert Mestermaker succeeded in landing on Greenland; presumably on the west coast, though it is not known where. He found no sign of the Norse colonists, for whom he had been specifically charged to search. Very little is known about this intriguing expedition, which appears not to have been followed up.

Until the drive toward German unification in the 1860s, political fragmentation meant that no single state existed with the ambition and resources to sponsor polar expeditions. As far as ideas were concerned, however, no nation was more influential, with the contributions of the geographer and publisher August Petermann (1822–1878) and the pioneer geophysicist Georg von Neumayer (1826–1909) being particularly noteworthy. Petermann’s views were outlined in more than 600 articles published from 1855 in his journal *Petermanns Geographische Mitteilungen* and summarized in his map *Karte der arktischen und antarktischen Regionen zur Übersicht des geographischen Standpunktes im J. 1865, des Meere strömungen* (Map of the Arctic and Antarctic regions, reflecting the geographical points of view in 1865, the sea currents). Although Petermann’s ideas about the Antarctic were typically idiosyncratic—he saw no reason to believe in the existence of a single continent—it was his conception of the Arctic that led to the organization of several expeditions and shaped popular understanding into the final decades of the nineteenth century. On the basis of wide reading, Petermann concluded that a giant peninsula extended from Greenland, reaching across the Arctic close to the Pole to terminate in Wrangell Island. There had been numerous reports of land north of Russia, and Petermann believed that all related to a single landmass. Petermann also believed in the “open polar sea,” the idea that the Pole itself lay in open water, surrounded by a belt of pack ice some 200 miles wide. It was an ancient idea, but Petermann brought it up to date by incorporating data indicating the pervasive influence of the warm Gulf Stream in the Barents Sea and beyond. These ideas inspired the expeditions of Karl Koldewey (1868, 1869–1870), Julius Payer (1872–1874), and George De Long (1879–1881).

Georg von Neumayer was a very different figure. Whereas Petermann’s prime concern was geographical exploration, Neumayer advocated exploration of Antarctica for the scientific questions it might answer. Believing—correctly—that Antarctica had the essentially simple structure of an ice cap surrounded by an ocean, he considered that few complicating factors would mask the operation of fundamental meteorological, oceanographic, and geophysical forces, whose global functioning might therefore be best studied there. In essence, he was anticipating the modern view that Antarctica constitutes a natural laboratory, whose study has global significance. Neumayer held a succession of influential positions in Germany and was instrumental in organizing expeditions to the Kerguelen and the Auckland Islands to observe the Transit of Venus in 1874. The early 1870s were a time of national euphoria in Germany, following establishment of the Second Reich in 1871, and it was hardly coincidental that it was during these years that Eduard Dallman’s whaling and sealing venture to Antarctica also took place. Later governments
under Otto von Bismarck were less well inclined toward polar exploration, and Neumayer spent much of his later life in unsuccessful advocacy until Bismarck's dismissal in 1890 brought in a more favorable regime encouraged by the personal interest of Kaiser Wilhelm II. During the intervening period, the only polar expeditions to receive government backing were those during the First International Polar Year (IPY) in 1882–1883, when stations were established in Cumberland Sound, Baffin Island (led by Dr. W. Giese) and in Royal Bay, South Georgia (led by Dr. Karl Schrader), the latter being the only IPY station in the Antarctic.

Symptomatic of the government's changed priorities was its funding of Carl Chun's Valdivia expedition in 1898–1899, a purely scientific endeavor that aimed to continue the work begun by the British in HMS Challenger (see Nares, George). Germany's ambition in emulating Great Britain was also prominent in preparations for Erich von Drygalski's first German Antarctic expedition in 1901–1903. The German government was in fact considerably more generous than the British, meeting all costs incurred in constructing the purpose-built vessel Gauss and equipping it with the best scientific equipment. Drygalski's achievements were far from negligible, but he was unfortunate to be directed toward one of Antarctica's most inaccessible coasts, and having discovered Wilhelm II Land, he was forced to sail north after just one year in the ice. The government was not prepared to fund a second season, and his contribution inevitably became overshadowed by Robert Falcon Scott's more obviously successful British expedition.

For contrasting reasons, the achievements of the second and third German Antarctic expeditions of Wilhelm Filchner and Alfred Ritscher have also been underappreciated. Like Drygalski, Filchner was forced to sail north before completing his program, in his case by the machinations of a disease-crazed captain. Nevertheless, in reaching the southern coast of the Weddell Sea and in discovering Vahsel Bay, he did much to facilitate later attempts to cross Antarctica from there. Ritscher's 1938–1939 expedition obtained air photographs of extensive areas of Queen Maud Land, in the process discovering several major new mountain ranges. Ritscher's expedition, however, was sent south by the Nazi government as a spoiling move to thwart Norway's assertion of territorial claims over waters fished by German as well as Norwegian whaling fleets. Distaste aroused by this association, together with the natural grievance of Norwegian scholars and those supporting the Norwegian claim, has led to unwillingness on some parts to acknowledge the significant contribution made by Ritscher's photographs to subsequent expeditions to Queen Maud Land.

In the Arctic, Drygalski had made his name on two expeditions to Greenland. Filchner led an expedition to Svalbard before visiting Antarctica. Ritscher had also visited Svalbard, participating in Herbert Schröder-Stranz's disastrous expedition. German explorers visited many parts of the Arctic, the most notable figures being the Wegener brothers, Kurt and Alfred. Knowledge obtained in Svalbard and East Greenland was exploited during World War II, when a network of secret meteorological stations was established there and in Franz Josef Land to supply information of critical significance for weather forecasting and thus for the planning and prediction of air and other military operations.

Postwar politics meant that neither East nor West Germany was among the original signatories to the Antarctic Treaty, which was ratified by the former on 19 November 1974 and by the latter on 5 February 1979. Scientists of the German Democratic Republic (DDR, or East Germany) worked closely with the Soviet Antarctic program, the first to do so wintering in 1960 at the Soviet station Mirnyy. The first East German expedition took place in 1975–1976, again with logistical assistance from the Soviet Union. In April 1976, this expedition opened DDR Station in Schirmacher Oasis, Princess Astrid Coast, close to the Soviet station Novolazarevskaya. Renamed Georg Forster on 25 October 1987, it was closed on 14 April 1993 and has since been operated in occasional summers only.

Following German reunification on 3 October 1990, the East German program was absorbed into that of the German Federal Republic. Although slower to ratify the Antarctic Treaty than its eastern counterpart, West Germany was first to achieve consultative status—3 March 1981 versus 5 October 1987—following initiation of a national Antarctic program in 1979–1980. Long-term studies began that season in northern Victoria Land and Oates Land, where the summer station Lillie-Marleen (1980–1993) was opened, and on the Ronne Ice Shelf at the summer station Filchner (1982–1999). In 1981, the all-year station Georg von Neumayer was established on Princess Martha Coast. Despite the periodic need to relocate, as with all stations sited on ice shelves, the station has maintained a comprehensive scientific program ever since. The German Antarctic program also operates Dallmann Laboratory at the Argentine station Juby on King George Island and in 2001 opened Kohnen (75º00'S, 0º04'E) in Queen Maud Land as part of a major ice drilling project.

The major government research establishment is the Alfred Wegener Institute for Polar and Marine Research (AWI), which was founded in 1980. AWI is responsible for operating R/V Polarstern, a 17,300-ton icebreaker commissioned in 1982, and maintains Koldewey station at Ny-Ålesund, Spitsbergen, in addition to the Antarctic stations.

See also: Bouvet Island; Chun, Carl; Dallmann, Eduard; De Long, George; Drygalski, Erich von; Filchner, Wilhelm; Filchner-Ronne Ice Shelf; Koldewey, Karl; Oates Land; Open Polar Sea; Payer, Julius; Princess Astrid Coast; Princess Martha Coast; Queen Maud Land; Ritscher, Alfred; Scott, Robert Falcon (1901–1904); Schröder-Stranz, Herbert; Victoria Land; Wilhelm II Land

References and further reading:
Gerritsz, Dirck

(1544–ca. 1608)

Was Antarctica discovered in 1599 by a Dutch sailor engaged in piratical exploits against the Spanish? Certainly Dirck Gerritsz is reported as having seen land, and his latitude was placed sufficiently far south for him to have seen the Antarctic Peninsula, or more likely, the South Shetland Islands, whose discovery is generally credited to the English trader William Smith in 1819.

Claimed Discovery of the South Shetland Islands, 1599

In 1598, Jacques de Mahu left the Netherlands with a fleet of five ships, intent on trade and plunder in the Spanish-occupied Pacific Ocean. After sailing through the Strait of Magellan, the fleet encountered a violent storm on 15 September 1599 that completely dispersed the ships. One ship—Hoop—subsequently reached Japan, the first western vessel to do so, and another—Gelof—made its way back to Europe through the strait, but the three others were either lost or captured. Before being seized at Valparaiso, Chile, Dirck Gerritsz, the commander of Blijde Bootschap (Glad Tidings), is reported to have been blown by the storm far to the south, where he saw high snow-covered mountains similar to those of Norway. He did not attempt to explore further but headed north again in an attempt to rejoin the other members of the fleet before being captured by the Spanish.

Gerritsz has been credited by some as having made the first sighting of the South Shetland Islands, or even—since he is recorded as reaching 64°S, where he saw a coastline “extending to the Solomon Islands”—as possibly as having been first to see the Palmer Archipelago and the Antarctic Peninsula itself. However, there is so much confusion about this voyage that it is more generally discounted. Gerritsz himself apparently made no report of discovering any land when writing to the expedition leader about his failure to meet up with the other ships, and the first account of the supposed discovery appeared in 1622 in supplementary material intercalated in Latin, French, and Dutch editions of a history of Spanish exploits in America by Antoine de Herrera (the information about Gerritsz was presumably added by the editor, Kasper Barlaeus). Edwin Balch quotes a declaration by one of Gerritsz’s shipmates, Jacob Dircxz, who states that Blijde Bootschap was driven by the storm “three times to within 50 degrees . . . twice to 55 degrees and once to 56 degrees” (1902, 48). This description would appear to provide a better match with the experiences of Francis Drake, who in similar circumstances and in a not dissimilar vessel was driven south by a storm to about 57°S in 1578. For Gerritsz to have been driven so much farther south than Drake seems unlikely. Given also the quoted remark concerning the Solomon Islands, there can be little doubt that whatever may have happened to Gerritsz was subsequently greatly exaggerated by Barlaeus, just as Drake’s farthest south was displaced by the compiler Theodore de Bry from 57°S to close to the Antarctic Circle. As for Gerritsz sighting land, we have only the statement inserted in Herrera to support that he did, and nothing from Gerritsz himself or his shipmate Jacob Dircxz. However, since the South Shetland Islands do in some ways resemble the coast of Norway, it is not inconceivable that Barlaeus is preserving observations from some other voyage, of which nothing else is known.

See also: Antarctica; Smith, William; South Shetland Islands

References and further reading:


Giaever, John

(1901–1970)

Although different countries had collaborated previously in the planning of polar expeditions—most notably in the two International Polar Years of 1882–1883 and 1932–1933—the Norwegian–British–Swedish Antarctic Expedition of 1949–1952 may be viewed as the first in which several countries contributed personnel and resources to mount a shared scientific expedition. In this, an example was set and techniques were developed that were subsequently to be adopted by the much larger collaborative exercise soon to follow: the International Geophysical Year of 1957–1958. The expedition was led by the veteran Arctic traveler John Giaever.

Harbinger of the International Geophysical Year, 1949–1952

In 1943, the Swedish glaciologist Hans Ahlmann, professor of geography at Stockholm University, had begun planning an expedition to Antarctica. Initially, he had considered continuing the work of Otto Nordenskjöld’s first Swedish Antarctic Expedition in the Antarctic Peninsula, until study of the photographs obtained by Alfred Ritscher’s expedition of 1938–1939 persuaded him that Queen Maud Land presented a more interesting destination. What particularly intrigued Ahlmann was the indication that this part of Antarctica appeared to have been much more heavily glaciated in the past than recently, but as yet no expedition had made a ground survey. Once World War II had ended, Ahlmann approached colleagues in Norway and Great Britain with
regard to launching a joint expedition. Although Norway's economy had been devastated by the war, there were strong political considerations in favor of Norwegian participation. The first explorations of this region had been made in 1929–1930 by the Norwegian Hjalmar Riiser-Larsen, and on 4 January 1939, the sector between 45°E and 20°W had been declared Norwegian territory in a royal proclamation. Ritscher's expedition had been organized by Adolf Hitler's Germany largely in order to dispute this claim, which Norway was now eager to reassert. In consequence, Norway agreed to take on the majority of the expedition's costs, with the remainder shared between Sweden and Great Britain.

Overall scientific direction was exercised by Professor Harald Ulrik Sverdrup, director of the Norwegian Polar Institute (NPI), but the expedition itself was led by Captain John Schjelderup Giæver, an NPI colleague with extensive polar experience, including four winters spent as a trapper in north-east Greenland. Norsel, a recently built steel-hulled sealer with icebreaking capabilities and a powerful diesel engine, was chartered to take Giæver's party south under the captaincy of Guttorm Jacobsen.

On 17 November 1949, Norsel sailed from Oslo, Norway. Although Norway's largest sealing vessel, Norsel was unable to carry everything needed by the expedition, so five men, sixty-two dogs, three Weasels, and an ice drill were transported south on the whaling factory ship Thorshøvdi. Further stores and men were taken on board Norsel at London, including a British Royal Air Force flying group with two small Auster planes. The role of this group was to assist navigation through the ice and to identify suitable landing places rather than to carry out full-scale air reconnaissance, which would be provided later in the expedition by Norwegian and Swedish flying groups.

Reaching Cape Town, South Africa, on 20 December, Norsel headed south eight days later. Thorshøvdi was operating in the Scotia Sea some way to the west, and Norsel had to make a considerable detour to meet it. On 14 January 1950, the additional men and equipment were transferred, and a now very heavily laden Norsel set course to the southeast for Queen Maud Land, where a suitable landing place was sought in the vicinity of Cape Norvegia on the Princess Martha Coast. Considerable difficulty was experienced with dense pack ice, and it was not until 10 February that an anchorage was found off an ice shelf at 71°03'S, 10°56'W. Norsel was rapidly unloaded and ready to
depart just ten days later. Onshore, great progress had been made in the construction of Maudheim, which consisted of two accommodation blocks—each 8 by 8 meters and subdivided into cabins for each expedition member—together with various smaller huts for scientific and engineering purposes. The packing boxes were used as modules, which, when linked together, provided passages connecting the various buildings.

Although strong political motivation underlay Norway’s involvement, it was essentially a scientific expedition, and a comprehensive scientific program was maintained throughout the winter, despite temperatures descending to \(-46^\circ C\) \((-50.8^\circ F\)) and frequent strong winds leading to heavy snowdrifts. The party of fifteen wintering at Maudheim included many scientists: Dr. Frederick Roots and Alan Reece (geologists), Valter Schytt and Charles Swithinbank (glaciologists), Nils Jørgen Schumacher and Gösta H. Liljequist (meteorologists), and Gordon de Q. Robin (physicist). Most of them subsequently pursued distinguished careers in polar research.

While preparations continued for the main fieldwork program, which was to focus on the mountains some 200 miles away and was based on photographs taken during Ritscher’s expedition, Robin and Swithinbank began seismic sounding away and was based on photographs taken during Ritscher’s gram, which was to focus on the mountains some 200 miles

soundings indicated that beneath the ice lay a region of mountains (74°35’S, 11°W), possibly corresponding to the “Kottas Mountains” previously reported but inadequately positioned. Robin’s group was able to obtain the first reliable and systematic ice thickness measurements for Antarctica on a transect running 390 miles south from Maudheim to 74°20’S, 0°48’E. His ice soundings indicated that beneath the ice lay a region of mountains and fiords not dissimilar from the Norwegian coastline familiar to many of his colleagues.

By 6 January 1952, all field parties had returned to Maudheim to find Norsel ready to take them home. With the ship had come a third flying group—this time Swedish—who made a series of photographic reconnaissance flights using a twin-engined Beechcraft 18-R and a Saab Safir. With only sixteen days available for flying, this group was highly fortunate to be able to complete eight long missions, during which they photographed an area extending from 3°E to 21°W, from the coast south to 75°S. Among their discoveries were the Heimefront Mountains (74°35’S, 11°W), possibly corresponding to the “Kottas Mountains” previously reported but inadequately positioned by Ritscher’s expedition. Flights ceased on 8 January, and the expedition sailed from Maudheim one week later.

In one of the most inaccessible regions of Antarctica and one never previously explored on land, the achievements of Giæver’s expedition were considerable. Ahlmann’s conjecture of past glaciation exceeding that of the present was amply confirmed. Robin’s spectacular seismic results found ice thicknesses up to 2,400 meters, and much productive geological research had been carried out in the mountains. Back at Maudheim, meteorological records had been maintained continuously for just under twenty-three months and pioneering upper atmospheric studies had been conducted. All in all, this expedition should be credited with laying much of the scientific groundwork for the major scientific campaign to follow during the International Geophysical Year of 1957–1958.
Glen, Sandy

(1912–)

For many university students during the 1920s and 1930s, participating in an Arctic expedition changed their lives. Although only a few could pursue careers as polar explorers, others such as Sandy Glen went on to distinguished service careers in World War II and positions of leadership in the challenging decades that followed.

The period between the two world wars was the great era of student Arctic expeditions. Each year, groups of young men joined Donald MacMillan and Bob Bartlett on voyages to Labrador, Greenland, and the Canadian Arctic in Bowdoin and Effie M. Morrissey. Similar parties were taken north by the veteran French explorer Jean-Baptiste Charcot in Pourquoi-Pas?. The expeditions of the Oxford undergraduate Sandy Glen were two among many organized by exploration societies at Oxford and Cambridge Universities to destinations that included Jan Mayen, Svalbard, Greenland, and Baffin and Ellesmere Islands. Activities at Cambridge centered on the Scott Polar Research Institute, which, since its foundation in 1920 by Frank Debenham, professor of geography and a veteran of Robert Falcon Scott's second expedition, had served as a meeting place for all interested in polar exploration and science. Also in Cambridge was James Wordie, former head of scientific staff with Sir Ernest Shackleton, and Cambridge man—included many former members of Cambridge expeditions in his British Graham Land Expedition of 1934–1937. The first Oxford University expedition had been organized to Spitsbergen in 1921, followed by two to North East Land in 1923 and 1924, led by George Binney. The Oxford University Exploration Club was formed in 1927, mounting expeditions to Greenland in 1928, Lapland in 1930, and Hudson Strait in 1931, among other destinations. Although the club did not confine its activities to the Arctic, this region held a special place for the club in that it could be visited during the long vacation and thus did not interfere with academic studies.

Alexander Richard Glen inherited leadership of the 1933 Oxford University expedition to Spitsbergen when the appointed leader got badly frostbitten sledding in northern Canada. His eighteen-man party was to conduct a topographic survey and other studies of New Friesland, a peninsula some 55 miles long and 25 miles wide in northeastern Spitsbergen. It was one of the least-known regions of this island, and although several parties had explored the coast, no one had investigated the interior ice cap, which had been crossed just once: by Arve Staxrud in 1913 to rescue survivors of Herbert Schröder-Stranz's expedition at Sorge Bay. On the advice of others, no dogs were taken, a decision that Glen came later to regret, when the journeys proved longer than anticipated and the conditions seemed well-suited to dogs. Despite having to rely on man-hauling, the program was brought to a successful conclusion. The first accurate maps were compiled extending south to beyond Mount Newton—at 1,713 meters Spitsbergen's highest mountain—and several outstanding issues concerning the island's geology resolved.

The Oxford University Expedition to North East Land, 1935–1936

Although university expeditions generally did not winter, an exception was made for Glen's next and more ambitious venture. Apart from trappers, no one had wintered previously on North East Land, a largely ice-covered island northeast of Spitsbergen. Much remained to be discovered concerning its three ice caps, and a full scientific survey had yet to be attempted. In addition to Glen (geographer and glaciologist), the other nine members were Andrew Croft (second-in-command, photographer, and dog handler); Richard Hamilton and Robert Moss (physicists); David Keith (biologist); Brownie Whatman (ionospheric research and radio operator); surveyors John Wright, Daniel Godfrey, and Archie Dunlop-Mackenzie; and trapper Karl Bengtsson, who was recruited at the last moment when concern was expressed that they might run out of food.

On 27 July 1935 they headed north from Tromsø, Norway, in the 70-ton sealer MS Polar, along with twenty-three dogs acquired from West Greenland. Glen had planned to establish his base in Rijps Bay, but ice conditions made North East Land difficult to approach, and he eventually had to settle for Brandy Bay farther west. Polar was too small to transport all their stores, and he could not risk the possibility of the ship failing to reach them with the remainder, which had to be collected from western Spitsbergen. As it was, there was insufficient time to wait until the bay ice broke up, and the main station had to be set up near a stream backed by steep cliffs, rather than farther south, where there was ready access onto the ice cap. This meant that an additional sledging base would have to be established on the far side of the bay. While they awaited Polar's return with timber for the hut, food and equipment were divided into four piles—two for the bases in

See also: International Geophysical Year; International Polar Years; Nordenskjöld, Otto; Norway; Princess Martha Coast; Queen Maud Land; Riiser-Larsen, Hjalmar (1929–1930); Ritscher, Alfred (1938–1939)

References and further reading:

Brandy Bay and one for each of the ice-cap stations. By the time *Polar* finally departed on 22 August, the main hut—9 by 6 meters—had been erected, as had also one of Bengtssen’s trapper’s huts to provide accommodation at the sledging base. The ionospheric hut and meteorological facilities were completed by mid-August, when the regular routine of observations began. Whatman’s ionospheric studies were particularly significant. Initially puzzled by the distance at which radio signals could be received, given attenuation and the curvature of the Earth, scientists had identified layers within the upper atmosphere possessing the property of reflecting signals when ionized by ultraviolet light from the sun. Glen’s expedition provided the first opportunity to investigate what happened to these layers at high latitudes during the long sunless winters.

No time was to be lost if the expedition’s highly ambitious survey program was to be achieved. Using a 7-meter whaleboat, Wright, Keith, and Bengtssen succeeded in mapping the entire north coast west of Rips Bay while the sea remained comparatively open. As temperatures dropped with the onset of fall, the next task was to establish the two ice-cap stations. Glen proposed manning Northern Station himself. Sited on a high ice dome overlooking the north coast, it was to be occupied for four months, giving him the opportunity to conduct glaciological and meteorological studies of the ice cap as well as to monitor changes in the distribution of sea ice, since from this location he could see far out over the ocean. Central Station would be occupied for ten months in the center of West Ice. There, the main glaciological program would be carried out by Robert Moss, who was to investigate the age, balance, and physical conditions of the ice, particularly at depth. Delayed by an unseasonal thaw, which made conditions impossible for sledging with heavy loads, Glen was not able to lead a five-man party to establish Central Station some 15 miles inland until 6 September 1935. Once past the zone of melt streams and blue ice fractured by crevasses, the going became easier. Having located a suitable site, Glen remained behind with Mackenzie and Moss, while Croft and Godfrey returned to collect further loads. Considerable thought had been given to the design of Central Station, bearing in mind August Courtauld’s lucky escape on the Greenland Inland Ice in 1931 (see Watkins, Gino). Moss and Keith were to inhabit a tent buried deep within the ice and linked to the surface through a tunnel leading to a 6-meter vertical shaft. Other tunnels included a safety cavern (in the event of anything happening to the tent), paraffin and food stores, and another vertical shaft—this time downward and over 12 meters long—for recording temperatures and making other studies of ice behavior at depth.

By 19 October 1935 both ice stations were established, with Mackenzie accompanying Glen at Northern Station. Although the sun had set for the last time, Croft and Wright had one more journey to complete. Before the next year’s demanding survey program could be attempted, three more depots had to be laid, including one at Cape Leigh Smith at the northeastern tip of the island. Sledging across the ice cap, they were trapped in their tent for several days by a blizzard, fortunately close to Central Station, though it took them several days to find it. Resuming their journey, they crossed ice-free Rips Valley in the half-light and then the eastern ice cap. This they found deeply fissured by crevasses as they approached Cape Leigh Smith. Bears were numerous nearer the coast, and one came within 3 meters of Wright, rearing over him, before it was driven off by a volley of abuse. To save weight they had left their rifles behind, and Wright had only an ice axe to protect himself. The return journey with light sledges took only a few days, and after traveling a total distance of 250 miles, they reached Northern Station on 13 November. While he was based there with Glen, Croft became lost in a blizzard, eventually making his way down to Brandy Bay after wandering for hours and then lying up in a hole in the snow. Glen, meanwhile, had circled the station at the end of a long rope, increasingly certain that his companion was dead.

January 1936 was spent in preparations for the sledging journeys, which began on 3 February, when Croft, Godfrey, and Keith left to establish two more depots in Wahlenberg and Palander Bays to the southwest. This journey was undertaken in temperatures descending to −40°C (−40°F) and again in near-darkness; the sun did not reappear until 26 February.

One of the main journeys to be undertaken as part of the general survey was a circumnavigation of the island, which Glen planned to make with Croft. Despite injuring his back quite badly while investigating the sea ice, after a short lay-up Glen was fit enough to set out on 12 May 1936. Much of North East Land is lined by ice cliffs 60 meters high and more where the ice caps reach the sea. These cliffs extend along the east and south coasts for 120 miles, interrupted at three points only by small areas of ice-free land. Ice-free land is found, however, along the deeply indented north coast, widest to the west and narrowing rapidly toward Cape Leigh Smith. Benefiting from the hard sledging surfaces of early spring, the two men made good progress, taking just four and a half days to reach this cape, where they gained their first sight of the great cliffs they were to follow for the majority of their journey. By this time, Wright had begun his survey of the north coast, and the west coast was comparatively well known. The task facing Glen and Croft was to conduct a reconnaissance survey of the east and south coasts, paying particular attention to the ice-free areas, as well as making preliminary glaciological and geological investigations. Reaching the south coast at Cape Mohn, they were again on ice-free land by 8 June. Approaching the west coast at Cape Torell, they could see Barents and Edge Islands across Hinlopen Strait together with the high mountains of eastern Spitsbergen. Back in familiar territory, they made a rapid crossing of West Ice via Central Station to arrive back in Brandy Bay on 16 June.

Meanwhile, Keith and Godfrey studied birds, plants, and
insects in Murchison Bay, and Wright led survey parties along the north coast. Moss continued to man Central Station until 13 June. For the last three months he was alone and only finally abandoned the station when the roof was about to cave in.

Croft and Whatman spent the last days of the expedition across Hinlopen Strait, mountaineering in the Stubendorff and Chydenius Ranges of Spitsbergen before continuing on to Ice Fjord, where they were picked up by MS *Heimland* on 21 August 1936, the other members of the party having been collected three days earlier.

Thus concluded one of the most successful expeditions of the interwar period. It was not, however, to be the last expedition organized to North East Land by the Oxford University Exploration Club. Including Glen's expedition, as well asBINney's earlier expeditions of 1923 and 1924, no less than six were to go to this one island—the others took place in 1949 and 1951 (led by John Hartog), and in 1955 (led by J. T. Hollin). Glen and his colleagues found that their Arctic experiences equipped them well for service during World War II, most directly when Glen participated in the Allied reoccupation of Spitsbergen in 1942, after German forces had taken over Longyearbyen to threaten convoys transporting essential goods to the Soviet Union. His later career took him to the heights of British industry.

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**References and further reading:**


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**Gould, Laurence**

(1896–1995)

During the first Antarctic expedition of Richard Byrd, the distinguished American polar scientist Laurence Gould led one of the longest sledge journeys ever undertaken for purely scientific purposes.

**Geological Studies on Byrd’s First Antarctic Expedition, 1928–1930**

Dr. Laurence McKinley Gould gained his first experiences of polar exploration in 1926 as a member of the first University of Michigan expedition to Greenland, led by William Hobbs, and in 1927 with George Putnam’s expedition to Foxe Basin and Baffin Island. Originally selected as geologist and head of scientific staff for Byrd’s first Antarctic expedition, he made such an impression that Byrd promoted him to second-in-command shortly before the expedition landed in the Bay of Whales in January 1929. Here his first task was to take charge of the construction of Little America, Byrd’s operating base.

On 27 January, Byrd had discovered the Rockefeller Mountains in Edward VII Land. Rock exposures had been noted, and Gould was extremely eager to study them before winter set in, knowing that he was unlikely to have any opportunity the following season, when he would be fully committed on a long sledge journey to the Queen Maud Mountains. With flying conditions worsening as winter approached, rather against his better judgment, Byrd was persuaded to allow Gould to lead a three-man party to survey the Rockefeller Mountains.

On 7 March 1929, Gould took off in the Fokker Universal monoplane with pilot Bernt Balchen and radio operator Harold June. After traveling 150 miles from Little America, they landed about 1 mile from the foot of one of the larger southern peaks at 78°9’S, 154°27’W. To begin with conditions were good, allowing Gould to establish that the mountains were predominantly composed of Precambrian granites. Three days later, however, a strong wind started blowing, with gusts of 60 miles per hour lifting the Fokker into the air as the three men hung onto its wings and loaded snow over its skis to weigh it down. A rapid return to Little America was clearly now in order, and arrangements were made to fly back the next day, but they were prevented from doing so when the wind again increased. The next day, 13 March, was overcast, impossible for flying but otherwise good for Gould’s geological and survey work. Climbing up the nearby mountain, they could see new land to the south in the region recently named Marie Byrd Land for Byrd’s wife. Conditions were ideal for their return flight early the next morning, but before the engine could be started, the wind began to rise once more, and the plane had to be resecured. With the barometer dropping, it was evident that worse weather was on the way, and the full force of the storm struck on 15 March. They could do nothing to prevent the Fokker breaking free of its moorings and taking off backward in a gust estimated at 150 mph. The plane was carried half-a-mile before crashing back onto the ice, a total wreck. Within the sodden and battered tent, with screaming winds outside, June struggled to repair the emergency radio set. Until it could be mended, all radio communication was lost with Little America, whose messages could be heard but to which no messages could be sent. Gould and his colleagues were making preparations to walk the 150 miles back to base, when on 17 March, they picked up communications that Byrd was sending out dog teams and would himself lead a rescue flight. Realizing that the dog teams would be likely to reach them within a week, Gould decided that the best course was to sit tight. They had plenty of food and were poorly equipped for overland travel. On 19 March, Byrd was at last able to take off with Dean Smith and Howard Hanson in the Fairchild. Learning of his departure by radio, the three waited expectantly, hearing the plane long
before they saw it. Since the Fairchild could not carry all six
men, Byrd wanted all three of Gould’s party to return with
Smith, while he and Hanson waited to be picked up later. Gould
would not have this, so he remained with Byrd and Hanson
until Smith and June were able to fly out to collect them three
days later.

Throughout the winter, preparations continued on the two
major tasks set for the coming season: Byrd’s flight to the South
Pole and Gould’s sledging journey to the Queen Maud Moun-
tains. The two undertakings were designed to be mutually sup-
porting. In the event of any accident befalling the polar flight,
Gould’s party would be on hand to provide assistance, and
Byrd would establish a final large depot for the sledging party
at the foot of Mount Nansen. Further assistance to Gould
would be provided by a series of depot-laying parties, who
from 15 October 1929 on succeeded in laying stores of food
and fuel at 50-mile intervals out to 200 miles on the 163°30’W
meridian, along which Gould was to travel.

On 4 November, Gould set out, accompanied by surveyors
John S. O’Brien and George A. Thorne Jr., together with dog
drivers Frederick E. Crockett, Edward E. Goodale, and Norman
D. Vaughan. Five dog teams pulled ten sledges linked in pairs.
It took them twenty-eight days to cover the 440 miles to the
mountains, with their way across the first 200 miles made con-
siderably easier along the trail already pioneered by the sup-
porting party. The only area of real difficulty was a belt of
heavy crevassing between 81° and 82°S. Shortly before they
reached the mountains, on 28 November, Byrd flew overhead
on his way to the Pole. A parachute fluttered down with some
provisions, cigarettes, instructions on how to find the Mount
Nansen depot established on the fuel-laying flight of 18
November, and air photographs of the mountains taken dur-
ning the same flight.

On reaching the mountains, Gould realized that they would
have to climb up one of the glaciers to reach areas of exposed
rock that were confined to the higher slopes. After an initially
abortive attempt to find a way up the steep and heavily
crevassed Liv Glacier, they finally established Strom Camp,
their base for the next few weeks, on 6 December on the lower
part of the Axel Heiberg Glacier, the same glacier Roald
Amundsen had ascended on his way to the Pole. The next two
days were spent climbing to 1,980 meters on Mount Nansen,
where Gould discovered exposures of Beacon sandstone. This
discovery was important since it appeared to demonstrate the
continuity of these mountains with those studied in Victoria
Land by geologists during Robert Falcon Scott’s two expedi-
tions.

On 13 December 1929, Strom Camp was left behind on a
journey east-southeast along the foot of the mountains.
Gould’s aim was to investigate “Carmen Land,” a high scarp-
land reported by Amundsen as forming the edge of the Ross
Ice Shelf farther east. Conditions for travel were frequently
appalling. For three days heavy snowfall trapped them in their
tents, and from then on they had to make their way through
soft snow that frequently capped treacherous crevasses.
Despite these difficulties, Gould was determined to reach east
of 150°E, the limit of the Ross Dependency and the beginning
of Marie Byrd Land. Attaining this meridian on 21 December,
there they climbed Supporting Party Mountain, which Gould
named in honor of those who had made their work possible
by laying depots so far from Little America. From the top they could see for over 30 miles. There was no sign of “Carmen Land.” Most likely, Amundsen had been misled by the high ice pressure ridges formed in an area where the mountains were insufficiently high to prevent the mass of the polar ice—ponded back elsewhere—spilling over in quantities that caused the ice shelf below to buckle.

By 25 December they were back in the vicinity of Strom Camp when they saw a curious rock pile on a low ridge. The party was aware that much of their way they had been traveling in Amundsen's footsteps, and it caused them intense pleasure to discover that this was the cairn the great Norwegian explorer had reported building on 6 January 1912. Carefully removing the stones, they found buried beneath a tin of paraffin, a box of matches, and a tightly closed can. Forcing the last open, inside Gould found a note torn from Amundsen's diary on which he recorded his success in reaching the South Pole. Gould described this moment as “the high spot of the summer for all of us” (1931a, 220).

Before heading north, Gould had wanted to make one more climb up Mount Nansen to reexamine the Beacon sandstone and the coal measures associated with it. This, however, proved impossible, with the dogs clearly exhausted and in need of rest before their long journey home. On 30 December, they set out north back to Little America, which they reached on 19 January 1930 after a rapid journey along the well-marked trail. In all, they had traveled 1,525 miles.

For his services on this expedition Gould received a Congressional Medal, and his achievements in Antarctica provided the platform for his distinguished later life. From 1932, he was a professor of geology and, between 1945 and 1962, president of Carleton College, later Carleton University. Although he participated in no more polar expeditions, he continued to be involved in Arctic and Antarctic matters, heading the Arctic, Desert, and Tropic Information Center of the U.S. Air Force until his retirement in 1963.

Graah, Wilhelm

(1793–1863)

The greatest achievement of the Danish explorer Wilhelm Graah was to prove that the Norse Eastern Settlement was not to be found in East Greenland south of 65°N and indeed that it was much more likely to have been located on the west coast. The site of the Eastern Settlement founded by Erik the Red in 986 remained a subject of intense speculation well into the nineteenth century. Its name seemed to imply its location on Greenland’s east coast. From 1723 onward a succession of Danish expeditions, initiated by the missionary Hans Egede, sought to reach this coast from West Greenland, either over the Inland Ice or else by rounding Cape Farewell. So long as East Greenland remained unreached, it was still possible for some to believe that not only would the Eastern Settlement be found there but even that a Norse colony might still survive. Spurred by the success of British expeditions led by William Scoresby and Douglas Clavering in surveying extensive sections of East Greenland’s coastline in 1822 and 1823, respectively, the Danish government determined to organize yet another expedition, selecting as its leader Wilhelm August Graah, who had previously led a naval expedition in 1823–1824 that had charted the coast of central West Greenland between 68°30’ and 73°N.

The Eastern Settlement Not Found, 1828–1831

The task set for Graah was to explore the coast of East Greenland from its southernmost tip north to 69°13’N, thus uniting his survey with those of Scoresby and Clavering farther north. To assist him in this task, he was accompanied by the naturalist Jens Vahl and the interpreter J. M. Mathiesen. On 31 March 1828, the three-man party sailed from Copenhagen in the Royal Greenland Trading Company ship Hvalfisken to reach Frederikshåb (Paamiut) on 27 May. Graah’s plans were significantly influenced by Peder Walloe, who between 1751 and 1753 had led the only expedition to achieve any success in reaching East Greenland. Proceeding by boat to Julianehåb (Qaqortoq), where he arrived on 16 June, Graah had two umiaks constructed before traveling south to Nanortalik, where he was to winter.

At Nanortalik fifteen Greenlanders were recruited, five men to act as guides and hunters and ten women to crew the umiaks. Setting off on 21 March 1829, they reached the east coast through Prince Christian Sound by 27 April, after being delayed for twenty-five days by ice blocking the sound’s eastern exit. Following the coast north, they reached Lindenow Fjord (Kangerdlugssuatsiaq) on 29 April and Iluileq in late May. Soon afterward they were held up for seventeen days by difficult ice conditions. Resuming the journey on 14 June, they passed Cape Herluf Trolle (Kangererdlukasik) three days later and Cape Cort Adelaer on 20 June. To extend his limited provisions as long as possible, Graah now sent back Vaal and...
Mathiesen together with most of the Greenlanders in one umiak, continuing on in the other with two of the women and two Inuit families from the east coast.

Uummannaq Island was reached on 2 July. Some way farther north, Graah sent one of the Greenland families away, taking on in their place three local women. Cape Løvenørn was passed on 18 July 1829 and Køge Bay two days later. On 24 July, he was halted by ice at 65°15'N. Waiting for it to clear until 3 August, he decided to make use of the delay to extend his investigations of Køge Bay. A second attempt to get north was again thwarted by ice, and thus it was at his farthest north on Dannebrog Island at 65°15'36"N on 18 August that he took formal possession of the coast he had explored, naming it King Frederick VI Coast for the Danish king. Returning some way south, he wintered at Imaersivik (63°21'N). Nowhere had he seen any evidence of Norse settlement, nor did any of the Inuit interviewed profess knowledge of any such people ever inhabiting this region.

From April to June 1830, Graah again sought to get farther north, only to be stopped by ice near Cape Møsting. Making another attempt in July, he could reach only 64°09'N and on 28 July turned south for the last time. He reached Nanortalik on 19 October and then continued on to Julianehåb, where he wintered. On 11 August 1831, he boarded Hvalfisken to return to Copenhagen on 13 September 1831. Not until Gustav Holm in 1884 did any European reach farther north along this most inaccessible coast.

See also: Clavering, Douglas; Egede, Hans; Erik the Red; Greenland, East; Holm, Gustav; King Frederik VI Coast; Richardson, Carsten; Scoresby, William

References and further reading:
Graah, W. A. 1837. Narrative of an expedition to the east coast of Greenland, sent by order of the King of Denmark, in search of the lost colonies. . . . London: Royal Geographical Society.

Graham Bell Island (Franz Josef Land)
Located at 80°50'N, 64°00'E, Graham Bell Island is the easternmost island in Franz Josef Land and at 667 square miles, the third largest. It was discovered in May 1899 by Evelyn Baldwin during Walter Wellman's expedition and named for the inventor, Dr. Alexander Graham Bell (1847–1922), founder of the Bell Telephone Company and president of the National Geographic Society. The official Russian name is Ostrov Greem-Bell.

A Soviet military station and airstrip were established during the Cold War on the Kholmistiy Peninsula, the most extensive ice-free area in Franz Josef Land. This was originally a secret facility designed for use by long-range bombers. In 1995, the base was described as more or less evacuated by military personnel.

See also: Baldwin, Evelyn; Franz Josef Land; Wellman, Walter (1898–1899)

References and further reading:

Graham Land
See Antarctic Peninsula

Great Britain
Great Britain has been involved in exploring the polar regions more continuously and over a longer period than any other country. Whether or not Nicholas of Lynn visited West Greenland in the fourteenth century, by the early years of the next century Bristol fishermen were to be found off Iceland and Greenland and were beginning to explore west across the Atlantic Ocean, before assisting John Cabot in reaching North America in 1497. Cabot began the search for the Northwest Passage, which remained central to British attempts to explore the Arctic for the next 350 years. English navigators also pioneered exploration of the Northeast Passage, and it is interesting that when they did so, Scottish merchants were discovered at Vardø in northernmost Norway and sought to dissuade them from going any farther. Just how far the Scots had themselves got at this date is unknown, but clearly it was not just the English who were interested in trading possibilities in the far north.

Until the nineteenth century, virtually every British polar expedition was intended as a money-making venture, fitted out by merchants in the hope of returning with a profit from whaling, mining, and trade or, more speculatively, of laying the foundations for future fortunes by discovering routes to the Far East and thus opening up the possibility of obtaining directly the luxury goods previously purchasable only at the end of a long chain of traders, each of whom had taken a cut and added to the expense. The British, at the end of the chain, had the strongest reasons for wishing to discover the Northwest and Northeast Passages. From Henry Hudson on, they also made repeated attempts to reach the Far East directly across the Pole. Given that almost all expeditions made losses and none actually discovered a passage, the optimism of their backers may seem surprising, but the potential prize was great. A reason could always be found for yet another expedition, though after the frenzy of speculation following Hudson's supposed discovery of a route to the Pacific Ocean through Hudson Strait in 1610–1611, it became increasingly hard to find people prepared to invest their fortunes by backing further voyages. Thus, by 1631, the most intense period of early exploration was over.

Although occasional voyages continued to be sponsored by merchants and courtiers, toward the end of the eighteenth century expeditions began to be organized by the British government for motives sometimes described as “scientific.” Preeminent among them were the three circumnavigations of James Cook, two of which explored the polar regions. Scientific work certainly was conducted during Cook's voyages, but science was by no means their sole objective. The geographical discoveries reported had considerable commercial significance—leading, for example, to establishment of the Southern Ocean sealing industry—and his third voyage renewed the search for
the Northwest Passage. The numerous naval expeditions organized between 1818 and 1845 by John Barrow, however, did break with the earlier pattern. Polar exploration now became a matter of national prestige. As the British Empire rose toward its zenith, polar exploration played a not dissimilar role to the space program of the United States during the late twentieth century. It served to demonstrate national pre-eminence. British expeditions to the Northwest Passage and Antarctica were the “big science” of their day, expensive ventures that only the richest of states could afford, especially since they were not expected to yield financial return. The important thing was that no other country discover the passage or explore Antarctica first. This attitude persisted through much of the nineteenth and into the twentieth centuries, despite the disastrous loss of Sir John Franklin in 1845–1848 and the expense of fitting out many expeditions to search for him. Barrow was uniquely well placed to persuade the British Admiralty to pursue such a program. Later in the century, Clements Markham was less privileged but still able to exert sufficient influence through the Royal Geographical Society for the government to renew exploration of the Arctic in 1875–1876 (see Nares, George) and Antarctica in 1901–1904 (see Scott, Robert Falcon). Inevitably, not all in government were prepared to place such importance on polar research, and although proponents of exploration could usually find support in the Admiralty, the Treasury in particular was much harder to convince.

Not until the whaling industry proved that there was money to be made in Antarctica did the British government show interest in making official the many territorial claims made on its behalf from 1819 on by sealers and exploring expeditions. North of Canada, all such claims had been transferred in 1880 to the Dominion. In 1908 the Falkland Islands Dependencies were established (see British Antarctic Territory), and by 1920 the undersecretary of the Colonial Office could write officially to the governor-generals of Australia and New Zealand, informing them that it was “desirable that the whole of the Antarctic should ultimately be included within the British Empire” and that “a definite and consistent policy should be followed of extending and asserting British control with the object of ultimately making it complete” (Leo Amery, quoted in Beck 1984, 75). This policy was later modified to one in which the British government sought to ensure that whatever could not reasonably be claimed by Britain, Australia, or New Zealand was claimed by its allies—France, Norway, and the United States. In this, France and Norway were generally prepared to cooperate, but not the United States, which in 1924 declared its refusal to recognize any territorial claims unless the land was effectively occupied. (For an account of how this policy did not preclude the United States from pursuing its own agenda to mount covert claims across the continent, see the entry “United States.”) The Australian and New Zealand claims are described in the entries for the Australian Antarctic Territory and the Ross Dependency. Discovery Investigations, Douglas Mawson’s British, Australian, New Zealand Antarctic Research Expedition (1929–1931), and John Rymill’s British Graham Land Expedition all obtained government funding partly as a result of this policy, which, although never officially declared, provided the basis for consistent action by governments of the British Empire and Commonwealth until the negotiation of the Antarctic Treaty in 1959, of which Great Britain was naturally one of the original signatories.

For further information concerning British activities in Antarctica since 1943, see the entries for Operation Tabarin and the British Antarctic Survey. Great Britain also maintains the research facility Harland House at Ny-Ålesund, Spitsbergen.

See also: Australian Antarctic Territory; Barrow, John; British Antarctic Survey; British Antarctic Territory; Cabot, John; Cook, James; Discovery Investigations; Franklin, John (1845–1848); Franklin Search Expeditions; Hudson, Henry; Markham, Clements; Mawson, Douglas (1929–1931); Nares, George (1875–1876); Nicholas of Lynn; Northwest Passage; Operation Tabarin; Ross Dependency; Rymill, John; Scott, Robert Falcon (1901–1904)

References and further reading:

Greely, Adolphus
(1844–1935)

Only six men out of twenty-five returned from the scientific expedition led by the U.S. Army officer Adolphus Greely. Starvation, scurvy, execution, and possibly suicide caused the others to die, when they found themselves forced to winter on a remote cape in the Canadian Arctic with minimal provisions.

The Horrors of Cape Sabine, 1881–1884
The American expedition to Ellesmere Island was the result of two separate initiatives. In 1875, Captain Henry W. Howgate of the U.S. Army Signal Corps published his plan to establish a fifty-person-strong colony to conduct science and geographical exploration in the Arctic. Lady Franklin Bay was selected for its site on the basis of its northerly location, local availability of coal, and accessibility to channels leading north from Smith Sound, which had been shown to be navigable by a succession of American expeditions led by Elisha Kent Kane (1853–1855), Isaac Hayes (1860–1861), and Charles Francis Hall (1871–1873). Most recently, HMS Discovery had wintered there during the British expedition of George Nares (1875–1876). After Howgate had obtained the backing of Congress to organize a preliminary expedition to Baffin Island to recruit Inuit assistants and acquire dogs, funding for his main undertaking was voted down in 1878.

Quite independent of this effort were plans for an International Polar Year (IPY), originally proposed by Karl Weyprecht, coleader with Julius Payer of the Austro-Hungarian expedition that discovered Franz Josef Land. (For the background to
Weyprecht’s proposal and subsequent developments, see the entry “International Polar Years.” The U.S. contribution to IPY was to establish two stations, one at Point Barrow in Alaska and the other at Lady Franklin Bay. Responsibility for their operation was charged to the Signal Corps.

First Lieutenant Adolphus Washington Greely of the 5th Cavalry had been Howgate’s original choice as leader. He was now appointed commander of the IPY expedition, selecting Second Lieutenant Frederick F. Kislingbury as his second-in-command. The remainder of the party consisted of Second Lieutenant James B. Lockwood and twenty-four volunteers, chiefly enlisted men in the Signal Corps but also two who had enlisted specifically to join the expedition: the astronomer Edward Israel and the photographer George W. Rice. No one had any previous experience of the Arctic.

On 12 June 1881, the expedition sailed from New York in the 467-ton Newfoundland sealer Proteus. Dr. Octave Pavy joined the party at Godhavn. He had spent a year studying natural history in Greenland and served as expedition naturalist and surgeon. Two Greenlanders—Jens Edward and Thorlip Christiansen—came aboard at Upernavik with thirty-six dogs. The powerful Proteus made good progress through Nares Strait to reach Lady Franklin Bay on 10 August. Three soldiers were sent back with the ship when it departed eight days later, leaving twenty-five at Fort Conger, the station Greely named for Michigan senator Omar D. Conger, one of the expedition’s most enthusiastic advocates. There, through the winter, a routine of observations was established, conforming strictly to instructions drawn up for all IPY stations to ensure coordination of results. Meteorological, magnetic, and tidal measurements were made each hour. On “term-days,” twice a month, observations of magnetic declination were made every five minutes and, for one hour, every twenty seconds.

Three exploratory journeys were made the following spring. Pavy followed in the footsteps of Albert Markham on Nares’s expedition in an attempt to see whether land lay north of Ellesmere Island. He was turned back by open water without getting far. Greely investigated the interior of Ellesmere, discovering signs of early occupation by the Inuit and finding a large lake, which he named for the chief of the Signal Service, General William Babcock Hazen. The most significant journey, however, was undertaken by Lockwood, who crossed Robeson Channel to travel north along the coast of Greenland to Lockwood Island, nearly 100 miles beyond the farthest reached by Lewis Beaumont on Nares’s expedition and, at 83°24’N, a record farthest north.
With ice still blocking Kennedy Channel in late summer of 1882, it came as no great surprise to Greely when the relief vessel *Neptune* was forced to turn back in Kane Basin. This posed no real difficulties for his expedition, which was still well-supplied with provisions. Others, however, were far from content, including several whose period of enlistment was now up, as well as Kislingbury and Pavy. Kislingbury had fallen out with Greely almost immediately after his arrival at Fort Conger. He had offered to resign and return home with *Proteus* but was too late to catch the ship. Greely refused to reinstate him or give him any other role, and his contributions had been limited to hunting and assisting astronomer Israel. Pavy was a different case. With overinflated ideas as to his abilities as an Arctic explorer, Pavy submitted with ill grace to military discipline and held his commander in near-open contempt. Since he was not prepared to conduct his duties as expedition naturalist in a manner acceptable to Greely, in May 1883 Lockwood was ordered to take over this role. During the long winter, the full routine of scientific observations continued, keeping busy being the only outlet for rising feelings of antagonism nursed by many toward their irritable and irritating leader.

Before the expected arrival of the relief vessel in the summer, there was time for another foray by Lockwood, this time, west across Ellesmere to discover a large fiord, which he named for Greely. Again, it was a bad year for ice, and the relief expedition, consisting of *Proteus* and USS *Yantic*, was unable to get through. *Proteus* got as far as Cape Albert before being nipped by ice and sinking at about 79°N. With the aid of supplies left at Cape Sabine by *Neptune* the previous year, the crew and Lieutenant Ernest Garlington's detachment of Signal Corps volunteers made their way safely to West Greenland, from where they eventually returned with *Yantic* to the United States. Although Fort Conger retained sufficient supplies for another year, Greely's instructions were to retire south to a location from where he and his men might be picked up more easily, if they were not relieved by August. On 10 August 1883, Fort Conger was abandoned as they set out in three whaleboats and an Inuit dinghy, towed by the steam launch *Lady Greely*. It took fifty-one days to travel the 500 miles to Cape Sabine, where they arrived on 29 September. For 100 miles, they had had to heave the boats across the sea ice, after abandoning the launch on 10 September. During the journey, Pavy and Kislingbury had plotted to wrest leadership from Greely, after a series of injudicious decisions appeared to put all at risk. However, they were thwarted when the indispensable Sergeant David Brainard remained loyal to his leader. Greely was indeed completely out of his element, a soldier more used to commanding cavalry patrols in the prairies. He was lucky to be able to rely on Brainard, who was destined to rise from noncommissioned officer to general.

Once on the shores of Smith Sound at Cape Sabine, Greely expected to find at least two well-supplied depots left behind by the relief vessels. Instead, only one cache was discovered, and that had already been depleted by the crew of *Proteus*. With the depot was found Garlington's note expressing his determination to provide imminent assistance. This encouraged Greely to remain at Cape Sabine, despite the lack of game. A crude hut was built, walled with stones, and the remaining boat placed on top to form a roof. Here, they would have to survive for at least nine months with provisions at most for two.

The expedition's prospects were extremely bleak. Unless help reached them before the full onset of winter, it was probable that no one would survive. Unfortunately, Secretary of War Robert Lincoln had been hostile to the expedition from the start. Receiving conflicting advice as to the necessity of sending assistance, Lincoln chose to do nothing. Meanwhile, at Cape Sabine, the Greenlanders proved poor hunters without a harpoon to help them recover their prey, and the men were left to scavenge what they could. A four-man party led by Rice was sent to collect a small cache of meat left by Nares at Cape Isabella. It was all they could do to reach it. On the way back, one man collapsed, and Rice had to walk 17 miles to fetch help. When the injured man was brought in, Pavy refused to amputate his frostbitten hands and feet, which were left to drop off one by one. Despite their privations, only one man died before April 1884, four following soon afterward as the effects of scurvy intensified. Rice volunteered to return to fetch the meat cache, which he had been forced to leave behind on his previous journey. Accompanied by Private Julius Frederick, he could find no sign of the meat. He refused to return without it, searching in circles until he collapsed and died. Deaths now came thick and fast. The Greenlander Edward was lost with his kayak. Four men died in May, leaving just fourteen alive. With the approach of summer, meltwater flooded the low-lying hut, which they were forced to abandon to find what little shelter they could in a tent. By June, there was nothing to eat but shrimp, seaweed, lichen, and a jelly produced by boiling clothes made out of sealskin. When one of the party—Private Charles Henry—repeatedly ignored Greely's orders not to steal food, he was executed. This was the reason given for Henry's death, but it is likely that Henry had also resorted to cannibalism, as others, if not all of them, may have done. By 21 June, only seven men remained alive, surrounded by the partially buried bodies of their colleagues. The next day, Greely thought he heard a ship's whistle and asked Brainard and Francis Long to investigate. Noting that the distress signal had fallen down, Long climbed up to see two ships at anchor in the bay beyond.

Had their rescuers arrived just forty-eight hours later, it is probable that no one would have survived. All were suffering from severe scurvy, and their rations were virtually exhausted. The body of Henry still lay where he had been shot. Another corpse was found half in and half out of the tent. Flesh from six of the bodies had been removed by a sharp instrument. With the greatest care, the survivors were brought to the ships and nursed to health so successfully that only one died on the voyage back to St. John's, where they arrived on 17 July 1884.
The horrors experienced at Cape Sabine and the rumors of cannibalism received wide publicity, which altogether overshadowed the expedition’s very real scientific achievements. Fort Conger had been the most northerly of all the IPY stations, and Greely had made every effort to ensure that his results and the instruments used to make them were not jettisoned after the station was abandoned. In later life, Greely became a leading pundit on polar exploration, in this capacity showing altogether greater aptitude than he had ever demonstrated when himself in charge of an expedition.

See also: Ellesmere Island; Farthest North; Greenland, North; Hall, Charles Francis (1871–1873); Hayes, Isaac; International Polar Years; Kane, Elisha Kent; Nares, George (1875–1876); Payer, Julius; Peary Land

References and further reading:

Greenland

This entry provides an overview of Greenland’s place in exploration history. For more detailed accounts of how its component coasts and regions were explored, see the entries for West, North, and East Greenland, as well as the entry about Greenland’s Inland Ice.

The world’s largest island, Greenland has a total area of 822,700 square miles and extends from Cape Farewell (59°50'N) to Cape Morris Jesup (83°33'N). Ice covers 94 percent of its area. According to the Icelandic sagas, the first European to see Greenland was Gunnbjörn Ulfsson around 877. The first European to explore it was Erik the Red, who between 982 and 985 investigated the west coast for suitable sites to colonize before founding the Eastern and Western Settlements in 986. It is likely that south Greenland had only shortly before been deserted by the Dorset Eskimos around 900. At this date, the Inuit of the Thule culture were still much farther north.

At its largest, the Norse colony may have numbered 4,000–5,000 in the Eastern Settlement and 1,000–1,500 in the Western Settlement. Regular contact was maintained with Iceland and through it with Norway and the European mainland. In exchange for timber and other products not available in Greenland, the Norse colonists traded both luxury goods—white falcons, walrus ivory, eiderdown, and furs—and more everyday commodities—fish, fish oil, blubber, cattle hide, and wool. In 1261, Håkon Håkonsson, king of Norway, claimed Greenland as a crown possession, and from this time on, only the king’s ship was permitted to trade, resulting in the colonists’ increasing isolation. The last recorded voyage from Greenland to Norway took place in 1410. It is possible that the voyages were brought to an end following the refusal of the colonists to pay tithes to the Norwegian church authorities, thus removing the motivation for them to continue to organize annual voyages to collect tithes and goods. By the time the priest Ivar Bárðarson visited the Western Settlement around 1350, no Norse were to be found, though the presence of horses, goats, cattle, and sheep wandering freely indicated that the settlement’s abandonment may have been recent. The Eastern Settlement appears to have died out around 1500. Kirsten Seaver (1996) has speculated that the decline of the latter may have been hastened by English and possibly Portuguese attempts to establish colonies on the North American mainland in the early years of the sixteenth century, thus encouraging the most vigorous of the younger inhabitants to voluntarily migrate away. Other scholars link the decline to climatic change, interbreeding with the Inuit, extermination by the latter, or all three.

Following the last voyage to Norway, Seaver (1996) has found evidence of English fishermen and traders regularly visiting southeastern Greenland by 1420–1430 in their search for cod. Despite the efforts of the Norwegian king to confine overseas trading to Bergen in western Norway, by 1411 fishermen from Bristol were regularly fishing off Iceland, from where it was but a short distance to Greenland. This familiarity with the waters of the northern North Atlantic was a significant factor motivating John Cabot to move to Bristol before organizing his voyages of 1497 and 1498.

In 1397, Greenland came under Danish rule. The first map to depict “Engroenlant” was compiled by the Danish cartographer Claudius Clavus in 1427. There is little else to indicate early Danish interest in Greenland, apart from a voyage possibly made by Didrik Pining and Hans Pothorst, which some scholars believe to have been organized by Christian I. Whether or not it actually took place, by the time of Frederik II (1559–1588) and Christian IV (1588–1648), all knowledge of the exact location of the colonies and even of Greenland itself appears to have been lost, and both kings commissioned English pilots to assist them in reestablishing contact with their lost possessions.

Cape Farewell had been sighted by two Portuguese expeditions in 1500, but Portuguese interest faded soon afterward, when it became apparent that Greenland lay in the regions defined as Spanish by the Treaty of Tordesillas (1494). The English explorer Martin Frobisher saw Greenland during the first of his three voyages in 1576. Misled by the notorious “Zeno map,” he identified it instead as “Frisland,” believing that he had reached Greenland when he landed in southeastern Baffin Island. When he did finally land in West Greenland on 20 June 1578, he did not recognize it as such and called it simply “West England.” Until well into the nineteenth century, Frobisher Strait was depicted on maps as cutting through the southern
tip of Greenland (see Frobisher, Martin; for subsequent visits by English, Danish, and Dutch sixteenth- and seventeenth-century expeditions, see Greenland, West).

The Danish colonization of Greenland began in 1721, when the Lutheran pastor Hans Egede established a mission near Godthåb. Like subsequent missions, this was intended to pay its way by trading with the Inuit, offering European goods in exchange for blubber, skins, and whatever else the Inuit had to offer. In 1732, the Greenland Trading Company was established, the first of several companies exercising a monopoly over trade with Greenland. Between 1774 and 1908, this privilege was the prerogative of the state-owned Royal Greenland Trading Company. The main items acquired from the Inuit were blubber, liver (oil), sealskins, arctic fox and polar bear furs, and eiderdown. During this period, Danish settlements were established along the west coast from Nanortalik, near Cape Farewell, north to Upernavik (72°50’N). The company sponsored a certain amount of exploration of West Greenland to investigate commercial possibilities. From Egede on, a number of attempts were also made to reach the Norse Eastern Settlement, which was widely believed to still survive on the east coast.

Whaling activities off Greenland can be dated back to the early seventeenth century, first at high latitudes between East Greenland and Spitsbergen and then off the west coast. The English, Dutch, and Danish were all active to the east, whereas whaling off West Greenland was pioneered by the Dutch, with the first exploratory voyages as early as 1614, though regular visits took place only from the first decade of the following century. Until John Ross’s voyage of 1818, whalers seldom fished north of Disko Island and Vaigat. Afterward, they fished the more southerly waters in the early part of the summer, until the ice opened up sufficiently to allow them to penetrate along the coast to the seasonally open waters of Baffin Bay, where rich stocks of whales were to be had. After 1818, a succession of British naval voyages visited West Greenland on their way north to search for the Northwest Passage. There, they took on fresh water and additional provisions. Unless they met up with whalers later, it was also their last opportunity to send letters home.

These expeditions contributed little to the further exploration of Greenland, unless, like Ross, they also visited North Greenland. By the nineteenth century, the west coast was well-known as far as Upernavik, but much remained to be learned of Melville Bay. The Inland Ice and North and East Greenland remained virtually unknown.

See also: Cabot, John; Denmark; Egede, Hans; Erik the Red; Frobisher, Martin; Greenland, East; Greenland, Inland Ice; Greenland, North; Greenland, West; Norway; Whaling and Arctic Exploration

References and further reading:

Greenland, East

For the purposes of this encyclopedia, the coast of East Greenland has been divided from north to south into the following regions: King Frederick VI Coast (from Cape Farewell to 65°N), discovered and named by Wilhelm Graah in 1829; King Christian IX Land (between 65°N and 70°N), discovered and named by Gustav Holm in 1884; King Christian X Land (between 70°N and 75°N); and King Frederick VIII Land (from 75°N north to the Northeast Foreland), following the discoveries of Ludvig Mylius-Erichsen in 1907.

To approach East Greenland by ship, one must first penetrate the dense belt of pack ice carried south from the Arctic Ocean by the East Greenland Current. This follows the coast closely, particularly south of 70°N, where it hugs the coastline until it is swept west around Cape Farewell. No area is easy to approach, but the most accessible region lies between 76° and 70°N, where after mid-July, open water may often be found along the coast. In consequence, this region was the first to be explored in any detail.

The earliest sighting by any European was probably made about 877 by the Icelandic Gunnbjörn Úlfsson. “Gunnbjörn’s Skerries” lay off the coast of East Greenland, most likely near present-day Ammassalik or farther south near Cape Farewell. Úlfsson’s sighting led to Erik the Red visiting Greenland during the period of his banishment (982–985), though he explored the west coast rather than this region. It is possible that some among the Norse may have reached the east coast through Prince Christian Sound and explored north in pursuit of game.

Scholars continue to dispute whether any genuine knowledge of East Greenland is incorporated in early maps dating back to those compiled by Claudius Clavus in the first part of the fifteenth century. A Danish expedition led by Didrik Pining and Hans Pothorst is considered by some to have landed near Ammassalik in the 1470s, on the grounds that they are reported to have encountered hostile Inuit but no Norse, whom presumably they would also have met if they had reached West Greenland. It is not certain, however, whether this voyage actually took place. An exploring expedition led by Gert Mestermaker is reported to have been mounted by the German city of Hamburg in 1540, following sightings of Greenland’s east coast by vessels trading between Hamburg and Iceland. Mestermaker apparently reached Greenland but was unable to make contact with any inhabitants, the prime aim of his expedition. If he landed, it is most likely to have been on the west coast. The desire to restore contact with the Norse colonies inspired a series of expeditions organized by the Danish kings Frederik II (1559–1588) and Christian IV (1588–1648) in the belief that the Norse Eastern Settlement was so named because
of its location on the east coast. Although several vessels came within sight of the coast, none was able to land (see Richardson, Carsten).

The earliest sightings that can be clearly identified with particular features are those of Henry Hudson in 1607, whose place-name Hold with Hope is thus the earliest European name preserved on this coast at 73°50′N. The northeast coast would have been familiar to whalers from occasional sightings throughout the seventeenth and eighteenth centuries. In 1670, a Dutch whaler named Lambert is reported to have seen land at 78°30′N, which is now known as Lambert Land. Reports by whalers of unprecedentedly little ice here in 1817 led to John Barrow’s initiation of the long series of British Arctic expeditions, though apart from Douglas Clavering’s voyage of 1823, East Greenland was not among the areas investigated. One of those reporting little ice in 1817 was William Scoresby. In 1822, he again found the coastline only lightly encumbered with ice, enabling him to explore between Hold with Hope and 69°N, in the process discovering Scoresby Sound.

From Hans Egede’s 1723 journey onward, Danish expeditions attempted to reach the southeast coast from West Greenland across the Inland Ice or around the southern tip of Greenland. The first actually to reach the east coast by the latter route was Peder Olsen Walløe in 1752. He got no farther than 60°56′N at most, in the process becoming the first European to make contact with the East Greenlanders. All these expeditions sought the Norse Eastern Settlement on the east coast in the belief that some Norse might survive there. That no Norse were to be found south of 65°N was not proved until Wilhelm Graah’s expedition in 1829, and that the Eastern Settlement could not have been located on the east coast was only finally demonstrated by Holm in 1884.

Holm’s establishment of a station at Ammassalik in 1894 was of considerable assistance to subsequent expeditions. It enabled Georg Amdrup in particular to extend knowledge of the coast north to Cape Dalton in 1900, beyond where the coast had been charted by a series of earlier expeditions as far as Cape Bismarck, which had been reached by Karl Koldewey in 1870. Thus by 1901, the only region remaining to be explored lay between Cape Bismarck and Cape Wyckoff, the easternmost point in North Greenland, which had been reached by Robert Peary in 1900. This region was first explored by Mylius-Erichsen in 1907.

It was once believed that the Thule Inuit reached East Greenland from the west coast, but evidence now suggests that, although there may have been some mingling of populations in the vicinity of Cape Farewell, the majority made their way south from North Greenland. Archaeologists have found signs of Inuit occupation along much of the coast, including far north of those areas currently occupied: Prince Christian Sound, Ammassalik and—since 1925—Scoresby Sound. When Holm reached Ammassalik, there were only about 250 Inuit left in East Greenland, and the population appeared to be in terminal decline. Life was evidently easier on the west coast, causing the southernmost areas to become entirely depopulated as East Greenlanders visiting Nanortalik and Julianehåb decided to remain there. Establishment of the Ammassalik station initiated a slow recovery so that by 1935, there were over 1,000 Inuit in the area.

In the 1920s and 1930s, Danish sovereignty of East Greenland was disputed by Norway, which initially regarded the region as *Terra nullius* (No man’s land), before putting forward its own claim on the basis that Greenland was ancient Norwegian Crown Land and Norwegians had long hunted and trapped there, as demonstrated by the presence of their many huts. In 1933, the dispute was resolved in favor of Denmark by the International Court of Justice at The Hague, though Norway continued to operate meteorological stations here long afterward and Norwegian trappers and hunters continued to visit, as indeed they were entitled to under the terms of the 1924 treaty previously signed by Denmark and Norway and revoked only in 1967.

The presence of meteorological stations in East Greenland caused considerable concern to the Allies during World War II, following Germany’s occupation of Denmark and Norway. In September 1940, facilities at Myggbukta, Torgilsbu, and Ella Island were destroyed by the Free Norwegian gunboat *Fridtjof Nansen*. Mørke Fjord was evacuated in 1941. Deprived of information on which to base long-range weather forecasts, the Germans established secret meteorological stations in East Greenland on Sabine and Shannon Islands, which operated in 1942–1943 and 1943–1944, respectively. Other attempts to establish stations proved unsuccessful, largely because of surveillance by Danish sledge patrols. Renamed the Sirius Patrol in 1950, a detachment of thirteen men is now responsible for patrolling the entire coast between Mestersvig, Liverpool Land, and Thule District, North Greenland.

*See also:* Amdrup, Georg; Barrow, John; Clavering, Douglas; Egede, Hans; Graah, Wilhelm; Holm, Gustav; Hudson, Henry (1607); King Christian IX Land; King Christian X Land; King Frederik VI Coast; King Frederik VIII Land; Koldewey, Karl; Mylius-Erichsen, Ludvig (1906–1908); Norse Arctic Exploration; Richardson, Carsten; Scoresby, William; Whaling and Arctic Exploration

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**Greenland, Inland Ice**

Greenland’s ice sheet occupies 94 percent of the island, extending 1,540 miles from north to south and 680 miles across at its widest, with an area of approximately 665,000 square miles. In places, it rises to over 3,000 meters, and the floor of its basin descends to some 350 meters beneath sea level. Except in a few places where it directly abuts the sea, such as Melville Bay, it is generally encompassed by coastal mountains, through which great glaciers flow.

Because this area was devoid of animal life, the Inuit had no cause to explore the Inland Ice, which they regarded as a place of ill omen, inhabited by evil spirits. The earliest recorded
journeys were organized by the Danes, generally in the mis-
taken belief that the Norse Eastern Settlement was located in
East Greenland, where descendants of the Norse might still
survive. In 1729, Claus Enevold Paars ventured a few miles
onto the ice sheet south of Godthåb before being forced to turn
back by crevasses. His is the first written description of Green-
land’s ice sheet. The second recorded exploration was made by
Lars Dalager in 1751, following reports by an Inuit hunter of
seeing mountains on the other side of the ice sheet in the vicin-
ity of Frederikshåb. They proved to be nunataks.

No further journeys are documented until the second half
of the nineteenth century, by which time Greenland’s ice sheet
was the focus of great scientific interest. In 1840, Louis Agas-
siz published Études sur les Glaciers, in which he put forward
the radical suggestion that at some time, much of northern
Europe had been overwhelmed by an ice sheet of continental
dimensions. During the subsequent debate, attention focused
on Greenland, where such an “ice age” appeared still to con-
tinue. The first scientific studies were made by Hinrich
Johannes Rink (1819–1893), based on observations concern-
ing the margins of the “Inland Ice,” a term he also coined.

In 1867, the well-known British mountaineer Edward
Whymper received funding from the British Association and
Royal Society to explore Greenland. In particular, he was to
investigate whether its interior was indeed entirely covered by
ice, since there were rumors to the contrary. Dramatic annual
fluctuations in the numbers of caribou and other species led
some to propose that ice-free oases might exist within the ice
sheet, providing grazing lands to which these animals
migrated. Others, such as Adolf Erik Nordenskiöld, pointed out
that, unless its elevation was very much higher than the mar-
gins of Greenland, the central region would have insufficient
precipitation to maintain an ice sheet. Whymper made his
attempt from the vicinity of Jakobshavn. Previous expeditions
had been of limited duration largely because everything had
had to be carried in backpacks. Whymper’s was the first to use
sledges. Thinking that the Inuit would construct them better
than English carpenters, he had brought wood with him but
was unlucky to arrive in a year when the Inuit were ravaged
by influenza. Many died, and no one was available to construct
sledges for Whymper. Instead, he had to make do with sledges
of the traditional type, which were designed for use along the
coastal ice and were insufficiently strong for the ice margin
inland. Arriving at the ice edge with the summer thaw already
well-advanced, the sledges soon broke up, and the five men
with him refused to go on. Whymper turned back after con-
tinuing a short distance alone. Nordenskiöld made two
attempts to explore the Inland Ice in 1870 and 1883, on the sec-
 onward of which two Saami claimed to have skied 140 miles, by far the deepest penetration to date.

Once it had been proved to the satisfaction of most that the ice sheet extended across Greenland, a race developed to see who could make the first crossing (see Table 10). By now, it was apparent that, once above the heavily crevassed marginal zone, the ice sheet rose gradually toward a central point, offering a surface that was by no means difficult to travel over, though certainly cold and subject to poor visibility and blizzards. Robert Peary's attempt in 1886 is described under his name. Starting out from Pâkitsoq Fjord, north of Jakobshavn, he traveled nearly 100 miles and attained an elevation of 2,294 meters. For the first successful crossing in 1888, Fridtjof Nansen famously—and against all expert advice—landed on the east coast to cross to the west. With the assistance of dogs, Peary later made much longer crossings in North Greenland.

One discovery made during Peary's crossings was the predominance of katabatic winds, which blew radially outward toward surrounding land. He reckoned that it was even possible to estimate the location of nearby land from minor changes in wind direction, offering an important aid to anyone lost on the Inland Ice. These and other observations caused William Hobbs in 1910 to theorize that a glacial anticyclone was stationed permanently over the ice sheet. Detailed knowledge of meteorological conditions required the establishment of stations, where observations could be maintained over an extended period. The first such station was set up by Johan Peter Koch in 1912–1913, near the edge of the Inland Ice at Borg in King Frederik VIII Land, where the expedition's meteorologist, Alfred Wegener, obtained interesting results. In 1930–1931, Wegener returned to Greenland to establish three stations in the center and the western and eastern margins of the ice sheet. His results disproved Hobbs's theory of the glacial anticyclone, since they demonstrated that cyclones regularly crossed Greenland. Farther south, a second station was simultaneously maintained by Gino Watkins, with a view to ascertaining flying conditions above the ice sheet.

Ever since Rink, glaciologists have visited Greenland to study the Inland Ice and its outlet glaciers. In 1890 and 1891–1892, Erich von Drygalski conducted the first systematic investigation of glacial flow above Umanak. Significant glaciological work was conducted by Alfred de Quervain during his crossing in 1912 and by Koch and Wegener at their wintering station and on their subsequent crossing. The first extensive research program was put into effect by Wegener in 1930–1931, during which the first measurements of ice thickness were obtained using seismic techniques. Coupled with gravimetric surveys and ice coring, these techniques were basic to the systematic studies of southern and northern Greenland organized in the 1950s by Paul-Émile Victor and Jim Simpson. Victor was also employed as a consultant on major research programs mounted by the United States following the establishment of Thule Air Base in North Greenland and the construction of Camp Century, an experimental station built under the ice 150 miles inland. Many of the techniques employed in Antarctica during the International Geophysical Year (1957–1958), particularly those required in setting up Amundsen-Scott and Byrd Stations at the South Pole and far inland in Marie Byrd Land, respectively, were first developed on Greenland's Inland Ice.

Since Koch's pioneering station at Borg in 1912–1913, many stations have been established on the ice sheet, though few have been occupied for more than one year. In addition to those mentioned above, most research programs of any scale

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<tr>
<th>Date</th>
<th>Explorer</th>
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<tr>
<td>1888</td>
<td>Nansen</td>
<td>First crossing</td>
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<tr>
<td>1892</td>
<td>Peary</td>
<td>First crossing in North Greenland</td>
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<tr>
<td>1913</td>
<td>J. P. Koch</td>
<td>First crossing from Northeast Greenland; first expedition to winter on the ice</td>
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<tr>
<td>1931</td>
<td>Cramer and Paquette</td>
<td>First flight across ice sheet</td>
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<tr>
<td>1950</td>
<td>Victor</td>
<td>First mechanized crossing</td>
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<td>1965</td>
<td>Myrtle Simpson</td>
<td>First crossing by a woman</td>
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<td>1978</td>
<td>Uemura</td>
<td>First solo and first north-south crossing</td>
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<tr>
<td>1988</td>
<td>Steger</td>
<td>First south-north crossing</td>
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and duration have involved operation of at least one station to extend observations throughout the year or to facilitate logistics. In the 1990s, major ice drilling projects were conducted in the region where the ice sheet was anticipated to be thickest. In July 1992, the European-funded Greenland Ice Core Project (GRIP) struck solid rock 3,029 meters below the surface of the ice. One year later, the American-funded Greenland Ice Sheet Drilling Project (GISP2) struck rock at 3,053 meters.

The Inland Ice of Greenland continues to attract both scientists and adventurers. For the latter, quite often it offers a proving ground before they go on to attempt even more formidable endeavors. Just as Nordenskiöld came here in 1870 to develop his ice-traveling skills before making an attempt to reach the North Pole, so Will Steger and Jean-Louis Étiéven, for example, made their first south-north crossing in preparation for crossing Antarctica by the longest route. Some notable firsts are in Table 11.

**See also:** Drygalski, Erich von (1890 and 1891–1892); Greenland; International Geophysical Year; Nansen, Fridtjof (1888–1889); Nordenskiöld, Adolf Erik (1883); Peary, Robert (1886, 1891–1892, 1893–1895); Simpson, Jim; Steger, Will; Victor, Paul-Émile (1948–1953); Watkins, Gino (1930–1931); Wegener, Alfred (1930–1931)

**References and further reading:**


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**Greenland, North**

For the purposes of this encyclopedia, North Greenland is defined as that area falling north of a line drawn at 75°N from Melville Bay across to Northeast Foreland, Crown Prince Christian Land, Peary Land and the northern part of the Inland Ice within this region are treated separately.

Melville Bay forms a natural divide between North Greenland and West Greenland farther south. Although much of West Greenland was explored by the Norse and then by British and Danish expeditions, Melville Bay formed something of an impassable obstacle. Here the ice sheet flows directly into Baffin Bay. Traveling north from West Greenland involved either crossing the ice overland or else making a perilous voyage along the ice front through a sea filled by pack ice and icebergs.

Only the southwestern part of this region has a resident Inuit population. The territory of the polar Inuit—or Inughuit—is divided into three sections according to their placement with regard to the prevailing southwestern winds: at Cape York and in Melville Bay live the Niggerleet (Those who live on the windy side); farther north around Wolstenholme Fjord live the Akuarmiut (Those who live in between); and beyond Cape Parry near Etah live the Oqonermiut (Those who live on the leeside).

Norse hunting parties certainly traveled far north through Davis Strait, but nothing has yet been found indicating that they reached North Greenland. Assuming that they did not, the first European visitors were William Baffin and Robert Bylot on 3 July 1616. Looking as they were for channels leading to a Northwest Passage, they found nothing to interest them here and within two days were at Smith Sound and heading west. More than 200 years passed before the next visit, when John Ross made contact with the Inuit at Cape York on 10 August 1818. Like Baffin, Ross was looking for the Northwest Passage, and although his report of a previously unknown people aroused contemporary interest, his failure to discover any navigable channel here deterred further exploration until Edward Inglefield reached Cape York on 20 August 1852. Wolstenholme and Herbert Islands in Whale Sound, as well as Murchison Sound, preserve names given by Inglefield, whose most significant achievement was to sail through Smith Sound—mistakenly reported as a bay by Ross—to reach 78°28'N. Inglefield’s suggestion that through Smith Sound might be found an “open polar sea” led directly to the expeditions of Elisha Kent Kane (1853–1855), Isaac Hayes (1861–1862), and Charles Francis Hall (1871–1873), all of whom wintered in this region. The explorations of Kane and Hayes were confined to the vicinity of Etah north to Washington Land, and Hall Land commemorates Hall’s investigations east of Robeson Channel. Hall’s discoveries were extended farther north by Lewis Beaufort in 1876 on the expedition led by George Nares and farther still by James Lockwood, who succeeded in sledging to Cape Washington in 1882 during Adolphus Greely’s expedition.

Although Kane and Hayes received some assistance from the Inuit, the first to make their presence a key factor in his planning was Robert Peary, who chose to winter close to areas inhabited by them in 1891–1892 and 1893–1895. From them he was able not only to obtain clothing, dogs, and sledges but also to learn how to handle dogs. Inuit accompanied him on the initial stages of his journeys across the Inland Ice, during which he mistakenly reported the existence of “Peary Channel,” beyond which he believed lay a series of islands now known as Peary Land. In 1896 and 1897, he returned to collect three large meteorites from Cape York, the sole local source of iron. Peary’s later expeditions were concerned with reaching the Pole rather than exploring North Greenland. Significant contributions were, however, made to knowledge of the north coast (see Peary Land). At the start of each expedition, Peary would begin by visiting Cape York and Etah to take on hunters and their families before heading north as far as he could go through Smith Sound.

Knud Rasmussen first visited North Greenland in 1903 on an expedition led by Ludwig Mylius-Erichsen, when he and two colleagues spent nearly a year living with the Inuit. Mylius-
Erichsen’s next expedition, in 1906–1908, made major discoveries in the vicinity of Danmark and Independence Fiords. In 1910, Rasmussen returned to establish Thule trading station in North Star Bay, Wolstenholme Fjord. This station ensured that the Inuit continued to have access to goods such as rifles, ammunition, tea, and sugar on which they had come to rely, having previously been supplied with these products by the whalers and, between 1891 and 1909, by Peary. The station also supplied Rasmussen with much of the means for equipping his own expeditions, on the first two of which—in 1912 and 1916–1918—he extended knowledge of North Greenland, traveling across the Inland Ice to Danmark Fjord on the first and following the coast north to Peary Land on the second. The work of Rasmussen’s Second Thule Expedition was subsequently extended by one of its members, Lauge Koch, on his own expedition from 1920 to 1923.

Until the construction of the U.S. air facility at Thule, most expeditions based themselves at Etah. One of the largest communities, it was also as far north as vessels could reliably reach. When his ship was unable to reach east Ellesmere Island, Donald MacMillan established his winter quarters at Etah between 1913 and 1917. In 1925, he returned here with three biplanes, which operated from the beach and the open water offshore. Expeditions quartered at Etah during the 1930s included Dr. Noel Humphreys’s Oxford University expedition (1934–1935) and David Haig-Thomas’s (1937–1938) and Clifford J. McGregor’s meteorological expeditions (1937–1938). Following the opening of a meteorological station by the U.S. Army at Thule in 1943, a gravel runway was constructed in 1946. By 1951, this station had expanded into a major U.S. Air Force base, and the resident Inuit population was moved some 60 miles away to Qaanaaq in Inglefield Fjord (77°27’N, 69°11’W). Jean Malaurie’s famous book (1956) records his experiences during a French expedition to northwest Greenland in 1950–1951. Regular flights make this region considerably more accessible than it used to be.

Denmark operates the military facility Station Nord (81°36’N, 16°40’W) on the north coast of Crown Prince Christian Land, consisting of a meteorological station and runway. It was established in 1952 with the assistance of the U.S. Air Force and maintained an expanded scientific program during the International Geophysical Year (1957–1958).

See also: Baffin, William; Greely, Adolphus; Greenland, Inland Ice; Hall, Charles Francis; Hayes, Isaac; International Geophysical Year; Inuit Contribution to Polar Exploration; Kane, Elisha Kent (1853–1855); Koch, Lauge; MacMillan, Donald; Mylius-Erichsen, Ludvig; Nares, George (1875–1876); Open Polar Sea; Peary, Robert; Peary Land; Rasmussen, Knud (1912, 1916–1918); Ross, John (1818–1819).
Greenwich Island

References and further reading:

Greenwich Island (South Shetland Islands)
Located at 62°31’S, 59°47’W, this island—15 miles long and varying in width from 0.5 to 6 miles—is separated from Livingston Island by McFarlane Strait and from Robert Island by English Strait. Land near to the north coast of Greenwich Island, at Williams Point on east Livingston Island, was the first seen by William Smith when he discovered the South Shetland Islands on 19 February 1819. Smith certainly saw this coast on his third voyage in October of the same year and again during his fourth voyage in January 1820 with Edward Bransfield, though the latter’s chart fails to distinguish it as a

Greenwich Island

Greenland, West

West Greenland is generally defined as extending from Cape Farewell north to Melville Bay, where the Inland Ice separates it from North Greenland beyond. Although more accessible than the largely unapproachable east coast, the west coast too is affected by ice brought south with the East Greenland Current, which is swept round Cape Farewell and north to about 64°N. Considerable quantities of ice also flow south through Baffin Bay, including many icebergs, most of which calve in Melville Bay. During spring, this “West Ice” may hug the coast south to 69° or even 66°N. This makes the region between 64° and 66°N easiest to approach, though as summer develops, ice first clears close to the coast, leaving a navigable channel leading north. All Inuit communities are found in this region apart from Ammassalik and Scoresby Sound in East Greenland and Qaanaaq in the North.

In 986, Norse colonists led by Erik the Red established two colonies: an Eastern Settlement in the vicinity of Julianehåb, from Cape Farewell north to 61°N; and a Western Settlement, located near present-day Nuuk, occupying the area between 63° and 66°30’N. Contacts maintained between these settlements and Europe are described in the entry for Greenland, as are also possible reasons for their eventual decline. About 1360, a friar from Oxford University in England, possibly Nicholas of Lynn, visited the Eastern Settlement before continuing on his travels west across Davis Strait or, more probably, north along the west coast.

Nicholas of Lynn apart, Martin Frobisher’s landing of 20 June 1578 was the earliest recorded for an English expedition to this coast, though he may have been preceded by fishermen from Bristol (see Greenland). The explorations of John Davis were more extensive. Landings were made on all three voyages—1585, 1586, and 1587—and on the third voyage, he sailed as far as “Sanderson’s Hope” (72°12’N), not far south of Upernavik. Other early visits were made by Danish expeditions in 1605 and 1606, led by John Cunningham and Godske Lindenow, respectively. On the first of these, ore containing silver was thought to have been discovered at 67°04’N. In 1612, James Hall organized a mining expedition here, during which he was killed and the ore was proved valueless. The last of the early exploring voyages by English and Danish expeditions was made by William Baffin and Robert Bylot in 1616. On their way north to search for the Northwest Passage, they made several landings—the northernmost at 73°45’N—before crossing Melville Bay to discover Smith Sound and adjacent regions of North Greenland.

The establishment of a mission and trading station at Godthåb by Hans Egede in the 1720s inaugurated Danish settlement of West Greenland. Through much of this period until 1908, the Royal Greenland Trading Company exercised a monopoly over all trade, and access to Greenland was strictly controlled by the company and the Danish government. As a result, what exploration took place in West Greenland was primarily conducted by Danes, much of it to investigate resources of potential commercial significance. One non-Dane making a notable contribution was the German geologist Karl Ludwig Giesecke (1761–1883). At the request of the Danish government, from 1806 to 1813 he made the most detailed examination to date of West Greenland’s geology and mineralogy, in the process also collecting botanical and zoological specimens and recording information on meteorology and Inuit culture. It was Giesecke who was responsible for discovering cryolite at Iqvittuq in 1806. Between 1848 and 1851, Hinrich Johannes Rink (1819–1893) extended Giesecke’s geological and mineralogical studies in the northern districts of Upernavik and Umanak. For many years, Rink was the leading authority on West Greenland, publishing extensively on fields as diverse as glaciology and ethnography during his long career as an administrator.

Numerous expeditions have visited West Greenland during the past two centuries, but they are not treated in detail in this encyclopedia, except when they have explored the Inland Ice or East or North Greenland. As a long-settled land, West Greenland did not generally require the large-scale, long-duration expeditions of the type characteristic of other polar areas. Expeditions sailing from Europe or the United States to explore North Greenland and the Canadian Arctic, however, were frequent visitors, and many received invaluable assistance in the form of dogs, dog handlers, and interpreters. The contribution of West Greenlanders to polar exploration was most significant, and a careful reading of the literature will make it clear that many well-known figures received their first training in polar travel from a Greenlandic companion, although their names are not always prominent in the official narratives.

See also: Baffin, William; Cunningham, John; Davis, John (ca. 1550–1605); Egede, Hans; Erik the Red; Frobisher, Martin (1578); Greenland; Hall, James; Lindenow, Godske

Greenwich Island (South Shetland Islands)
separate island. Insularity must therefore have first been established by sealers in 1820–1821. Presumably McFarlane Strait was first explored by the British sealer Andrew McFarlane. Certainly, Nathaniel Palmer explored McFarlane Strait in November 1820, and Fabian von Bellinghausen identified Greenwich as a separate island, which he named “Berezina,” when charting it from the south in February 1821. Bellinghausen named it for the river Berezina, near Minsk, site of a Russian victory over the French in November 1812.

There is some uncertainty over whether the island is named for Greenwich, England, or Greenwich, Connecticut, both likely places of origin for sealers, though the island’s strong early connections with American sealers would suggest the latter. The island’s most famous feature, Yankee Harbor, was discovered by Palmer on 19 November 1820, its name recording the presence here in 1820–1821 of a fleet of five vessels from Stonington, Connecticut. This fleet, led by Benjamin Pendleton, had previously been based in the more exposed anchorage of New Plymouth on western Livingston Island, moving here after Palmer reported the presence of the fine harbor together with seals nearby. An alternative name in early use—“Port Williams”—may conceivably be for William Smith’s brig Williams, but there is no record of an early visit, and it would appear more likely that this name was for Ephraim Williams, master of the Express, one of the Stonington fleet. It was from Yankee Harbor that John Davis sailed south in February 1821 to make possibly the first landing on the Antarctic continent. Throughout the remainder of the nineteenth century, the island would have been occasionally visited by sealers. Carl Anton Larsen is recorded as landing here in December 1893.

On 6 February 1947, a Chilean meteorological station was opened at Guesalaga Peninsula, Discovery Bay. Initially named Soberiana, it was the first Chilean Antarctic station. Now known as Capitán Arturo Prat, it is manned by naval personnel and kept open throughout the year. A refuge hut at Yankee Harbor was built by the Chileans in the 1952–1953 season. In addition to Chilean activities, British survey parties worked on the island in 1957–1959 and again in 1963–1964 as part of a general triangulation of the South Shetland Islands. In March 1990, the Ecuadorian Antarctic Program opened Pedro Vincenzo Maldonado station at Point Fort Williams.

See also: Bellinghausen, Fabian von; Bransfield, Edward; British Antarctic Survey; Chile; Davis, John (fl. 1820); Ecuador; Larsen, Carl Anton (1893–1894); Palmer, Nathaniel (1820–1821); Pendleton, Benjamin (1820–1821); Sealing and Antarctic Exploration; Smith, William; South Shetland Islands

Gvozdev, Mikhail
(ca. 1700–ca. 1760)

Nine years before the journeys of Vitus Bering and Aleksey Chirikov, Alaska was first seen by Europeans during a little-known Russian exploring voyage led by Mikhail Gvozdev.

In 1738, when a brawling sailor was brought for trial from the Siberian settlement of Tobol’sk, Russian authorities in St. Petersburg learned of an important voyage made years earlier in the vicinity of Bering Strait. He told how he had been in a vessel whose crew had actually seen the “Great Land”—Alaska—which was reported by the native inhabitants of the Chukotka Peninsula as lying not far east of their land but had not previously been sighted by any Russian. Vitus Bering and Aleksey Chirikov are popularly believed to have commanded the first Russian vessels to come within view of Alaska, but their voyages took place only in 1741, nine years after that of Mikhail Gvozdev.

The First Russian Sighting of Alaska, 1732

Mikhail Spiridonovich Gvozdev had originally traveled east as geodesist, or surveyor, on the military expedition of the cossack Afanasiy Shestakov, sent by the Russian Senate in 1727 in an unsuccessful attempt to subdue the Chukchi inhabitants of the Chukotka Peninsula. When news of Shestakov’s death in 1730 and the demoralization of his defeated forces reached Dmitriy Pavlutskiy, the officer in charge of the Chukotka region, he too assembled a substantial armed force, with which he traveled north across Chukotka and then east along the Arctic coast. Several engagements were fought in the following year, before Pavlutskiy returned to winter at the fort of Anadyr’sk. Planning to extend his conquests across Bering Strait to the reported “Great Land,” rumored to be forested and rich in fur-bearing animals, he sent instructions to Okhotsk for ships to sail north to the Anadyr’ River, from where they were to head east in search of the “Great Land.”

Gvozdev was initially only the third senior officer on board St. Gabriel, the same vessel in which Bering had passed through Bering Strait in 1728. Originally commanded by pilot Jacob Gens, St. Gabriel alone managed to reach the Kamchatska Peninsula from Okhotsk. Gens was now too ill to continue the voyage, and assistant pilot Ivan Fedorov had a badly ulcerated leg and had to be carried on board under protest. Although nominally sharing command with Gvozdev throughout the voyage, the latter’s report makes clear that Fedorov continued to be an unwilling participant, missing many of his watches and failing to complete his entries in the ship’s journal. The burden of responsibility thus fell on Gvozdev, not a naval officer but still competent as a navigator.

On 23 July 1732, St. Gabriel sailed from Kamchatka. On 5 August, it anchored off Chukotka to take on drinking water and then spent many days in fruitless search for the “Great Land” until on 17 August an island was sighted. It was Big Diomede Island. There the Russians landed, replying with musket fire to a shower of arrows from the Inuit. Three days later a visit was made to Little Diomede Island, where they again met a hostile reception. The next day, 21 August, Gvozdev anchored off the “Great Land” itself, some 2.5 miles off present-day Cape
Prince of Wales. No signs of human occupation could be seen, and Fedorov, without consulting Gvozdev, gave orders to up anchor and head slightly farther south. There dwellings were visible, but with the winds contrary, they were unable to land. The breeze now veered to the north-northwest, obliging St. Gabriel to stand out to sea and head southwest, where King Island was sighted on 22 August. With the wind too strong to attempt a landing, the Russians were approached by an Inuit in a kayak who confirmed that on the “Great Land” there were forests, deer, and fur-bearing species such as martens, foxes, and beavers. Gvozdev was under increasing pressure from his crew to return to Kamchatka, because the season was advanced for further exploration, food stocks were dwindling, and his vessel had begun to leak. Turning for home on 2 September, they reached the mouth of the Kamchatka River on 27 September 1832.

Why did it take six years for the Admiralty College in St. Petersburg to be informed of this voyage? Gvozdev had in fact submitted his logbook and a brief report to Okhotsk on his return to Kamchatka. Without Fedorov’s cooperation, he was unable to compile a map. What happened to these documents is unknown. It took a further three years before the Admiralty College instructed him to make another report, and it is on the basis of this brief and to some extent self-serving document, compiled ten years after the events described and therefore not to be relied upon for every detail, that knowledge of his expedition is based.

See also: Bering Strait; Bering, Vitus

References and further reading:
Hall, Charles Francis  
(1821–1871)  
The American Charles Francis Hall was the first to demonstrate just how much could be achieved by an explorer who was prepared to adopt Inuit methods of hunting and traveling. Befriended by the Inuit couple Ebierbing and Tookoolito, Hall spent seven winters living with the Inuit during his first and second expeditions. He was then charged with leading a government-sponsored expedition to the North Pole, on which he died in mysterious circumstances.

Frobisher Is Rediscovered in Baffin Island, 1860–1862  
Charles Francis Hall was founding editor of the Cincinnati Daily News when his interest in the Arctic was aroused by reading Elisha Kent Kane's account of his search for Sir John Franklin. He subsequently attended a lecture by Isaac Hayes, which further increased his desire to rescue Sir John. That so many others had failed did not concern him at all, nor that he was entirely unqualified to lead an expedition. To him it was obvious that the key to finding Sir John's missing men was to learn how to travel like the Inuit. Only once someone had done so would they—or, at least, the truth of their demise—be found. On the basis of Inuit reports, Leopold McClintock had been led to King William Island, where he had discovered bodies, artifacts, and two documents. Hall planned to revisit this island, as well as the adjacent mainland where, according to the Inuit, the bodies of many more white men lay.

Despite obtaining the backing of Kane’s sponsor, the wealthy philanthropist Henry Grinnell, Hall was unable to afford a ship but was given free passage to Baffin Island on the whaler George Henry, captained by Sidney Budington. Baffin Island was far from King William Island, but toward the south it was believed to be cut through by “Frobisher Strait.” Hall planned to take a boat west through this strait and then sledge over any intervening land to King William Island with the aid of Inuit guides.

Departing from New London, Connecticut, on 29 May 1860, George Henry stopped at Holsteinborg, West Greenland, before crossing Davis Strait to coast south to Cyrus Field Bay, where it was to winter. Whalers had taken to wintering in inlets along southeastern Baffin Island since 1851–1852. Budington, then mate of McClellan, had in fact led the first party to do so. This region attracted large numbers of whales during the fall, and there was rich hunting to be had until the inlets froze over, generally in January. Hall’s preparations began badly when his specially constructed boat was wrecked in a gale. During the winter he became close friends with an Inuit couple, Ebierbing (Joe) and Tookoolito (Hannah). Some years earlier, a British whaling captain had taken them to England, where they had been introduced to Queen Victoria. Tookoolito’s English was impeccable and her husband’s good, so Hall’s ignorance of Inuktitut was not a handicap. They remained with Hall for the rest of his life, and he owed most of his later achievements to their friendship.

Hall’s initiation into Inuit travel and hunting took place early in 1861, when he was invited to join Ebierbing, Tookoolito, and others on a forty-two-day trip to Cornelius Grinnell Bay, some way farther north. Although he never acquired great expertise himself, this trip gave him the opportunity to observe at first hand igloo building, seal hunting, and dog driving. During the winter, Ebierbing’s grandmother told
him stories passed down by her people through many generations, which spoke of white men visiting their land in three successive years—first with two ships, then two or three, and then very many. Five of them had remained through a winter and had then made a boat in which they had attempted to sail home. She said that objects left behind by the white men could still be seen nearby on Kodlunarn Island (White Man’s Island). Although the large inlet farther south of Cyrus Field Bay was by this date generally known as “Frobisher Strait,” this name had only recently been transferred here from southern Greenland. The process whereby the strait had been mislocated there is described in the entry for Martin Frobisher. Hall was soon to provide decisive proof that Frobisher’s three expeditions—in the two, three, and many vessels faithfully recorded by Inuit oral tradition—had indeed been made to “Frobisher Strait.”

Borrowing a boat from Budington, between 9 August and 7 September, Hall made an extended investigation of this inlet, confirming Inuit reports that it was a bay rather than a strait and damming his prospects of sailing through it toward King William Island in the process. On Kodlunarn Island, he found the foundations of a house built by Frobisher as well as pieces of brick, wood, and coal. Hall’s enthusiasm for his Inuit companions began to wane during this journey, and he complained when they refused to act at his bidding and insisted on dancing noisily when he wanted to sleep. He even believed that one of them was plotting to kill him. This paranoid streak in Hall’s personality reappeared during both of his later expeditions.

A further eleven months passed before George Henry finally succeeded in breaking through the ice off Cyrus Field Bay to reach the open water of Davis Strait. Hall was unable to accomplish much further exploration during this enforced second wintering, though he did revisit Kodlunarn Island in July 1862 to collect more Frobisher relics, mainly pieces of coal, which he stored in his socks. Ebierbing and Tookoolito accompanied him back to the United States, where their presence did much to assist fund-raising for his next expedition. Hall might have rediscovered the true destination of Frobisher’s expedition, in the process charting 1,000 miles, but he had yet to come close to visiting King William Island. Yet, he could now argue that the case for an expedition there was all the more necessary.

Clearly, if the Inuit could remember precise details of their contact with an English expedition nearly 300 years ago, there could be little doubt that they would not have forgotten whatever they knew of Franklin.

Rumors of Franklin Are Collected among the Inuit, 1864–1869

Fund-raising for a polar expedition is never easy, particularly not when one’s country is riven by civil war, as was the case with the United States in 1862. Believing that some of Franklin’s men might still survive among the Inuit, Hall could not afford to await better times, but even with Grinnell’s help and the willingness of Ebierbing and Tookoolito to act as living exhibits, it still took several years before he had accumulated the means to go north again. He was as determined as ever to reach King William Island but now planned to make his attempt from Repulse Bay, in northwestern Hudson Bay.

Frustration followed frustration on this expedition, during which Hall spent no less than five winters in the Arctic before finally reaching King William Island. Accompanied by his two Inuit friends, Hall took passage from New London in the whaler Monticello. Unfortunately, rather than being brought to Wager Bay, by some mistake he was landed 40 miles farther south at Depot Island in Roes Welcome Sound. This mistake cost him a year. Although whalers were wintering nearby, Hall preferred to live with the Inuit. When he finally reached Repulse Bay in June 1865, he had just enough time to begin his survey of the bay before the sledging season ended, and it was necessary to establish winter quarters. Hall selected Fort Hope, where John Rae had built a stone house in 1846. On 31 March 1866, he set out on his first attempt to reach King William Island. At Cape Weynton, he met a party of Inuit carrying relics from Franklin’s expedition. They warned him that the Inuit living farther west were likely to be hostile. Hall’s companions refused to go on, forcing him to return to Repulse Bay. The next two years were spent exploring Melville Peninsula, first to obtain dogs and then to look for two white men rumored to have been seen there. Finding the Inuit intractable as traveling companions, on his second journey—in 1868—Hall chose to go with five whalers. He soon fell out with them too, and a series of disputes ended in his shooting one of them, Patrick Coleman. Hall claimed that the men were threatening mutiny and that he had not intended to kill Coleman. He was fortunate never to be brought to trial.

On 23 March 1869, he made another attempt to reach King William Island, this time accompanied by Inuit, including the ever-faithful Ebierbing and Tookoolito. It took him six weeks to reach the west coast of Boothia Peninsula, where he interviewed several families who recalled meeting the party of forty starving white men near Cape Herschel. From them, Hall obtained a spoon bearing Franklin’s initials, part of a writing desk, and other objects. Crossing Rae Strait, he found a thigh bone and some graves on Todd Island on 12 May and soon afterward the skeleton of Lieutenant Henry Le Vesconte of HMS Erebus. Snow still covered the ground, masking much of what lay beneath. Hall wished to remain until the summer thaw, but his companions were prepared to stay no longer than one week. By 20 June he was back at Repulse Bay, soon afterward embarking for the United States with Ebierbing and Tookoolito in the whaler Ansel Gibbs.

Promising Explorations Are Terminated by Hall’s Mysterious Death, 1871–1873

Having discovered as much as he could concerning Franklin, while still in the far north Hall had given thought to his future, concluding that Arctic exploration was now his life
and that therefore his next task should be to extend the discoveries of Kane and Hayes to the North Pole. With the influential support of his sponsor, Grinnell, who held him in high regard, Congress was persuaded to grant $50,000. It was a substantial sum and meant that his next expedition would not be a one-man affair of the type to which he was accustomed, but instead would involve command of a ship, crew, and scientists. Hall was aware of his limitations, and although he never really became accustomed to the presence of the scientists—so much better educated than himself—at least with regard to the ship he could do whatever possible to ensure appropriate leadership, choosing not one but three experienced whalers, each of whom should have made a capable captain. Budington, who had brought him to the Arctic in 1860, took charge as sailing and ice master; George Tyson was appointed assistant navigator; and the mate was Hubbard Chester, former mate of Monticello. Others on board with Arctic experience included Toookoolito and Ebierbing and second mate William Morton, Kane's former steward and the man who in 1854 had claimed to have discovered the "open polar sea" at 81°22’N. The National Academy of Sciences took responsibility for organizing a demanding scientific program, which would be conducted by three scientists, led by the ship's surgeon Dr. Emil Bessels. Including Hall, ten of those on board were American and ten were German, two of them scientists. This mixture made for future friction.

Escorted by USS Constitution as far as Godhavn, West Greenland, the 387-ton Polaris left New London on 3 July 1871. Remarkably little ice was seen on the voyage north. One of those joining in Greenland was Hans Hendrik, accompanied by his wife and three children. Hendrik had assisted both Kane and Hayes as a hunter and dog handler, though both had found him difficult. By the time that Smith Sound was reached in late August, it was clear that this was an exceptional year, and they entered Kennedy Channel through open waters on 28 August. Beyond, all was theirs to discover, as first Hall Basin and then Robeson Channel were reached, and a record latitude was achieved on 30 August of 82°11’N. Hall was eager to go as far as possible, but Budington grew increasingly anxious that they might be cut off by ice. To appease him, Hall was persuaded to turn back to look for a suitable anchorage, one being found soon afterward at 81°38’N on the coast of Greenland. There, in "Thank God Harbor," the expedition wintered, farther north than anyone before. An observatory was erected, and the first sledging trips were begun.

Hall could hardly have hoped for a better start. On his return from a sledging journey on 24 October, however, he was taken violently ill after drinking a cup of coffee. For two weeks, he lay on his bunk, paralyzed on one side, suffering periods of dementia during which he accused many of his officers of poisoning him. Before he died on 8 November 1871, he trusted only Toookoolito to come near him. The next morning, he was buried in a shallow grave half a mile inland.

Little now was accomplished under Budington's lukewarm leadership. The winter was distinguished by bouts of drunkenness, led rather than curbed by the captain. As a whaler, he appeared to hold neither science nor exploration in high regard, and after permitting token investigations of the local area the following spring, he made preparations to head south just as soon as Polaris was released from the ice. This took place on 12 August 1872.

Conditions were much less favorable than the previous year, and Polaris was soon beset and drifting south. Before the relative safety of Baffin Bay could be reached, the ship had first to survive the constricted waters of Smith Sound, where the convergence of land caused icebergs and pack to smash against each other in a seething mass. In the midst of this turmoil on 15 October, Budington panicked as an iceberg hit the ship, ordering Polaris to be abandoned and everybody out onto the ice. The Greenlanders were the first to be evacuated, as boxes, bags, and clothing were indiscriminately heaved over the side. Four hours later, Polaris was still afloat and now no longer in any apparent danger of sinking. As the sound broadened out toward Baffin Bay, conditions became calmer. Tyson and some of the crew were on the ice, beginning to move stores back towards the ship, when their floe suddenly broke up, at the same time releasing Polaris. Soon, the ship was separated from them by an unreachable distance, and shortly afterward disappeared into the night.

Tyson was the senior officer left on the pack. Most of the supplies thrown overboard were grouped together on a large floe. With the aid of a waterlogged boat, he picked up scattered parties of men, women, and children, gathering no less than eighteen by midday. He had every expectation of imminent rescue by Polaris, but although it was sighted three days later at anchor 10 miles away, it soon became obvious that no help would be forthcoming from this quarter. With Tyson were ten members of the crew and nine Inuit, five of them children. Most of the crewmembers were Germans and had little respect for Tyson, who was the only man without a gun. Fortunately, Hendrik and Ebierbing were good hunters, enabling the sparse rations obtained from the ship to be supplemented by seals and birds. It was never enough, but no one starved. Through the next nine months, they drifted 1,300 miles south through Baffin Bay and Davis Strait to the Labrador Sea. On 1 April 1873, they abandoned their now shrunken floe, and a boat designed for eight was made to carry nineteen, along with their tent and whatever else it could bear without sinking. With its aid, they paddled from floe to floe, survived storms, and eventually—on 30 April 1873 at 53°10’N—were rescued off the coast of Labrador by the Newfoundland sealer Tigress.

As for Polaris, Budington had managed to work the ship to shelter in Foulke Bay, where Hayes had wintered in 1860–1861. On 3 June 1873, it was abandoned as Budington and the remnant of his crew took to the boats in an attempt to reach the whaling grounds of Baffin Bay. Twenty days later, they were
picked up by the Scottish whaler Ravenscraig at 75°38'N, 65°35'W. Not until November did all of them reach the United States, having been taken first to Scotland in the whalers Arctic and Erik.

This was a government expedition, and there was an inquiry, both into the causes of Hall's death and into the expedition's failure to conduct significant exploration afterward. Although the thorough investigation cleared Budington of the most serious charges, note was taken of his drunkenness and quarrels with Hall. Disputes early in the voyage between Hall and his two German scientists, Bessels and meteorologist Frederick Meyer, were also recorded, as too was the general ill-feeling between American and German crewmembers, particularly after Hall's death. As for the causes of the latter, the inquiry eventually attributed this to apoplexy. Nearly 100 years later, Hall's body was exhumed for a post mortem examination with a thorough investigation cleared Budington of the most serious charges. Tests on his hair and fingernails showed him to have received large quantities of arsenic in the last two weeks of his life. The examiners were unable to conclude that his death was caused by arsenic poisoning, though he had certainly received a very large dosage. If, however, he had been poisoned, who was the poisoner? Budington, Bessels, and Meyer might all be considered possible candidates on grounds of their previous disputes with Hall, though by October Bessels and Hall seemed to last essentially in accord as to the expedition's conduct. Bessels and Budington both had opportunity, and Bessels—as surgeon—most of all. It is not inconceivable, however, that Hall might have administered the arsenic himself. Distrustful of others toward the end, he possessed his own medical kit, and arsenic was a not uncommon ingredient in the patent medicines of this era. Although poisoning remains an intriguing possibility, given Hall's symptoms, apoplexy (a stroke) could actually have been the correct diagnosis. It is unlikely that we shall ever know for certain.

Significant as was his mapping of Baffin Island, his contributions to the knowledge of the expeditions led by Martin Frobisher and Sir John Franklin, and his discoveries through Naars Strait, Hall's greatest achievement was to prove that a white man could live off the land like the Inuit. Vilhjalmur Stefansson, in particular, learned much from his example.

See also: Baffin Island; Farthest North; Franklin, John (1845–1848); Franklin Search Expeditions; Frobisher, Martin; Greenland; Hayes, Isaac; Inuit Contribution to Polar Exploration; Kane, Elisha Kent; King William Island; McClintock, Leopold; Naars, George (1875–1876); Naars Strait; North Pole; Open Polar Sea; Rae, John (1846–1847); Stefansson, Vilhjalmur; Whaling and Arctic Exploration

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Hall Island (Franz Josef Land)
Located at 80°15'N, 58°00'E, at 384 square miles Hall Island is the fifth-largest island in Franz Josef Land. Almost entirely covered by ice, it lies between McClintock Island and Wilczek Land in the central-southern section of the archipelago. The prominent headland Cape Tegthoff was the first land observed by Julius Payer and Karl Weyprecht on 30 August 1873, when they discovered Franz Josef Land. They named the cape for their ship and the island for the American explorer Charles Francis Hall. Its official Russian name is Ostrov Khallya. Between 10 and 15 March 1874, Payer made his first sledging journey along the island's southern coast to Cape Tegthoff, from whose summit he hoped to get an idea of the lay of the land. Fog and ice crystals restricted what he could see, but he obtained better views afterward from high ground nearby.

Walter Wellman set up his winter quarters at Cape Tegthoff in July 1898. Nine men wintered in accommodations partly fashioned out of an octagonal storage hut originally erected by Frederick Jackson at Cape Flora, Northbrook Island. In token of its origin, it was named Harmsworth House in honor of Jackson's sponsor. Continuous meteorological and magnetic records were maintained throughout the winter. On 18 February 1899, Wellman set out from here for the North Pole but was forced to return just short of Rudolf Island, after injuring his leg and losing many of his dogs when the ice broke up. A party from Anthony Fiala's expedition visited Harmsworth House in 1905 but found nothing of value.

See also: Fiala, Anthony; Franz Josef Land; Hall, Charles Francis; Jackson, Frederick; Payer, Julius; Wellman, Walter (1898–1899)

References and further reading:

Hall, James
(d. 1612)
The Englishman James Hall acted as pilot on three Danish expeditions and led one of his own to Greenland. Long after the last Norwegian ships stopped sailing to the Norse colonies in Greenland, contact with them had been maintained by English ships. Although such voyages had ceased many years before Hall's time, knowledge of the waters off Greenland was
preserved among English seamen, who were in consequence much in demand as pilots on Arctic expeditions.

Pilot on Danish Expeditions to Greenland, 1605, 1606, 1607

James Hall was a native of Hull, an important port on the east coast of England. Although we know nothing of him before 1605, when he was appointed pilot of an expedition organized by the Danish king Christian IV to search for the long-lost Norse colonies in Greenland, his evident familiarity with the coasts of South and West Greenland suggests participation in previous expeditions, most probably those led by John Davis in the 1580s. It is also possible that he may have been the son of the Christopher Hall who sailed with Martin Frobisher in 1576, 1577, and 1578. Hall acted as pilot to three Danish expeditions, led in turn by John Cunningham (1605), Godske Lindenow (1606), and Carsten Richardson (1607). As pilot, Hall was responsible for navigation and charts, tasks requiring skills possessed by very few at this date. He also wrote the official reports for the first two expeditions, a duty often falling to the pilot. Willem Barents, too, was pilot rather than leader of the expeditions in which he took part, as was William Baffin, and Hall’s case is instructive in assessing the relative importance of pilot and leader. On his return from his successful first expedition, the Danish king gave Hall an annual salary of 500 Rixdollars, compared to 300 for the leader Cunningham, both figures much above the standard rate of pay for captains, despite Hall’s nominal status as a mate in the Danish navy. So long as Christian IV was actively planning further expeditions to Greenland, he wanted to employ Hall, but some time after his second and third expeditions proved expensive failures, Hall was released from Danish service and returned to England.

Search for a Silver Mine, 1612

Again, nothing is known of Hall’s life between 1607 and 1612, when he organized his own expedition. It is likely that he had been planning it for some time previously. In 1605, leaving his expedition leader, Cunningham, at anchor on the west coast of Greenland, he had sailed farther north to 68°35’N, charting the coast and collecting geological specimens, some of which—obtained at 67°04’N—were later said to contain silver. It was the discovery of silver that had persuaded Christian IV to fit out a large expedition of five ships the following year, but only two ships managed to reach Greenland, and although great quantities of ore were mined, no silver was found. Now a free agent, Hall wanted to try for himself, but first he had to persuade others to help him fund an expedition. Following his service in Denmark, Hall himself was not without means, and four London merchants found the prospects of the silver mine sufficiently encouraging to invest in the scheme. They included Sir Thomas Smith and Sir James Lancaster, both of whom sponsored other expeditions to the Northwest Passage and later had their names immortalized by channels leading out of Baffin Bay.

Two ships were fitted out, the 140-ton Patience and the 60-ton Heart’s Ease, and they sailed from Hull on 10 April 1612. On rounding Cape Farewell, Hall found ice conditions favorable for sailing up Greenland’s west coast much closer inshore than he had managed in 1605 or 1606. This enabled him to investigate more southerly parts of this coast than he had seen then, and on 27 May he landed at 64°N, near present-day Nuuk, 2 degrees farther south than he had landed before. There he remained until 16 June in order to fit out a pinnace and shallop, shallow-draft craft that would be essential for transporting the ore to his ships, as well as for survey work close inshore. On the next day a suitable anchorage was found, probably in Søndre Isortoq Fjord, from where Hall set out in the pinnace to explore north in search of Itivdleq Fjord, where Cunningham had been based at the time of Hall's discovery of the silver mine. Having found this, he returned to Patience and Heart’s Ease on 29 June and now brought both ships to Itivdleq, where they were anchored by 15 July. Three days later, Hall set out north again, seeking to replicate the course he had followed seven years earlier. He did not find his silver mine. On 22 July Inuit were encountered in Amerdloq Fjord. Four Inuit had been taken prisoner by Cunningham in 1605, and this incident had not been forgotten. While Hall was in the boat, he was struck by a spear and killed.

Andrew Barker, captain of Heart’s Ease, now took command. Rocks obtained from Hall’s mine were assessed by the expedition’s silversmith, who concluded that the ore was worthless and contained no silver. There being no point in staying longer, Barker ordered departure on 4 August 1612, and the two ships arrived separately in England in mid-September.

See also: Baffin, William; Barents, Willem; Cunningham, John; Davis, John (ca. 1550–1605); Frobisher, Martin; Greenland, West; Lindenow, Godske; Richardson, Carsten

References and further reading:

Hasselburg, Frederick (fl. 1810)

The discovery by the Australian sealer Frederick Hasselburg of the two sub-Antarctic islands Campbell and Macquarie on separate voyages in 1810 provides the clearest example of important geographical discoveries being made by a sealer searching for new sealing grounds, which were then kept secret with varying degrees of success to avoid competition from others.

A Sealing Captain Attempts to Keep His Discoveries Secret, 1810

Unlike whaling, sealing is essentially a land-based industry, and the sealers of the late eighteenth and early nineteenth
centuries were engaged in a continuous search for previously undiscovered coasts and islands, where fur and elephant seals hauled out on land to breed. Once found, these populations—especially those of the more valuable fur seal—were systematically decimated. By the end of the first decade of the nineteenth century, known sealing grounds off Australia and New Zealand were close to exhaustion. Encouraged by the discovery of the Auckland Islands in 1806 by Abraham Bristow, the Sydney-based Robert Campbell and Company commissioned Frederick Hasselburg to search for new sealing grounds in the 130-ton brig *Perseverance*. Two Tahitians were included in his crew.

Little is known of Hasselburg beyond the fact that he first came to Sydney in 1807 as first officer of the merchant vessel *The Brothers*. Sailing from Sydney in September 1809, he reached the Auckland Islands in late November, remaining there one month to seal. On 4 January 1810, just a few days after leaving these islands, he discovered Campbell Island at 52°33'S, 169°10'E. Leaving behind a shore party of six men under his second officer John Wood to hunt for seals and equipping them with supplies for about six months, Hasselburg sailed next for the Bay of Islands, New Zealand, before returning to Sydney on 28 April. Unlike many sealing discoveries, secrecy surrounding the discovery of Campbell Island was maintained until January 1811, when the island's existence was disclosed by another sealing captain, Owen Folger Smith of *Aurora*, following Hasselburg's death at Campbell Island.

Receiving instructions to relieve his shore party, which would now be running short of supplies, Hasselburg sailed again on 25 June 1810. However, rather than heading directly for Campbell Island, he took a more southerly route, no doubt in the expectation that once in the zone of persistent westerly winds farther south, an easterly course could be easily followed and in any case should the island's rediscovery should his longitude be inaccurate. This course fortuitously led him to discover Macquarie Island on 11 July at 54°38'S, 158°55'E. Leaving behind a shore party of six men under his second officer John Wood to hunt for seals and equipping them with supplies for about six months, Hasselburg run out of supplies some four months before and had been forced to kill birds to survive. On 4 November, Hasselburg set out in the jolly-boat to inspect the condition of some oil casks left ashore in Perseverance Harbour. As he returned, a sudden gust of wind caught the boat so that it filled with water. Hasselburg was one of three drowned.

Whereas secrecy concerning Campbell Island's discovery was successfully maintained for a year, news of Macquarie Island's discovery clearly leaked out almost immediately. Before 1810 had ended, Macquarie had been reached by four vessels not owned by Robert Campbell and Company, one of these also visiting Campbell.

**See also:** Campbell Island; Macquarie Island; Sealing and Antarctic Exploration

**References and further reading:**


**Hayes, Isaac**

(1832–1881)

Ambitious explorations through the “open polar sea” to the North Pole and beyond were planned by the American explorer Isaac Hayes. In the event, he accomplished little more than a brief journey on the Greenland ice sheet and some minor additions to knowledge of Ellesmere Island.

Shortly after graduating from the University of Pennsylvania, Dr. Isaac Israel Hayes was appointed surgeon on the Arctic expedition of Elisha Kent Kane (1853–1855). In 1854, he led a two-man party that was the first to explore Grinnell Land, Ellesmere Island. He was one of nine who left their leader in an attempt to reach Upernavik in a whaleboat. In his published account (1860), Hayes portrays this journey as sanctioned by Kane. In fact, the latter regarded it as desertion, though he had done much to bring it on himself and lacked provisions to support the entire party through the winter (see Kane, Elisha Kent). As a result of frostbite received during this journey, Hayes returned home with several of his toes removed.

**Further Sightings of the Open Polar Sea, 1860–1861**

After Kane’s death in 1857, Hayes took measures to portray himself as one of Kane’s staunchest supporters. Kane had not made public the many disputes during an ill-disciplined, ill-led expedition, and they were also masked in Hayes’s account of the boat journey, an episode omitted from Kane’s book. He had promised to tell the story later, but he never had the opportunity to do so because of his early death. The great claim made on the expedition’s behalf was that during it, the
open polar sea had been discovered. At this date, it was widely believed that the ice found in the Arctic formed an encircling ring, within which lay open water (see Open Polar Sea). Clearly, this discovery required further investigation, and Hayes now turned the United States, giving lectures calculated to appeal to the patriotic instinct that the discovery of the “open polar sea” by the great American explorer Elisha Kent Kane must now be followed up by another American expedition. Considerable skepticism had been expressed about whether or not the open polar sea existed and, even if it did, whether it was possible for Kane to have discovered it. Eminent British and Danish authorities had poured scorn on the inadequacies of his expedition, its poor maps, and over-inflated claims. None of this mattered a bit to Hayes’s enraptured audiences. The point was that all this had been discovered by an American expedition. Many of them had read Kane’s enthralling account, and they were willing to back Hayes to prove Kane right and his critics wrong. Soon, several distinguished institutions were prepared to support Hayes: the American Geographical Society, the Smithsonian Institution, and the Boston Society of Natural History, among others. By 1859, Hayes had enough money to organize his expedition, much of it being donated by Kane’s chief sponsor, Henry Grinnell.

On the basis of his previous exploration of the east coast of Ellesmere Island, Hayes proposed to winter at Cape Frazer, the northernmost point he had reached in 1854. Hayes believed that although winds packed the ice close to the coast of Greenland (thus leading to Kane’s failure), he would find much less ice off Ellesmere. In the following year, he would head north to reach the “open polar sea” and explore the northern coasts of Ellesmere and Greenland before continuing on to the Pole. In the course of his investigations there would also be opportunity for useful scientific work.

Whereas Kane had been somewhat cursory in his preparations, Hayes ensured that everything conceivably necessary in the way of provisions and equipment was carried on board his 133-ton schooner United States. August Sonntag, his friend and colleague from Kane’s expedition, was happy to join as second-in-command and astronomer, but other experienced officers and scientists were less easy to find. They included S. J. McCormick (sailing master), Henry Dodge (mate), Henry Radcliffe (assistant astronomer), and George F. Knorr (secretary), none of whom had ever been to the Arctic.

On 6 July 1860, United States sailed from Boston with fifteen men on board. Reaching West Greenland, they anchored off Prøven and Upernavik. At the latter, the Danish interpreter and dog handler Peter Jensen came on board with thirty dogs. Two Danish sailors and three Greenlandic hunters also joined there. Hayes was eager to include the Greenlander Hans Hendrik in his party. He was now living at Cape York, and although eager to join the expedition, he insisted on doing so with his wife and baby. Little ice was met until Smith Sound, where United States was stopped by a torrential outflow of ice. After several ineffectual attempts, Hayes was finally able to force the ship through the ice stream but not without incurring serious damage. Repairs were effected in Foulke Bay, 78°20’N, just 8 miles northeast of Cape Alexander and 20 miles south of where Kane had wintered at Rensselaer Harbor. There Hayes was obliged to winter, far south of where he had hoped and on the opposite side of Smith Sound. There was little that he could do about it, however, with United States in such a condition that it might not make it back to Boston, let alone explore farther north next season.

Prior to the onset of winter, several sledging expeditions were organized, during one of which Hayes ventured some 60 miles onto the Inland Ice, the first significant journey since that of Lars Dalager in 1751. Mindful of the scurvy that had ravaged Kane’s expedition during two winters, Hayes had his Inuit hunters obtain as much game as possible, and as a result no one experienced this illness now. Disease, however, did break out among the dogs, with all but nine dying. On 21 December 1860, Sonntag and Hendrik were sent to obtain replacements from Northumberland Island, 150 miles away. Hendrik seemed a different person from the young man Hayes had known on the previous expedition. Always complaining, he and his wife caused endless problems, culminating in the disappearance of Peter, Hayes’s favorite among the Inuit and his best hunter. Hayes suspected that Hendrik had caused Peter to run away after informing him that the Americans planned to kill him. Peter’s frozen body was later discovered 20 miles away, but in the meantime, Hendrik was the most competent traveler available and, being well-known to the local Inuit, seemed best placed to assist Sonntag in obtaining suitable dogs. Sonntag never came back. According to Hendrik, he fell through the ice and then allowed himself to be pulled on the sledge rather than running alongside to keep warm. When they finally found shelter in an abandoned hut, he died not long afterward. To Hayes it sounded unconvincing, but Hendrik stuck to his story.

On 18 February 1861 the sun reappeared, causing an appreciable lifting of spirits. Now, further sledging trips were planned with the aid of dogs eventually obtained from the Inuit. After a brief first visit to Rensselaer Harbor, where no sign of Kane’s vessel Advance was seen among the piled-up ice, on 3 April Hayes left on his major journey to Ellesmere Island. The condition of the ice in Smith Sound was atrocious, and thirty-one days were required to complete the 75-mile crossing. Setting out originally with twelve men hauling two sledges and a 6-meter metal boat, Hayes had to abandon the boat just three days out. By 27 April, they were barely halfway across Smith Sound, and Hayes seriously considered giving up. Instead, he decided to send nine men back and continue on with just Jensen, Knorr, and the seaman John MacDonald. On 3 May, he was within sight of the coast of Grinnell Land, which he finally reached eight days later. On 15 May Jensen collapsed. Leaving MacDonald behind to look after him, Hayes contin-
ued on with Knorr for another three days. At 81°35'N he climbed a hill, from where he claimed to see unmistakable signs of the open polar sea. There, the Stars and Stripes was unfurled before he and Knorr turned back to pick up Jensen and MacDonald and then make their way across Smith Sound. Subsequent travelers have found it difficult to equate Hayes's description of Grinnell Land with what actually exists, and it is generally believed that he got no farther in fact than 80°14'N, not as far as Kane's farthest north. As for proof of the open polar sea, what he had seen amounted to little more than a thinning of the pack. Rather than putting his inability to see Greenland down to poor visibility, he had inferred that he was past its northernmost termination.

Hayes considered his investigations far from complete, but because United States was in too poor condition to be sailed farther north, he decided to return to Boston to replace it before renewing his explorations the following year. Unfortunately for Hayes, when he arrived at Boston in October, he learned that the American Civil War had broken out. With every vessel required by the war effort, there was no question of his being provided with another ship to return to the Arctic. Hayes volunteered to serve in the Union Army, rising in rank to colonel and being given charge of a military hospital.

See also:
- Payer, Julius
- Wellman, Walter (1898–1899)

References and further reading:

Hayes Island (Franz Josef Land)

Located at 80°36'N, 57°60'E, this small island north of Hall Island in Franz Josef Land was first seen in 1874 by Julius Payer, who mistakenly considered it to form merely a peninsula of the latter. The name “Hayes Islands” was originally given by him to a group of small islands near the southern end of Austrian Sound but was transferred here when insularity was established by members of Walter Wellman's expedition in 1898. The island is named for the American explorer Isaac Hayes, in conformity with Payer's principle that geographical names should honor predecessors in the work of discovery or else those promoting the expedition. The official Russian name is Ostrov Kheysa.

An unusually large proportion of the surface area is ice-free, a factor that played a part in its selection as the site for a scientific station during the International Geophysical Year. Following the construction of an airstrip in 1956, Druzhnaya (80°37'N, 58°03'E) was opened in 1957, becoming for many years the largest scientific station in the Arctic. More recently, the station was known as Krenkel' for Ernst Teodorovich Krenkel' (1903–1971), radio operator with Ivan Papanin in 1937 on the drifting ice station North Pole–1. The extensive research program included the launch of rockets to study the upper atmosphere. Staffing levels have been progressively reduced from a maximum of seventy to twelve, with fourteen throughout much of the 1990s until the station was closed in 2001 following the death of one of the two remaining members in a tractor accident.

See also:
- Franz Josef Land; Hayes, Isaac; International Geophysical Year; Papanin, Ivan; Payer, Julius; Wellman, Walter (1898–1899)

References and further reading:

Heard Island (Sub-Antarctic)

Located at 53°10'S, 73°30'E, and lying 300 miles south-southeast of the Kerguelen Islands, Heard Island has an area of 150 square miles and is crowned by the active volcano Big Ben (2,745 meters). Given that Big Ben is visible in clear conditions from 100 miles, it might have been expected that Heard Island would have been discovered relatively early, but in fact, despite several near misses and two possible earlier sightings, it was almost the last of the sub-Antarctic islands to be discovered, only certainly seen for the first time in 1853.

The earliest of the near misses occurred in February 1773, when James Cook sailed 45 miles southwest of Heard Island and his colleague Tobias Furneaux only 30 miles to the north of it. Visibility was poor, and it was seen by neither, though the large numbers of swimming penguins were correctly interpreted by some of Cook's officers as a sign that land lay nearby. First sighting is sometimes attributed to the British sealer Peter Kemp, whose chart notes seeing land on 27 November 1833. At the time he was 120 miles distant from Heard and too far away to see it unless he benefited from exceptional atmospheric conditions. A similar sighting of land south of the Kerguelen Islands was reported by the American whaler and sealer Thomas Long in 1848. Although Heard Island was possibly seen and visited by other sealers based in the Kerguelen Islands who kept the knowledge to themselves, discovery is generally credited to John J. Heard of the American barque Oriental. Heard was on a trading voyage from Boston to Mel-
bourne and was one of the first to note the advice of Matthew Maury, pioneer oceanographer and director of the U.S. Naval Observatory, that the best route through the Southern Ocean was along the Great Circle well south of the course customarily taken. Not only was this route shorter, but ships would also benefit from the near constant westerly winds. Maury’s advice shortened voyages from the United States to Australia by many weeks. It also directed ships close to Heard Island, and on 25 November 1853, John Heard found himself within 20 miles of previously unreported land. As his wife’s diary records, initially he thought it was an iceberg, but having ascertained that it was indeed land, he continued on his voyage, reporting his discovery on arrival at Melbourne, where it was published in the local newspaper, *Argus*, on 24 December 1853. This announcement later proved significant, when discovery of land by a British vessel on 4 January 1854 was reported soon afterward. By means of the *Argus* report, Heard was able to prove his priority, though in fact what had been discovered by William McDonald (*Samarang*) was not Heard but the nearby McDonald Islands, which lie 28 miles west of Heard. The first landing on Heard was made by American whaler Erasmus Darwin Rogers in the New London vessel *Corinthian* in 1855. During the next twenty-five years, more than 100,000 barrels of elephant seal oil were obtained by American sealers, who also compiled a fine map of the island.

Few exploring expeditions stopped here. The first to do so was the British oceanographic vessel *HMS Challenger*, which visited Heard briefly on 6 February 1874 (see Nares, George). *Challenger’s* crew members were particularly struck by the squalor in which the forty American sealers lived. Paid just $500, they would stay here for three years hunting elephant seals. Other scientific visits were made on 3 February 1902 by the German Antarctic expedition of Erich von Drygalski, who investigated the island’s glaciation while his colleagues made natural history collections, and by Edgar Aubert de la Rue, who spent eight days here with his wife, Andrée, in January 1929, prospecting for minerals. Later the same year, a party from RRS *Discovery* was landed for seven days during Sir Douglas Mawson’s British, Australian, New Zealand Antarctic Research Expedition in November and December 1929.

Despite its discovery by an American ship and long history of exploitation by American sealers, Heard was annexed by Great Britain in 1908, together with the McDonald Islands. In 1947, sovereignty was transferred to Australia, which opened a station at Atlas Cove in December that year. A topographic survey was begun in 1948, together with a comprehensive scientific program. The station continued to be occupied throughout the year until 1954, when the dogs and scientific work were transferred to the newly opened Mawson Station on the Antarctic continent. From March 1955 onward, Atlas Cove has been occupied during the summers only, with the exception of a wintering party in 1991.

Mawson Peak, the highest point on Big Ben, is higher than any mountain on the Australian mainland and, within territory over which Australia claims sovereignty, is surpassed only by peaks in the Britannia and Prince Charles Ranges in the Australian Antarctic Territory. With only one clear day on average each month, early attempts at climbing Big Ben were frustrated primarily by poor weather. Mawson Peak was finally climbed on 25 January 1965 by an Australian party brought south by the yachtsman Harold Tilman in *Patanela*.

Although they were inspected from a distance by *Challenger* in 1874, the first recorded landing on the McDonald Islands did not take place until 1971, when a two-man Australian party was landed by helicopter to make a very brief reconnaissance. A more extended visit was made in 1980, when a six-man party spent four days here.

*References and further reading:*


**Hearne, Samuel**

(1745–1792)

The Arctic coast of North America was reached for the first time by a European when the British fur trader Samuel Hearne was led there by his Indian guide, Matonabbee, on a journey relying exclusively on Indian methods of travel. Hearne joined the Hudson’s Bay Company (HBC) in 1766 after being paid off from the Royal Navy in 1763 at the end of the Seven Years’ War. Shortly afterward, as mate in *Churchill*, he participated in 1767 in the discovery of the fate of James Knight’s expedition of 1719–1721 on Marble Island, northwest Hudson Bay. Two years later, he revisited the site of Knight’s two sunken ships to learn from local Inuit further details of this expedition’s disastrous end. Hearne’s future work was curiously linked with Knight’s, in that his famous journeys were also undertaken in search of the copper deposits reported by Indians as lying somewhere west of Hudson Bay.

While waiting for his own command, Hearne joined the staff of Prince of Wales’s Fort at the mouth of the Churchill River. There the chief factor, Moses Norton, had sailed with William Christopher in 1762 in *Churchill* to reach the head of Baker Lake, thus proving that no Northwest Passage was to be found through Chesterfield Inlet. This region was close to where the copper mines were rumored to be, and some years
later Norton sent two Indians to follow to their sources the largest rivers flowing north. One of these was Matonabbee, a leading Chipewyan Indian who had been largely brought up at the fort. He and his companion returned with samples of copper and a rough map showing the approximate location of the copper mines in relation to rivers flowing east into Hudson Bay. Norton now wished to send a company officer to investigate the mines, a task for which he considered Hearne perfectly qualified, being young, fit, and with some skill in navigation. Not only was the copper itself a valuable commodity, but it would provide useful ballast for the company's ships sailing back to Great Britain with their cargos of beaver pelts.

**Overland toward the Coppermine River—the First Attempt, 1769**

On 6 November 1769 Hearne set out from Prince of Wales's Fort, accompanied by two Europeans and some Indian guides. His immediate objective was to meet up with Matonabbee, who customarily traveled the route he was to follow, serving as an important link between the HBC and the Indians, especially the Chipewyans, who lived north of the local Cree. Matonabbee, however, was ignorant of these arrangements, and after just three weeks Hearne was abandoned by his Cree guide, after having traveled some 200 miles, and had no alternative but to make his way back to the fort, arriving there on 11 December.

**The Second Attempt to Reach the Coppermine River, 1770**

Hearne set out again on 23 February 1770 accompanied by the Chipewyan guide Conne-e-queese and four other Indians. Carrying on his back equipment weighing over 27 kilograms, including an unwieldy quadrant and its stand, each day he had to travel nearly 20 miles to keep up with the Indians. Little food was to be found, and for seven days Hearne's party subsisted on berries, scraps of old leather, and burnt bones. To make matters worse, Conne-e-queese was regarded by the local Indians as being of low status and proved quite incapable of preventing them from robbing the party of many of its possessions. When Hearne's quadrant was broken some distance north of Lake Dubawnt, in retrospect it was fortunate since he was now forced to return. Even if he could find the copper mines—and Conne-e-queese did not know where they were—without his quadrant he could not plot their position for others to find.

On the way back, Hearne at last met Matonabbee, who was also returning to Prince of Wales's Fort. The two got on well, and Matonabbee was happy to lead Hearne to the mines. The Indian blamed his previous failures on Norton's poor choice of guides and the absence of women from the party. In his view, no extended journey could be made without women, who were “made for labor; one of them can carry, or haul, as much as two men might do. They also pitch our tents, make and mend our clothing, keep us warm at night” (Hearne 1958, 35).

**Across the Canadian Barrens to the Arctic Coast, 1770–1772**

Arriving back at Prince of Wales's Fort on 25 November, after the briefest of rests Hearne set out again on 7 December 1770, this time accompanied by Matonabbee, having made it clear to Norton that he wanted no more of the latter's guides. Scholars still dispute the exact route now taken by Hearne to the mouth of the Coppermine River, which he reached on 17 July 1771, becoming the first European to stand on the Arctic coast of North America. Most probably it took in Nueltin, Kasba, and Snowbird Lakes, at the last of which he remained some time in a Chipewyan camp. From there he headed northwest with a large party of Chipewyans to reach the Coppermine at Sandstone Rapids on 14 July via Clowey Lake, Clinton-Colden Lake, Lake Aylmer, Lac de Gras, Lac du Sauvage, and Contwoyto Lake. After this, it was a three-day journey down the Coppermine River to the Arctic Ocean. Near the mouth of the river, Hearne's large party of Indians came upon an Inuit encampment at Bloody Falls, so called because of the massacre of the Inuit that now took place as Hearne helplessly looked on. Thirty miles farther south lay the long-sought copper mines, which proved a great disappointment when a lengthy search revealed just one copper nugget weighing 1.8 kilograms.

Hearne's return was even more arduous than his outward journey because the Indians insisted on making still greater speed in their eagerness to return to their wives at Contwoyto and Point Lakes. With his legs and feet swollen, his bruised toenails breaking off, and skin chafing, Hearne later wrote, “I left the print of my feet in blood at almost every step that I took” (Hearne 1958, 120). Great Slave Lake was reached on 24 December 1771. Although this great inland sea was known from Indian reports, Hearne was the first European to see and cross it. From there he returned to Prince of Wales's Fort on 30 June 1772 via Wholdaia Lake, Enadai Lake, and the Kazan River.

From the company's perspective, the results of Hearne's eighteen-month journey were disappointing in that the copper deposits had no commercial potential. Much was learned of the interior west of Hudson Bay and the route to the Arctic, but there Hearne's results were to some degree vitiated by his lack of mathematical skill, which resulted in his report and map being riddled with inconsistencies. In particular, he was shown subsequently to have placed the mouth of the Coppermine River 200 miles too far north. These mistakes were seized upon by the geographer Sir Alexander Dalrymple, who was eager to discredit Hearne since he appeared to prove that no Northwest Passage would be found through North America except at high latitudes. Despite Dalrymple's efforts, which certainly hit Hearne's reputation hard, when the British Admiralty gave instructions for James Cook's third voyage of circumnavigation, it was on the basis of Hearne's discoveries that Cook was told to concentrate his search for the entrance to the Northwest Passage north of 65°N.
Hedenström, Mathias von
(1780–1845)

Mathias von Hedenström, also known as Matvey Matveyevich Gedenshtrim, was an unlikely choice as an expedition leader: something of a scholar but with no scientific or mathematical background and a convicted criminal to boot. It is a mark of the desperation of the expedition’s organizer, the Russian minister of commerce, Count Rumyantsev, that he could alight on no more promising candidate. Hedenström performed surprisingly well, however, and his expedition made a significant contribution to knowledge of where land was and was not to be found north of Siberia.

A Convict Searches for a Great Northern Promontory of America, 1808–1811

When information reached St. Petersburg that hunters had discovered islands off the northern coast of Siberia, it appeared to confirm earlier suspicions that a peninsula of North America might extend far into the Arctic Ocean in this region. Concerned lest this land be surveyed and claimed first by Great Britain, Count Nikolai Petrovich Rumyantsev (1754–1826) decided to organize an expedition at his own expense. Rumyantsev had an abiding interest in the Arctic, having previously sponsored a silver prospecting expedition to Novaya Zemlya. He was later to sponsor Otto von Kotzebue’s voyage of 1815–1818.

One of Rumyantsev’s main difficulties was to find a suitable leader: There were few educated men in Siberia, and they were occupied with indispensable administrative duties. One man, however, had recently come to his attention; indeed, Rumyantsev had been responsible for his arrest and exile. Mathias von Hedenström, son of a Swedish political refugee living in Riga, had been deported to Siberia after being convicted of bribery while serving as secretary to the customs inspector of Riga. Hedenström was well-educated and had previously worked as translator for the governor general of the Baltic provinces. Although generally of good reputation, he had a taste for expensive living, which led him repeatedly into difficulties, and this was not the last occasion on which he was found guilty of financial misdemeanors against the state. Rumyantsev now came to an agreement with Hedenström, whereby the latter would be allowed to return to the Baltic Provinces once he had completed a survey of the newly discovered islands and had conducted a search for other land reported north of the Kolyma River, some way farther east.

Before setting out from Irkutsk in August 1808, Hedenström read widely to extend his previously limited knowledge of the natural sciences. Further preparations were made at Yakutsk, from where he departed on 18 November, heading north to Ust’-Yansk near the mouth of the Yana River on the Arctic coast, the nearest settlement to the newly discovered islands. His own lack of Arctic experience was compensated by the presence on his staff of the hunter Yakov Sannikov, who had traveled extensively across these islands since 1800, in the process discovering Faddeya Island in 1805 and New Siberia Island in 1806. The party also included the geodesist P. Pshenitsin and the surveyor I. E. Kozhevin.

After he reached Ust’-Yansk on 5 February 1809, Hedenström delayed there only long enough to establish his base before making his way across the sea ice of the Laptev Sea to reach first the Lyakhovsky Islands and then Faddeya Island. There he divided his men into three parties: one to survey Faddeya under Kozhevin, one to investigate the strait between Kettle and Faddeya Islands under Sannikov, and a third party, led by himself, to locate and survey New Siberia. This work was largely completed before the sea ice became impassable in the summer thaw, and Hedenström’s own task was made easier when he found New Siberia to be not 180 miles farther east, as indicated by Sannikov, but just 44 miles distant. By the end of spring, all three parties had returned to Ust’-Yansk. While preparations were made to continue the survey of what Hedenström now termed the New Siberian Islands the following spring, Sannikov was sent to construct a hut on New Siberia Island, and Hedenström surveyed the coast of the mainland between the Yana and Indigirka Rivers. It had been mapped by Dmitriy Laptev’s detachment on the Great Northern Expedition of Vitus Bering (1733–1743), but not to the same degree of accuracy as now achieved.

On 2 March 1810, Hedenström set out again across the sea ice with twenty-nine sledges, this time from near the mouth
of the Indigirka River, some way east of the New Siberian Islands. New Siberia was reached on 13 March. Here, Sannikov was sent across the island to follow its northern coast, while Hedenström’s party surveyed the south and east coasts. On 16 March at Cape Kamenny, land appeared to be in view to the northeast in the far distance. Sannikov confirmed this sighting the next day, which motivated Hedenström to set out across the sea ice in the hope of reaching it. Atmospheric conditions in the high latitudes can be particularly misleading. Mirages resulting from temperature inversions are common, and the fact that white is the predominant color of both land and sea does not help in distinguishing between the two. On this occasion, both Hedenström and Sannikov believed that mountains could be seen in the extreme distance, showing up blue.

In 1764, an exploring expedition led by Stepan Andreyev had reported seeing a very large island north of the Kolyma River. Unfortunately, he had not been able to follow up his sighting since one of his men had become seriously ill. He had also been made anxious by tracks of “hostile men” — perhaps Chukchi? — discovered far out on the sea ice. These were given as his reasons for returning to the mainland without attempting to explore further. “Andreyev’s Land” had not been seen since, but its sighting by an official expedition lent credibility to the view that a great peninsula from America extended far to the north of the Russian coast.

With his survey of the New Siberian Islands approaching completion, Hedenström’s next task was to rediscover “Andreyev’s Land.” Since both were believed to form part of the same peninsula, his obvious strategy was to head east across the sea ice from New Siberia, the most easterly of the New Siberian Islands. Setting out from there on 24 March 1810, he had traveled some 50 miles when further progress in this direction was made impossible by a wide open lead. Unable to cross it, he turned south toward the mainland, which he reached near the Kolyma River. On 18 April he made a second attempt, this time heading north across the ice from Cape Great Baranov, traveling more than 150 miles without sight of land and then east before returning to the mainland at Cape Shelagskiy. With the sea ice now unsuitable for sledging, Hedenström returned to the Kolyma River on 15 May, completed his survey of the coast by mapping the section between the Kolyma and Indigirka Rivers, and then traveled back to Ust’-Yansk. There, he was rejoined by Sannikov who had been with a hunting party on Kettle Island, providing him with an opportunity to survey that island’s west coast, the only major region not previously explored by Hedenström.

At Ust’-Yansk, Hedenström received orders summoning him back to Yakutsk. Although he had not found the great American peninsula, he could claim to have searched for it with great determination and brought with him charts demonstrating a considerable increase in knowledge of the New Siberian Islands. He was now relieved of his duties. Leadership of the scaled-down expedition was given to the geodesist, Pshenitisin, who was able to complete the mapping of the archipelago the following year, in the process demonstrating that Kettle and Faddeya were one island rather than two, and Sannikov reported another sighting of distant land — this time, just possibly Bennett Island in the De Long Islands. If so, he anticipated its discovery by George De Long by eighty years. Hedenström himself did not return to the Baltic Provinces but decided to remain in his “beloved Siberia,” in 1813 assisting with Vasily M. Golovin’s expedition to Japan and then working in various administrative capacities for the civil governor of Irkutsk. It was at the end of the term of office of this governor in 1819 that Hedenström was found guilty for the second time of misdemeanors against the state; on this occasion he was convicted of theft in company with the governor’s entire staff.

Hemenley-Adams, David

Pole-grabber extraordinaire, the English explorer David Hemenley-Adams reached the North Pole on 29 April 1998, thus becoming the first to achieve the “Magnificent Eleven”: the North Pole and North Magnetic Pole, South Pole and South Magnetic Pole, and the “Seven Summits,” the highest peaks of the seven continents. Other firsts include reaching the North Geomagnetic Pole in 1992 and, in 2000, making the first balloon flight to the North Pole. This entry concentrates on his balloon expedition.

David Kim Hemenley-Adams describes himself as an adventurer rather than an explorer. A businessman by profession, in his spare time he enjoys testing himself on the most strenuous activities, initially chiefly mountaineering and then increasingly, polar expeditions. In 1980, he climbed his first continental summit, Mount McKinley, the highest mountain in North America. In subsequent years, he added Kilimanjaro in
Africa (1981), Everest in Asia (1993), Elbrus in Russian Europe (1994), Vinson in Antarctica (1994), Aconcagua in South America (1995), and Carstensz Pyramid in Indonesia (1995)—the latter being regarded as the highest peak in Oceania—to complete the “Seven Summits.” His first polar venture was an unsuccessful attempt to reach the North Pole in 1983, during which he had ambitiously sought to be the first to reach it on a solo, unsupported expedition. The North Magnetic Pole provided an easier target in 1984. After a break of several years when business kept him fully occupied, he led the first expedition to the North Geomagnetic Pole in 1992 and in 1996 became the first man to reach three Poles within one year—the South Pole, the South Magnetic Pole, and the North Magnetic Pole. Reaching the North Pole proved more difficult, and after failing on his second attempt in 1997, he at last got there on 28 April 1998. What was left for him to do?

First Balloon Flight to the North Pole, 2000

Hempleman-Adams has never been short of ideas of “firsts” to attempt, nor has he limited himself to mountaineering and the Poles. He also went on canoeing expeditions and took up ballooning. With just four and a half hours of solo flying experience, he set off in 1998 to attempt the first crossing of the Andes in a hot air balloon as a training flight for the North Pole. Only one previous attempt had been made to fly to the Pole. In 1897, the Swede Salomon Andrée had taken off from Spitsbergen in a hot-air balloon with two companions. They were never seen again alive. In retrospect, no polar expedition ever seemed more impracticable. How could anyone hope to navigate a hot-air balloon to the Pole, let alone come back again? The mere attempt seemed suicidal, and so it had proved to be. Hempleman-Adams planned to fly in a 2,520-cubic-foot Roziere-styled balloon combining a spherical cell containing helium within an envelope of hot air. In order to recreate the conditions of Andrée’s flight as closely as possible, he used a wicker basket measuring 1.83 by 1.22 meters rather than a sealed capsule. Although Andrée’s balloon incorporated features intended to make it steerable—they had not worked—Hempleman-Adams made use of the wind, relying on advances in weather forecasting and communications technology to guide him to the Pole. In other respects, he would be little better off than Andrée.

The most important member of his team was the Belgian meteorologist Luc Trullemans. Careful analysis of satellite data enabled Trullemans to identify windtracks leading toward the Pole. By communicating this information to Hempleman-Adams using high-frequency radio and satellite phones, the latter would be able to steer his balloon, the Britannic Challenger, by altering its altitude. Thus, while winds at 1,500 meters might lead north-northwest, those at 1,550 meters might head due north. Hempleman-Adams’s chief task would be to follow Trullemans’s instructions as to which altitude the balloon should drift.

Because Andrée had taken off from Spitsbergen, Hempleman-Adams was determined to do the same, even though Trullemans told him that windtracks to the Pole were much rarer there than elsewhere in the Arctic. At Spitsbergen too, ground conditions would only seldom be sufficiently calm for the balloon to take off. Initially, the balloon team based themselves in England, ready to fly at short notice whenever promising winds were forecast. This strategy was abandoned in mid-May, when it became apparent that good forecasts could only be made seventy-two hours in advance, leaving insufficient time for the balloon team to reach Spitsbergen and complete preparations. From 15 May 2000, Hempleman-Adams based himself at Longyearbyen. The absolute deadline for departure had been set at 1 June, the problem being that after this date, the ice in the central Arctic Basin would be too soft for safe landing by an airplane. Although Hempleman-Adams spoke of the possibility of living on the ice until he was picked up by a passing icebreaker, clearly the airplane option was preferable. On 27 May, the long-awaited forecast came through. Trullemans had identified several promising windtracks. However, it was essential for Britannic Challenger to get off the ground by 6:00 A.M., after which the ground winds would be too strong.

Five minutes after his deadline on 28 May 2000, Hempleman-Adams was in the air and rising rapidly to climb higher than the encircling mountains. Disturbingly, he found he could not get his sophisticated communications equipment to work and, left to his own devices, decided that the best strategy was to ascend to 3,300 meters to be sure of being above the mountains. Here the winds took him west and then north, and it was not until 9:30 P.M. that the communications problem was sorted out. Next, the autopilot—essential to allow him some sleep—proved intractable, and when he finally got it to work, provided no means of warning him as he dozed that he was rising out of the range of Trullemans’s windtrack. Autopilots are designed to prevent balloons from crashing, but on this flight maintenance of correct altitude was hardly less important. When he awoke, he was informed that he was several degrees off course and would have to make a rapid descent to pick up another windtrack. By now he was over the pack ice and could at last take off his stifling wetsuit.

At 5:30 P.M. on 30 May 2000, Britannic Challenger crossed the 85th parallel. Marked on his map with a thick red line, it was the point of no return, beyond which he was out of reach of rescue aircraft. Having slept for barely two hours since taking off, Hempleman-Adams was about to fall asleep when an emergency message came through, warning him of a new weather front coming in from the west. To avoid being sucked into it, he would have to climb sharply and adopt a different course, which he must find within the next thirty minutes. Doing so was a tough proposition and involved making a gradual ascent, stopping periodically to measure the direction of the wind. The winds here were particularly confused, and not...
until forty-five minutes later was he able to pick up the windtrack indicated by Trullemans and escape the anticyclone, under whose influence he would certainly have blown back to Spitsbergen.

By 10:40 a.m. on 31 May, he was about 150 miles from the Pole and had been aloft for sixty-five hours. He was now regretting buying the cheap, second-hand basket rather than something roomier. There was barely sufficient space to sleep, and he was suffering badly from cramp. The cold, too, was excruciating, particularly at higher altitudes, and as a result he flew at 1,500 meters or less whenever possible. Above 3,000 meters he needed bottled oxygen, which was not working properly. Having for once strapped on his harness in case the basket hit the ice, he at last fell deeply asleep, only to be awoken by the loud ringing of an alarm. While sleeping, he had dreamed of escaping to safety across a waist-high barrier and awoke to the cheering news that he was within 55 miles of it. The aim now was to get as close as possible. By midday, he was 21 miles away. There he ascended to 3,500 meters to find a windtrack leading directly north. It took him a few miles closer, to within 12 miles at 89°48'N. By ballooning standards, that was pretty good, but unwelcome to Hempleman-Adams because it would mean completing the first pickup place, but it would also mean flying the basket over 1,000 meters.

Having originally set himself the target of getting within one degree—60 miles—of the Pole, when he finally came to his senses on the morning of 1 June 2000, he was given the cheering news that he was within 55 miles of it. The aim now was to get as close as possible. By midday, he was 21 miles away. There he ascended to 3,500 meters to find a windtrack leading directly north. It took him a few miles closer, to within 12 miles at 89°48'N. By ballooning standards, that was pretty much as close as he could hope to get, and with no more promising winds forecast by Trullemans, he decided to turn back.

Getting back is always a problem with balloons, which are best for one-way journeys. Hempleman-Adams had hoped to continue on to Canada. Not only would it be the most convenient pickup place, but it would also mean completing the first balloon crossing of the Arctic Ocean. Unfortunately, to reach Canada he would have to fly at 7,300 meters, which was impossible with the cold and lack of oxygen. Russia was an alternative, but unwelcome to Hempleman-Adams because it would involve the almost certain loss of his balloon and equipment. He could wait on the ice for an icebreaker bringing tourists to the Pole, which was due in about a month. He had food for thirty-five days, so it was a possibility, but the most attractive option was to head back toward Spitsbergen and, if necessary, ditch the balloon on the ice and wait to be picked up. To do so, he had to get south of 85°N. A message came through from Trullemans that he would find a high-speed track to Spitsbergen at 2,130 meters. By midmorning on 2 June, he was back south of the “comfort line,” and arrangements were being made for the pickup. Britannic Challenger’s descent began at 3:42 a.m. on 3 June as Hempleman-Adams pulled the cords to release helium and hot air. Fifteen minutes later, he was relieved to hear the sound of an approaching helicopter. As he descended rapidly toward the pack, he looked in vain for a large, flat floe to land on, and in no time at all found himself being dragged across the ice at a rate of 10 knots, and then rapidly slowed as the basket filled with frigid water, before being lifted again onto the ice by the still partially inflated balloon. It was a very rough landing. As the helicopter hovered overhead, the winchman joined Hempleman-Adams and helped him bundle everything on board. At 5:36 a.m. on 4 June, he was back at Longyearbyen, having completed a journey of 1,600 miles in 132 hours, during which he had become the first man to fly to the North Pole in a balloon.

See also: Adventurers; Andrée, Salomon; Balloons; Geomagnetic Poles; Magnetic Poles; North Pole; South Pole; Unsupported Expeditions

References and further reading:

Herald Island (Russia)
Located at 71°24’S, 175°29’W, this small rocky island lying in the Chukchi Sea, north of the Chukotka Peninsula and east of the much larger Wrangell Island, was discovered by Henry Kellett on 6 August 1849. He landed and took possession for Great Britain, naming it for his ship HMS Herald. The official Russian name is Ostrov Geral’d. It was next seen on 13 August 1855 by John Rodgers (USS Vincennes). George De Long saw it on 4 September 1879. Hoping to winter here, he made for the island, but his vessel became beset, and he was unable to land and was forced to continue on to the north and west. Several search expeditions were organized when De Long failed to reappear, and Herald Island was considered one of the most likely places to look for him. Calvin Hooper in the U.S. Revenue Marine Service vessel Thomas Corwin made several unsuccessful attempts to land in 1880. He returned the following year and conducted a thorough search after landing on 30 July 1881. A few weeks later, Robert Berry (USS Rodgers) conducted a brief search on 24 August. Both built cairns, and a message left by Berry was found by a Soviet party in 1954.

Karluk sank some 50 miles north of this island on 11 January 1914. While Bob Bartlett led the main party across the ice to Wrangell Island, eight others were last seen making their way here. Olaf Swensenn searched for them in September 1914 but was unable to land because of heavy ice. In 1924, four skeletons were found by the American whaler Herman. Nearby lay a broken sledge, a tattered tent, and four rusty guns amid the remains of a fully equipped camp. The bodies were later identified as those of Karluk’s first officer Sandy Anderson, second officer Charles Barker, and able seamen Archie King and John Brady. The captain of Herman thought it possible that they might have been suffocated by fumes from their stove.

The first aerial survey was conducted by O. Kalwitz in 1926.
Herbert, Wally (1934–)

Wally Herbert's crossing of the Arctic Ocean in 1968–1969 is considered by many to be the last of the great polar expeditions, completing the series in which both Poles were reached and then both polar regions crossed from side to side. Traveling 3,720 miles in 476 days, his crossing was longer in terms of distance and duration than any previous Arctic or Antarctic dogsledging journey.

Having abandoned a career in the British Army as insufficiently exciting, in 1955 Walter William Herbert took up a post as surveyor with the Falkland Islands Dependencies Survey (FIDS), based at Hope Bay at the tip of the Antarctic Peninsula. Hope Bay had a well-deserved reputation for long sledging journeys, and during Herbert's time there he was a member of the first party to sledge the length of the narrow plateau forming the spine of the Antarctic Peninsula. In 1961, while working for the New Zealand Antarctic Program, he also made the first descent of the Axel Heiberg Glacier since Roald Amundsen's return from the South Pole in 1912.

First Across the Arctic Ocean, 1968–1969

Herbert's ambition was to cross the Arctic Ocean by its longest axis, from Point Barrow, Alaska to Svalbard, north of Norway. Attempting a task that was widely believed to be impossible, he initially had trouble finding sponsors, but with the assistance of Sir Vivian Fuchs, leader of the first expedition to cross Antarctica, Herbert eventually obtained the backing of the Royal Geographical Society and with it sufficient commercial and government support to mount his British Trans-Arctic Expedition. Just as Fridtjof Nansen had demonstrated that a vessel frozen into the ice would drift across the Arctic Ocean, Herbert was convinced that the same could be achieved by a sledging party. The trick was to locate his summer and winter camps so as to derive maximum benefit from the Transpolar Current, which swept westward toward Svalbard from north of the New Siberian Islands.

Herbert identified five phases in his estimated sixteen-month journey, during two of which—lasting perhaps eight months—he would be unable to sledge and must rely on drift. Much of the expedition's extensive scientific program would be conducted at these camps, which would be occupied through the summer melt from mid-June until late August and through the winter darkness and cold from late September until late February. To keep loads as light as possible in the three remaining sledging phases, seven air-drops were planned, the largest being made soon after the winter camp had been established.

Herbert spent the winter of 1966–1967 in the northern Greenlandic community of Qaanaaq. Accompanied by Allan Gill and Roger Tufft, he wished to learn more about Arctic traveling techniques from the Inuit before testing his equipment by making a preparatory 1,400-mile journey across Ellesmere Island and south to Cornwallis Island, much of the way following the route taken by Frederick Cook in 1908. All three men were former FIDS staff from Hope Bay, as was Dr. Roy "Fritz" Koerner, the expedition's fourth member (he was currently engaged in research in Antarctica). This journey did indeed demonstrate a number of inadequacies, in particular that the sledges were too narrow for the loads they were to carry, and the dogs needed twice as much food.

In February 1968 Herbert's team assembled at Point Barrow, Alaska. Tufft had been forced to pull out and was replaced by Captain Kenneth Hedges, a doctor in the Special Air Service. It was of critical importance for the success of the expedition as a whole that on this first sledging phase the party should reach the vicinity of the Pole of Inaccessibility at about 83°50'N, 160°W, since only there would they move beyond the influence of the circulating waters of the Beaufort Gyre to the region where the Transpolar Current would ensure their westward drift toward Svalbard. Just how difficult this would be was soon apparent. Things began badly when they were delayed three weeks at Point Barrow. Immediately off the Alaskan coast was an 80-mile-wide band of fractured young ice separating them from the more solid polar pack. Not until 21 February did Herbert calculate that it had been sufficiently compacted by winds and currents to risk crossing with his four sledges and forty dogs. It took six weeks to reach the polar pack, though once they were there, surfaces improved sufficiently for them to generally better their target of 10 nautical miles a day. By 8 April they were at 74°49'N, 158°45'W but 400 miles behind schedule. It was clear that their only hope of reaching the Pole of Inaccessibility was to continue sledging through June and July, regardless of deteriorating ice conditions. By 21 June they had reached 81°18'N and were making just 2 miles a day, slowed by wet snow, meltwater pools, and an ever-increasing number of leads. Summer camp—nicknamed "Meltville" by the press—was finally established on 4 July at 81°33'N, 165°29'W. They had sledged 1,180 miles.

Too far south and east to benefit from the Transpolar Current, Meltville nevertheless did drift north 150 nautical miles at a rate of 2.4 miles per day during the summer. The next sledging phase would be short, beginning with the fall freeze-up in late August and continuing to 20 September 1968, by which date there would still be sufficient light for the Royal Canadian Air Force to make the major winter supply drop in safety. Herbert's intention was to reach 85°30'N, 175°00'E, from where he believed the drift would take him across the

See also: Bartlett, Bob (1913–1914); Chukchi Sea; De Long, George; Kellett, Henry (1848–1850); Wrangel Island

References and further reading:


Pole. Again, however, his hopes were thwarted when Gill slipped a disc just four days out, leaving no option but to return to the vicinity of Meltville to find a suitable floe for the winter. Now followed an interesting episode in which Herbert found himself at loggerheads with his London committee: Herbert determined to respect Gill’s wish to stay on through the winter to supervise his geophysical research program, but the committee insisted that Gill be airlifted back at the earliest opportunity. In the end, unfavorable weather and a mysteriously failing radio ensured that Gill remained with the expedition, but not before a series of fraught communications were intercepted by the press and articles published suggesting that Herbert was suffering from “winteritis.”

At this stage, their chances of completing the crossing looked slight and were still further reduced when their floe was carried off-course 120 miles due east during the winter. To reach Svalbard, it was now necessary to travel as far in 100 days as they had accomplished to date in just under one year. Nevertheless, as his three companions busied themselves with their scientific work, Herbert laid plans for his fifth and final sledging phase.

Three weeks before sunrise, they set out on 24 February 1969 traveling in near total darkness and navigating first by Venus and then by the Moon. After a painfully slow start, the going steadily got better as they approached the North Pole, which was finally located with some difficulty on 6 April. Herbert had been determined to reach the Pole and in any case wished to avoid the most direct course, which would have taken them too close to the Greenland Sea, exit point for about 80 percent of Arctic ice and an area to keep well clear of. His party’s presence close to the Pole was confirmed on 9 April by a U.S. Air Force weather plane on its daily flight between Europe and Alaska.

From the Pole, Herbert traveled south along the 30°E meridian, intending to make landfall on the Seven Islands, the northernmost islands in the Svalbard Archipelago. The ice conditions continued to be good, and the party regularly exceeded 20 miles a day as they raced to reach land before the pack disintegrated in the summer warmth. Arrangements had been made for them to be met by the British survey vessel HMS *Endurance*, but it was essential for Herbert’s claim to have completed the crossing that he should land somewhere on Svalbard first, rather than simply be picked up by helicopter and flown to *Endurance*. As spring advanced into summer, ice surfaces softened, and leads increased in number. They were running out of time. Then, on 23 May, they saw their first land since

Heroic Era of Antarctic Exploration

The phrase “Heroic Era of Antarctic Exploration” was originally coined by the Reverend J. Gordon Hayes for the purpose of distinguishing earlier from later expeditions covered by his book, The Conquest of the South Pole (1932). In that book, Hayes told the story of Antarctic exploration from 1906 through 1931, intending his publication as the continuation of H. R. Mill’s classic account, The Siege of the South Pole (1905). For Hayes, 1906–1931 was a transitional period; the “era” is enhanced by the reappearance on many expeditions of the same personalities, who, having acquired the taste and skills for polar travel, then volunteered to go south whenever opportunity arose. This was particularly true for the British expeditions, where it speaks well for the quality of leadership. Clearly, an inept or unpopular leader would attract few “returners.” This period also marked the first attempts to venture beyond the coast into the interior of the continent, and it is no accident that the stories of these expeditions—Scott, Shackleton, Roald Amundsen, and Douglas Mawson—are now best known, if one is allowed to include Shackleton’s second expedition, which at least in intention was the most ambitious of all in its plans to cross Antarctica via the Pole. On these epic expeditions, inadequately equipped and often ill-prepared explorers attempted apparently unattainable objectives at the risk of their lives in the harshest environment on Earth. Many kept journals in which they wrote up their daily experiences, lending a freshness to the published accounts and a wealth of manuscript material to provide new perspectives for later writers. That Hayes should have seen parallels between occurrences during these expeditions and the exploits of ancient Greek heroes is understandable and attractive, though it has perhaps led to some undervaluation of the heroism of earlier and later explorers. It is also true that one explorer in particular somehow fails to fit Hayes’s conceptions. Although Scott might appear the very personification of the doomed polar hero, for Hayes, Amundsen’s crossing of the Ross Ice Shelf and polar plateau reads “like an Alpine holiday” (Hayes 1932, 196).

The achievements of “Heroic Era” expeditions were considerable. John Murray’s review and map of 1886 provide the clearest summary of previous knowledge of Antarctica. Nothing was known of the interior, and the only areas of coastline charted to any real extent were the northern tip of the Antarctic Peninsula and the Ross Sea. Although Charles Wilkes had reported 1,500 miles of coast between 160° and 105°E, where Wilkes had charted land, subsequent explorers found only sea. Nevertheless, Murray did include Wilkes’s coastline on his map, along with the landfalls of the sealers John Biscoe and Peter Kemp, though he depicted them as islands, rather than as part of the mainland, following Benjamin Morrell’s claim to have sailed farther south in these longitudes. Comparing this

Alaska. It was Phipps Island, one of the Seven Islands, unreachable beyond a wide band of mush ice and open water. As their small, disintegrating floe was swept past Phipps, they were brought close to Little Table Island (Vesle Tavleøya), and there on 29 May Hedges and Gill managed to scramble briefly ashore to complete the crossing. On 11 June, at 80°26’N, 17°20’E, the four men with their dog teams were airlifted off the ice to Endurance, and their epic journey was over.

So ended the first expedition to cross the Arctic Ocean and the first to reach the North Pole by dogsledge, if the claims of Frederick Cook and Robert Peary are disbelieved. If so, it was only the second expedition to the Pole after Ralph Plaisted’s snowmobile journey of 1968 and the first to be properly documented. The extensive research program was particularly valuable for demonstrating the different age, thickness, and general nature of the ice between areas of the Arctic Ocean dominated by the Transpolar Current and those falling within the influence of the Beaufort Gyre, the latter areas being where older, thicker ice is to be found.

In 1971 Herbert returned to northwest Greenland to live with the Inuit. Six years later he sought unsuccessfully to circumnavigate Greenland for the first time. In all, he spent thirteen years in the Arctic and Antarctic, during which he traveled over 20,000 miles with dog teams. He has subsequently established as a reputation an artist and writer and was belatedly knighted in 2000.

See also: Amundsen, Roald; Antarctic Peninsula; Arctic Ocean; Cook, Frederick (1907–1909); Fuchs, Vivian; Greenland; Hope Bay; Nansen, Fridtjof (1893–1896); North Pole; Peary, Robert (1908–1909); Plaisted, Ralph; Seven Islands; Transantarctic Mountains

References and further reading:

Heroic Era of Antarctic Exploration

The phrase “Heroic Era of Antarctic Exploration” was originally coined by the Reverend J. Gordon Hayes for the purpose of distinguishing earlier from later expeditions covered by his book, The Conquest of the South Pole (1932). In that book, Hayes told the story of Antarctic exploration from 1906 through 1931, intending his publication as the continuation of H. R. Mill’s classic account, The Siege of the South Pole (1905). For Hayes, 1906–1931 was a transitional period; the later expeditions were characterized by their use of machinery—airplanes, motor vehicles, tractors, and so on—not available to the earlier explorers, who had little other than themselves to rely on. As employed by Hayes, the “Heroic Era” began with the departure in 1901 of the first expedition of Robert Falcon Scott. He did not state when it ended, though others have interpreted its end as marked by the death of Sir Ernest Shackleton in 1922. Today, most of those adopting the phrase would extend the “Heroic Era” back to 1895, to the adoption by the Sixth International Geographical Congress of a motion declaring “the exploration of the Antarctic Regions” as “the greatest piece of geographical exploration still to be undertaken” (Mill 1905, 384–385).

There are several reasons for the popularity of the term. In the first place, it does appear that a new era for Antarctica was inaugurated in the late nineteenth century, when, after a period of “averted interest” (Mill 1905, 327), major Antarctic expeditions were dispatched by several European countries within a comparatively short space of time. The feeling of a cohesive “era” is enhanced by the reappearance on many expeditions of the same personalities, who, having acquired the taste and skills for polar travel, then volunteered to go south whenever opportunity arose. This was particularly true for the British expeditions, where it speaks well for the quality of leadership. Clearly, an inept or unpopular leader would attract few “returners.” This period also marked the first attempts to venture beyond the coast into the interior of the continent, and it is no accident that the stories of these expeditions—Scott, Shackleton, Roald Amundsen, and Douglas Mawson—are now best known, if one is allowed to include Shackleton’s second expedition, which at least in intention was the most ambitious of all in its plans to cross Antarctica via the Pole. On these epic expeditions, inadequately equipped and often ill-prepared explorers attempted apparently unattainable objectives at the risk of their lives in the harshest environment on Earth. Many kept journals in which they wrote up their daily experiences, lending a freshness to the published accounts and a wealth of manuscript material to provide new perspectives for later writers. That Hayes should have seen parallels between occurrences during these expeditions and the exploits of ancient Greek heroes is understandable and attractive, though it has perhaps led to some undervaluation of the heroism of earlier and later explorers. It is also true that one explorer in particular somehow fails to fit Hayes’s conceptions. Although Scott might appear the very personification of the doomed polar hero, for Hayes, Amundsen’s crossing of the Ross Ice Shelf and polar plateau reads “like an Alpine holiday” (Hayes 1932, 196).

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map with *The Times survey atlas of the world* (1922), it is clear that there was a massive increase in knowledge between 1886 and 1922. Although considerable extents of coastline remained unknown, much of the Ross Sea and Antarctic Peninsula had been charted in detail, and new coast discovered on the east side of the Weddell Sea by William Speirs Bruce, Wilhelm Filchner, and Shackleton. Mawson’s Australasian Antarctic Expedition had revisited areas doubtfully charted by Wilkes, now shown in their correct location some way south of where looming mirages had misled Wilkes into placing them. Most notably, across the Ross Ice Shelf two routes headed inland, through the Transantarctic Mountains toward the South Pole, the western route followed by Shackleton and Scott and the eastern by Amundsen. Ross Island, where Scott and Shackleton wintered, was now familiar territory, as was nearby mountainous Victoria Land, together with passes through it leading

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**Expeditions or Major Journeys Undertaken during the “Heroic Era of Antarctic Exploration”**

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to the South Magnetic Pole. When the “Heroic Era” ended in 1922, much still remained to be learned about Antarctica's geography, but the transformation of knowledge from 1886 had been remarkable.

See also: Biscoe, John; Kemp, Peter; Morrell, Benjamin; Wilkes, Charles.

References and further reading:

Herschel Island (Canada)
Located at 69°34’N, 139°00’W and lying 1 mile off the coast of northern Yukon Territory, Herschel Island is the largest island in the Beaufort Sea, despite being no more than 8 miles across. Long utilized by the Inuit as a place to hunt seals in the spring, from the perspective of exploration history it was discovered on 17 July 1826 by John Franklin and named for the astronomer royal Sir William Herschel (1738–1822).

The island's significance derives from the presence on its southeast coast of Pauline Cove, a natural deepwater harbor protected from the prevailing northerlies and drifting ice and the only sheltered anchorage between Point Barrow and the Mackenzie Delta. The American whaling fleet had long sought to exploit the rich whaling grounds of the eastern Beaufort Sea but had been prevented from doing so by the shortness of the navigation season off northern Alaska. Once aware of Pauline Cove, whaling captains chose to winter at Herschel Island, the first ships to do so being Mary d. Hume and Grampus in 1890–1891. A period of intense exploitation followed, leading to a rapid decline in the numbers of bowhead whales and to the demise of the local whaling industry in 1907. A Royal Canadian Mounted Police (RCMP) post was opened in 1904. After years of sporadic operation, it finally closed in 1964.

The presence of the whalers and Pauline Cove made Herschel Island the natural logistics center for expeditions exploring the western Arctic during the late nineteenth and early twentieth centuries. Ejnar Mikkelsen intended to winter here during his search for land in the Beaufort Sea but was unable
to get beyond Flaxman Island. Vilhjalmur Stefansson was the only member of the expedition to reach Herschel Island, and it was here that he met Roald Amundsen in 1906 on his way through the Northwest Passage. It was here that Stefansson first learned of the "blond Inuit" of Victoria Island from whalers. He visited the island two years later on his own expedition, hoping for supplies but getting little from the suspicious RCMP commander. This did not prevent him planning to base his Canadian Arctic Expedition here, if he was unable to get farther north in 1913. As it turned out, Karluk became beset farther west before being wrecked off Herald Island in the Chukchi Sea. Before joining the RCMP, Henry Larsen was employed as navigator of a local schooner between 1922 and 1928.

See also: Amundsen, Roald (1903–1906); Bartlett, Bob; Beaufort Sea; Franklin, John (1825–1827); Larsen, Henry; Mikkelsen, Ejnar (1906–1908); Stefansson, Vilhjalmur; Whaling and Arctic Exploration

**Hillary, Edmund**

(1919–)

Best known for his mountaineering achievements, the New Zealander Sir Edmund Hillary also made a notable contribution to polar exploration. Having achieved the first ascent of Mount Everest—often referred to as the “Third Pole”—Hillary led the New Zealand party during the Commonwealth Transantarctic Expedition of Sir Vivian Fuchs. Hillary being Hillary, he was not content with the modest task of laying depots in support of Fuchs’s crossing party but, against his leader’s wishes, insisted on driving his farm tractors to the South Pole itself.

Edmund Percival Hillary, a beekeeper from Tuakau, North Island, New Zealand, rocketed to international fame when his conquest of the world’s highest mountain with the Sherpa Tenzing Norgay was announced on 2 June 1953, the Coronation Day of Queen Elizabeth II. Hillary participated in numerous other expeditions to the Himalayas and established a charitable trust in aid of their Sherpa inhabitants, but soon after climbing Everest, he declared his interest in mounting an expedition to the Ross Dependency, the large sector of Antarctica placed under New Zealand jurisdiction in 1923 that had remained unvisited by any New Zealand expedition.

**Hillary Races Fuchs to the South Pole, 1956–1958**

In late 1953, Hillary had met Fuchs in London, where Fuchs had taken the opportunity of outlining his plans to cross Antarctica and expressed the hope that New Zealand would assist by organizing a support expedition to the Ross Sea. Fuchs believed that with the popular Hillary as leader, his expedition would have an excellent chance of winning support from New Zealand’s government and people. This indeed proved to be the case: New Zealand set up the Ross Sea Committee in 1955 to take charge of arrangements, the committee’s first action being to appoint Hillary as leader.

Fuchs’s overall plan was essentially similar to that of Sir Ernest Shackleton’s abortive Imperial Transantarctic Expedition of 1914–1916, with Hillary’s role replicating that of the Ross Sea party of Aeneas Mackintosh. There were, however, a number of significant differences. Fuchs’s crossing party would travel in heavy motor vehicles. Since it was unlikely that they would be able to negotiate their way down the intensely crevassed Beardmore Glacier, Fuchs would take a less direct route from the South Pole, descending through the Transantarctic Mountains at one of the less precipitous glaciers in Victoria Land, probably the Ferrar Glacier, up which members of Robert Falcon Scott’s first expedition had first climbed to the polar plateau. Hillary’s task was to find a suitable route through the mountains and to lay two depots inland across the plateau at 80°S and 83°S. To Hillary, this appeared to be a tough but not particularly demanding objective, and from early on, he made suggestions that once these depots had been established, he might go on to the Pole. He received no encouragement from Fuchs or the Ross Sea Committee but decided in any case to make his plans on this basis.

Hillary was familiar with ice; indeed, he was particularly noted for his expertise as an ice climber, but he had never seen sea ice and had no experience of Antarctic conditions. Fuchs therefore invited him, his second-in-command J. H. Miller, and senior pilot Squadron Leader J. R. Claydon to join Theron’s voyage in 1955 to set up Shackleton Base on the southern coast of the Weddell Sea. At the same time, with the help of the Americans engaged in Operation Deep Freeze, Dr. Trevor Hatherton scouted out possible sites for Scott Base, which was to be established by Hillary in McMurdo Sound. Back in New Zealand, the Ross Sea Committee expanded its original plans so that instead of simply laying depots in support of Fuchs’s crossing party, Hillary was to be accompanied by five scientists led by Hatherton. They would conduct research at Scott Base as New Zealand’s contribution to the International Geophysical Year.

On 21 December 1956, Hillary sailed south in HMNZS Endeavour, reaching McMurdo Sound on 3 January 1957. In addition to the crew and twenty-three-man wintering party, Endeavour carried sixty dogs, two aircraft (a Beaver and an Auster), two Weasels, and five Ferguson tractors. A brief inspection of the Ferrar Glacier showed it to be impassable, with deep channels cutting through its lower sections. Another glacier and another site for Scott Base would have to be found. The latter proved encouragingly straightforward, with the help of American advice to try Pram Point on Ross Island. It would do nicely. Deciding that the Skelton Glacier offered the most likely alternative route up to the plateau, Hillary and Claydon took off in the Auster. The glacier’s surface looked promising, and Claydon decided to land. In fact, it was covered with sastrugi, over which the plane lurched from ridge to ridge until Claydon, by brute force, managed to haul it into the air again. A crash there would almost certainly have been fatal. Soon afterward a better landing place was
located, to where four expedition members, eighteen dogs, equipment, and provisions were flown to establish a depot. This party then began to make its way up the glacier and laid a second depot at the top. Meanwhile, another party reconnoitered a route from Scott Base to the foot of the Skelton Glacier. Great progress had been made toward establishing a route for the crossing party, with a proven trail and well-stocked depots 180 and 290 miles from Scott Base, all accomplished during the first sledging season.

With much depending on the effectiveness of the Ferguson tractors, Hillary decided to make a test journey with two of them to Cape Crozier in mid-March, accompanied by radio operator Chief Petty Officer Peter Mulgrew and mechanics Jim Bates and Murray Ellis. Much was learned about the functioning of the tractors in thick snow and intense cold, and at Cape Crozier they found the remains of the stone hut where Edward Wilson's three-man party had camped in 1911 during "the worst journey in the world."

Through the winter, plans were laid for the coming season. In addition to Hillary's party, which would lay Depot 480 at 80°S and Depot 700 at 83°S, 480 and 700 miles from Scott Base, respectively, separate dog teams would be sent to explore the Transantarctic Mountains west of the Beardmore Glacier and Victoria Land. Half tongue-in-cheek, Hillary even suggested to the Ross Sea Committee that after stocking Depot 700, he would make for the Pole of Inaccessibility, where the Soviets were planning to establish a station. His real target, however, remained the South Pole. Apart from establishing Depots 480 and 700, most of these plans were turned down by the Ross Sea Committee, whose instructions Hillary had by that time, in any case, decided largely to ignore. With the experiences of the Cape Crozier journey in mind, a caravan on skis—or "caboose"—was built. Installed with bunks, radio, and cooking equipment, it could be pulled behind the tractors to provide a measure of comfort.

Hillary set out on 14 October 1957 with Ellis, Mulgrew, and Dr. Ronald Balham (meteorologist and biologist), in three tractors and a Weasel to reach the lower depot on the Skelton Glacier six days later, where two days were spent repairing the Weasel. Now in company with the dog teams of Miller and medical officer Dr. George W. Marsh to scout out a path up the glacier, and with Bates replacing Balham, Hillary proceeded up the Skelton Glacier to reach the plateau depot on 31 October. Injuries to Ellis and Mulgrew forced him to delay here until 11 November, when replacement drivers Derek Wright and Ted Gawn were flown in. They were now at a considerable elevation and made very slow progress—just 35 miles in the first week—as the tractors sank deeply into the very soft snow. The vehicles struggled to keep going, with constant breakdowns and vast consumption of fuel. Gradually, however, conditions improved, and on 25 November they reached an area where a plane might land. Here, Depot 480 was established at 79°51'S, 148°E, 210 miles on from the plateau depot. Hillary's tractor party was joined soon afterward by Miller and Marsh with the dog teams and then by Ellis and Mulgrew, who were flown in together with further supplies from Scott Base. With Miller and Marsh going on ahead again with the dogs, Hillary set off on 6 December with his preferred "Old Firm" of drivers—Bates—Ellis, and Mulgrew—with whom he had made the journey to Cape Crozier. The going was much improved, and 93 miles were covered in the next two days. Now the Weasel broke down, and its load had to be divided up among the three tractors. The next 90 miles were considerably more difficult, but by 15 December they had reached the site for Depot 700, where the dog teams were waiting for them.

According to Fuchs's plans and instructions from the Ross Sea Committee, Hillary should now turn back, either to Scott Base or to join Miller and Marsh in the mountains, or he should remain at the depot for several weeks to ensure that it was found by Fuchs. None of these alternatives suited Hillary. Waiting five days for further provisions to be flown in by Claydon in the Beaver, he held a meeting with the "Old Firm." He told them that he intended to make for the Pole, if necessary alone, and appealed to them to come with him. Mulgrew was interested. Bates and Ellis were concerned that the tractors might not be able to make the additional 500 miles but nevertheless agreed
to come. Wright also joined the party as photographer and reserve driver. On 20 December, they set out for the Pole. Fuchs had yet to reach South Ice on the far side of the continent.

As Hillary’s party made rapid progress toward the Pole, Fuchs sent a message informing him that the crossing party might need him to make a further fuel depot. Hillary had received very little communication from Fuchs, and this message was unexpected. Having left generous supplies of fuel at the depots, he had sufficient fuel either to get to the Pole or to return to Depot 700. Creating another depot was not an option. Hillary’s response was to suggest that if Fuchs could not guarantee making Depot 700 from the Pole, then he should remain there to resume his journey the following year. This exchange of messages was overheard by journalists and led to newspaper headlines around the world.

On 4 January 1958, Hillary’s party of three farm tractors reached the Pole, the first party using motor vehicles to do so and the first party to do so overland since Scott. Fuchs arrived fifteen days later. The two were photographed shaking hands, and then, before Hillary flew back to Scott Base, arrangements were made for him to join the crossing party at Depot 700. That he did on 9 February. Unsurprisingly, he received a cool but polite welcome and spent most of his time traveling in the back of a Sno-Cat, until he was called upon to find the route down the Skelton Glacier.

Fuchs and Hillary were chalk and cheese. Two more different men it would be hard to imagine. Both proved themselves highly effective expedition leaders, but Hillary was no loyal subordinate. His was the first New Zealand Antarctic expedition. He had done much of the fund-raising, and it is doubtful whether New Zealand support would have been quite so generous without his involvement. It was not just for his own sake that he wanted a memorable objective for his country’s first expedition. Yes, he enjoyed the adventure and most likely gave little thought to the consideration that by beating Fuchs to the Pole, he might remove some of the luster from the crossing party’s achievement. Surely, he reasoned, making the first continental crossing was achievement enough, and for Fuchs, the South Pole was just a stop on the way. Fuchs never criticized Hillary in print. Hillary, unfortunately, was less reticent. As with Scott and Shackleton, one can side with Fuchs or Hillary, but to do so does justice to neither. The Commonwealth Trans-Antarctic Expedition was big enough for both men to accomplish their dreams.

See also: Fuchs, Vivian; International Geophysical Year; Mackintosh, Aeneas; New Zealand; Operation Deep Freeze; Ross Dependency; Ross Island; Scott, Robert Falcon (1910–1912); South Pole; Transantarctic Mountains; Wilson, Edward

References and further reading:


Hoel, Adolf (1879–1964)
The reputation of the Norwegian scientist, explorer, and patriot Adolf Hoel is clouded today by memories of his role as a collaborator with German forces occupying Norway during World War II. When the rector of the University of Oslo was dismissed by the Germans in 1941, Hoel allowed himself to be appointed acting rector and then rector. After the war, he was arrested and charged with treason. Unlike others, he did not face the death penalty, and his long, faithful service to his country was recalled in his favor. Not surprisingly, however, this episode overshadowed his earlier achievements, when he had labored hard to establish a “greater Norway” with possessions in Svalbard, East Greenland, Franz Josef Land, and Antarctica.

Until 1905, Norway was one-half of a dual kingdom with Sweden, ruled over by the Swedish king. Soon after achieving full independence, the Norwegian government organized annual expeditions to Svalbard, which Norwegian scholars believed to have been discovered by the Norse in 1194. For the young Vikings of new Norway, the era of Norse discovery and colonization set the mark against which they must themselves be measured. After centuries of subservience to Denmark and Sweden, men such as Hoel recalled that in 1261 King Håkon Håkonsson had declared Norwegian sovereignty over the entire polar sea and that their compatriots had explored and established colonies across the North Atlantic to Greenland and North America.

A Scientist-Explorer Seeks to Restore Norway’s Historic Polar Empire, 1911–1938
Hoel’s first visit to the Arctic was as a geological assistant on Gunnar Isachsen’s expedition to Svalbard in 1907. After working in Svalbard as a geologist during the next three years, in 1911 he was appointed joint expedition leader with Arve Staxrud and sole leader in 1915. Apart from 1917 and 1918, when Sverre Røvig assisted as joint leader, Hoel was responsible for all Norwegian expeditions to Svalbard until 1938. Under the terms of the Spitsbergen Treaty (1920), sovereignty over Svalbard was vested in Norway. This sovereignty, however, was conditional and did not exclude nationals of other countries from accessing its resources and conducting scientific research. Hoel worked hard to ensure that Norway, a small country with limited resources, maintained a scientific presence in the archipelago and that sovereignty was not abandoned by default. In 1928, Norske Statunder støttende Spitsbergenekspeditioner (Norwegian State-Supported Spitsbergen Expeditions) was reorganized as Norges Svalbard- og Ishavs-Undersøkelser (Norwegian Scientific Exploration of Svalbard and the Polar Regions) (NSIU). This change of name...
reflected a wider role for Norway’s Arctic expeditions. Although remaining primarily concerned with the topographic, hydrographic, and scientific study of Svalbard, Hoel now extended his work to East Greenland, Jan Mayen, Franz Josef Land, and Victoria Island, with all of which Norway claimed historic association.

Franz Josef Land had arguably been discovered by the Norwegian walrus hunter Nils Fredrik Rønnbeck in about 1865. Certainly, Norwegian sealers and hunters had mounted regular expeditions there long before it was annexed as Soviet territory in 1926. The Soviet claim was disputed by Norway, which held the archipelago to be Terra nullius (No man’s land). Concern that the Soviet Union might refuse access to Norwegians led NSIU to organize an expedition in 1929, sponsored by the whaling entrepreneur Lars Christensen, with the intention of erecting a meteorological station. Such stations had already proved effective in demonstrating Norway’s interests in East Greenland (see below). In any event, the Norwegian expedition was unable to reach Franz Josef Land through heavy ice, whereas the Soviets succeeded in building a station on Hooker Island. The next year, Gunnar Horn was sent to annex Victoria Island, where a hut was erected to mark Norwegian occupation, and several landings made on Franz Josef Land in defiance of a ban on foreign access now being applied by the Soviet Union. Although Hoel and other activists were eager to continue their protests, the Norwegian government took the view that it was wiser to appease its powerful neighbor by accepting annexation as an accomplished fact. The same policy was followed in 1932, when the Norwegian claim to Victoria Island was ignored and this island, too, claimed for the Soviet Union.

For accounts of Norway’s dispute with Denmark over East Greenland, see the entries for those countries. The areas affected were primarily King Christian X Land and King Frederik VI Coast, where Norway announced claims to “Eirik Raude Land” (71°30’–75°40’N) and the “Southern Coasts” (60°30’–63°40’N) in 1931 and 1932. Norway had maintained meteorological stations there since 1922, but from 1929 NSIU was charged with conducting a more active policy, undertaking scientific and survey work in addition to annual resupply of the stations. High priority was also given to constructing huts for use by Norwegian hunters, nineteen being erected in Franz Josef Fjord, King Oscar Fiord, and adjacent areas in 1930 alone. Hoel led the annual expeditions to Greenland whenever he could (1930, 1931, 1933, 1936). In other years leadership was delegated to Anders Orvin (in 1929 and 1932) and Gunnar Horn (1932). Helge Ingstad, newly appointed administrator of “Eirik Raude Land,” accompanied Orvin in 1932 when a Lockheed-Vega airplane conducted an aerial survey, during which 2,000 photographs were obtained and 375 flying hours logged. As part of Norway’s contribution to the Second International Polar Year, new stations were opened at Torgilsbu, Storfjord, and Jonsbu, in addition to the two existing stations at Finnsbu and Myggbukta. Despite the International Court of Justice ruling against Norway’s territorial claim earlier that year, Hoel went ahead with NSIU’s expedition in 1933. NSIU continued to mount expeditions until the outbreak of World War II, though after 1933 they were primarily concerned with transporting trappers and hunters and with bringing staff and supplies to the two stations remaining open, Myggbukta and Torgilsbu.

Hoel was a member of the Norwegian delegation to the International Court of Justice, and its rejection of Norway’s claim came as a great personal disappointment. In 1936 and 1938, he secured funding to conduct the first air survey of Svalbard, an important national achievement given that previous exploration had been dominated by non-Norwegians. He was also prominent in the campaign to ensure that Norwegian claims to Queen Maud Land in Antarctica were accorded official recognition by Royal Decree on 14 January 1939. It was only just in time, forestalling by five days the first claims to the same region made on behalf of Germany by Alfred Ritscher.

Hoel read and spoke German fluently. He frequently traveled in Germany and had many German friends. When writ-
ing of Norway’s right to various regions of the Arctic, he employed the term *lebensraum* (living space), coined by the German geographer Friedrich Ratzel and popular among German politicians to justify that country’s expansion eastward. Hoel's willingness to collaborate following Germany’s occupation of Norway in 1940 may have resulted partly from his long familiarity with German culture and ideas but also from his belief that Norway had been let down by democratic institutions such as the International Court of Justice. Although Hoel was imprisoned, part of his sentence was remitted in recognition that he had acted out of a deep, if misguided, love of his country.

See also: Christensen, Lars; Franz Josef Land; Greenland, East; Jan Mayen; King Christian X Land; King Frederik VI Coast; Norse Arctic Exploration; Norway; Queen Maud Land; Ritscher, Alfred; Svalbard; Victoria Island

References and further reading:

Holm, Gustav

(1849–1940)

To few explorers is it given to discover a previously unknown people. Significant as were his archaeological studies in southwestern Greenland and his exploration of King Christian IX Land, the Danish naval officer and explorer Gustav Holm is rightly best known for his ethnographic observations and collections when wintering with the East Greenland community of Ammassalik. He was later to found a trading and mission station there that provided a base for subsequent exploration of this otherwise exceptionally inaccessible region.

Naval lieutenant Gustaf Frederik Holm first came to Greenland in 1876 as an assistant on Knud J. V. Steenstrup's primarily geological and glaciological expedition to Julianehåb, one of the southernmost communities in West Greenland. In 1881, Holm returned to this area to conduct an archaeological survey of Norse remains. Today, it is recognized as the site of the ancient Eastern Settlement, a fact that Holm's survey and later explorations did much to prove, but at the time many were still misled by its name into thinking this settlement must have been on the east coast. Holm's expedition was organized by the recently established Commission for the Direction of Geological and Geographical Investigations in Greenland, which also sponsored his later visits.

In the following year, Holm returned to southern Greenland, accompanied by the botanist Poul L. P. Sylow. Landing at Pamiagdluk (Ilua) on 1 July 1882, more or less at the southern tip of West Greenland, they made their way through Ikerasak and Ikak Sounds around Itivdleq Island, the island on which Cape Farewell is to be found, to reach the east coast at about 60°N. Heading north, they soon reached the entrance to Prince Christian Sound before proceeding on to Lindenow Fjord. On their return journey, Holm and Sylow became the first Europeans to land on Cape Farewell.

The Discovery of Ammassalik, 1883–1885

The objective of Holm's most famous expedition, popularly known as the Danish Women's Boat Expedition, was to explore and survey the southeast coast of Greenland, previously visited by Wilhelm Graah in 1828–1831. Holm's task was to continue on beyond Graah's farthest point at Dannebrog Island (65°15'N) to an Inuit community reported as lying some way farther north. In addition to conducting a topographic survey, he was to carry out a range of scientific studies. Holm was accompanied by second-in-command Lieutenant Thomas V. Garde (surveyor and meteorologist), Hans Knutsen (geologist), Peter J. A. C. Eberlin (geologist and botanist), and interpreters Hendrik and Johan C. C. Petersen.

The expedition was again sponsored by the Commission for the Direction of Geological and Geographical Investigations in Greenland.

From 1877 to 1879, the Danish naval vessels *Fylla* and *Ingolf* had conducted exploratory voyages in Denmark Strait in preparation for Holm's coastal survey but learned little. On 14 June 1883, Holm's six-man party reached Godthåb in the Royal Greenland Trading Company vessel *Ceres* before sailing south to arrive at Nanortalik on 18 July. Since Holm planned an extended journey along the east coast, he determined that he would use this first season for the purposes of reconnaissance and the laying of a depot, which was placed at the entrance to Danell Fjord (ca. 61°N), before the party returned to winter at Nanortalik.

On 5 May 1884, Holm set out again, accompanied by thirty-one Greenlanders. Like Graah before him, Holm had chosen as his main form of transport the umiak, or women's boat, while the Inuit men rowed alongside in kayaks. Thus, while the women provided motive force, the men would assist in feeding the expedition through their hunting. After a difficult journey, they reached Tingmiarmiut at 62°30'N on 28 July. From there, Garde and Eberlin were sent back in an umiak to survey the coast between Tingmiarmiut and Illulissat before returning to winter at Nanortalik, while Holm and the others continued on in the two remaining umiaks. On 28 August, they landed on Dannebrog Island, Graah's farthest north, managing in just one day to cross the ice-filled bay that had stopped their predecessor. Across this bay was Sermilik Fjord and the Inuit settlement of Ammassalik, where they arrived on 1 September. Having concluded that wintering there would provide him with the best opportunity of studying the customs of a people not previously in contact with Europeans, Holm decided to make use of the remaining open water season by heading as far north as possible. At Erik the Red Island
Holm, Gustav

(65°45’N), he took possession of the land he had explored, naming it King Christian IX Land, before reaching his farthest north at Sermiligaaq (65°52’N). By 30 September, he was back at Ammassalik.

Holm’s party had been led to Ammassalik by Ilinguaki, a native of Sermilik, who was returning home from the south. With his assistance, good relations were soon established with the local Inuit, who rejoiced in the gifts that Holm had brought with him. Although no previous Europeans had visited Ammassalik, its inhabitants were aware of the Danish colonies on the west coast, which East Greenlanders occasionally visited to obtain luxuries otherwise unavailable to them. Mirrors, watches, and guns were all unknown, as were a magnifying glass and matches, though the usefulness of the latter was immediately appreciated. To provide accommodation through the winter, a house was built out of turf and stone for Holm and his companions, who included six women rowers. Several heavy pieces of driftwood were placed on top to form a roof, together with broken staves from their battered umiak. Holm, Knutsen, and the interpreter Johan lived in one room. The Inuit occupied a second. A third, central room served as a provision chamber and storeroom and consisted of a long, narrow passageway leading out into the open. It was rudimentary but sufficient for their needs. During the ten months that Holm remained at Ammassalik, he had ample opportunity to observe Inuit customs, making detailed notes of what he saw. Inuit from the surrounding localities came frequently to the house to barter for food, ironware, tobacco, and beads. In return, they supplied objects frequently of ethnographic interest, which Holm later brought back to the National Museum of Denmark. Such visits also provided opportunity for anthropological measurements to be made of head sizes and shapes, height, weight, and other physical characteristics. There was no sign of the remains of any structures attributable to the Norse and no memory among the Inuit of any such people ever inhabiting East Greenland.

On 9 June 1885, Holm set out on his return journey. Meeting Garde and Eberlin at Uummannaq (Griffenfelds Island), from there they traveled back together to Nanortalik, where they arrived on 18 August. In addition to discovering King Christian IX Land, Holm brought back to Denmark fine natural history collections, meteorological data from Nanortalik and Ammassalik, and the irreplaceable ethnographic collections.

Before leaving, Holm had promised the inhabitants of Ammassalik that one day Europeans would return to build a mission to look after their spiritual welfare and ensure that
they no longer suffered from famines. It took ten years of petitioning the Danish government to establish a colony before this promise could be fulfilled. In 1894, Holm returned to find a mission and trading station, which served as an essential logistics center for all later expeditions exploring southeast Greenland. The first to be based here was led by Georg Amdrup in 1898–1899.

See also: Amdrup, Georg; Graah, Wilhelm; Greenland, East; King Christian IX Land

References and further reading:

Hooker Island (Franz Josef Land)

Located at 80°15'N, 53°00'E, this largely ice-covered island is the westernmost of those forming the central-southern section of Franz Josef Land. It is separated from Northbrook Island and George Land to its west by the British Channel and was discovered in August 1880 by Benjamin Leigh Smith who named it for the eminent botanist Sir Joseph Hooker. The official Russian name is Ostrov Gukera.

Because Hooker Island lies on the sledging route north from Northbrook Island, parties from several expeditions based at Cape Flora made their way past or across it, beginning with Frederick Jackson, who made his very first journey here to establish a depot in March 1895. Members of Anthony Fiala’s expedition routinely crossed the island after Fiala led his expedition the island to a hut left behind by an earlier expedition.

Although others had previously noted the excellent natural harbor on the island’s west coast, the first to anchor there was Georgiy Sedov, when ice in British Channel prevented him from reaching Rudolf Island farther north. Landing on 1 October 1913, he named the anchorage Tikhaya Bay (Calm Bay), grateful that the relative stability of its ice through the winter had enabled his ship St. Foka to escape without damage. On 15 February 1914 Sedov set off for the Pole, never to return.

The scientific studies begun by members of Sedov’s expedition provided the foundation for later research, when Dr. Otto Schmidt selected Hooker Island as the most suitable location for a station in Franz Josef Land. On 29 August 1929, the scientific and radio station Tikhaya Bay (80°12'N, 52°29'E) was established by the icebreaker Sedov. The opening of this station, the first anywhere in the archipelago, was not least a significant political gesture designed to demonstrate Soviet sovereignty, then disputed by Norway and Italy. Seven men overwintered the first year and nine the next. In 1931, Hugo Eckener’s airship Graf Zeppelin landed briefly to exchange mail with the Soviet icebreaker Malygin. In the same year, facilities were extended by the addition of a magnetic observatory in preparation for the Second International Polar Year, when fourteen men led by Ivan Papanin wintered here. Staff manning the station remained unrelieved and unsupplied throughout World War II. When the icebreaker Joseph Stalin finally reached them in 1945, only some of the party were taken off, leaving the remainder to spend their sixth consecutive winter in the Arctic. Between 1949 and 1952, the Arctic Institute of Leningrad conducted a major research program into the potential use of ice caps as military airfields. In 1958, the weather station was moved to Hayes Island. At the same time, other activities were also reduced, and the station closed in 1959. In recent years, it has been operated as an occasional summer station by scientists from the Murmansk Marine Biological Institute, Norwegian Polar Institute, and the Polish Academy of Sciences.

See also: Eckener, Hugo; Fiala, Anthony; Franz Josef Land; International Polar Year; Jackson, Frederick (1894–1897); Papanin, Ivan; Sedov, Georgiy; Schmidt, Otto; Smith, Benjamin Leigh (1880)

References and further reading:

Hope Bay (Antarctic Peninsula)

Located at 63°23'S, 57°00'W at the tip of the Trinity Peninsula, Hope Bay possesses one of the very few harbors on the Antarctic continent in a region where the normal coastline is sheer rock or ice. Its potential as a site suitable for leaving a depot or wintering was first noted by Otto Nordenskjöld’s Swedish Antarctic Expedition in 1902, and the glacier leading up behind the bay was named “Depot Glacier” in consequence. The following year, three members of the expedition—Dr. J. Gunnar Andersson, Lieutenant Samuel A. Duse, and seaman Toralf Grunden were forced to winter from 11 March to 28 September 1903, erecting their tent within a hut crudely fashioned out of loose stones and roofed by a sledge and old ship tarpaulin. “To keep hope alive,” they chose the name “Hope Bay” (see Andersson, Gunnar).

The subsequent history of exploration at Hope Bay is also not without incident. After Nordenskjöld’s expedition, the first to visit was Olof Gyldén’s Swedish relief expedition, which carried out ornithological studies here after first establishing that
Nordenskjöld had been rescued by Uruguay. In 1920–1922, John Cope planned to sledge south from here along the Antarctic Peninsula but was prevented by pack ice from landing in Antarctic Sound. Ice conditions also obstructed the first attempt of the British covert wartime Operation Tabarin to establish a base in 1944. A second attempt the following year was more successful, with Base D opened on 12 February 1945. Until its closure in 1964, this base established a reputation as the great sledging center among British stations, being—unlike most other bases—not sited on an isolated island or constrained by restricted access to the continental interior. From August 1945, sledging trips were undertaken south to James Ross, Snow Hill, and Seymour Islands, and routes were pioneered to the plateau running along the top of the Trinity Peninsula. In 1947, a Falkland Islands Dependencies Survey (FIDS) party traveling south from Hope Bay along the east coast of the Antarctic Peninsula met up with a joint FIDS-Ronne party sledging north from Stonington Island, after an epic seventy-one-day journey during which 200 miles of new coastline were surveyed. On 8 November 1948, Base D was destroyed by fire. Two men died—Dick Burd and Mike Green—and the station was evacuated. When the British returned in February 1952, they found that in their absence the Argentine meteorological station Esperanza had been set up in December 1951. Shots were fired by Argentines over the heads of the FIDS survey team, provoking a serious diplomatic incident between Great Britain and Argentina. The British base was nevertheless reopened in February 1952 and a second Argentine station built in 1953, the latter operating for a few years only. Despite this unfortunate occurrence, in general Argentine and British personnel maintained good relations, and the British long-distance sledging expeditions on occasion received valuable air support from the Argentines. After 1964, the British base was occupied only periodically through the summer, until it was finally transferred to Uruguay in 1997 and renamed Teniente Ruperto Elichiribehety. Esperanza remains an important Argentine station conducting a significant scientific program, with sufficient accommodation for forty-two in winter and nearly 100 in summer. On 7 January 1951 they found that in their absence the Argentine meteorological station Esperanza had been set up in December 1951. Shots were fired by Argentines over the heads of the FIDS survey team, provoking a serious diplomatic incident between Great Britain and Argentina. The British base was nevertheless reopened in February 1952 and a second Argentine station built in 1953, the latter operating for a few years only. Despite this unfortunate occurrence, in general Argentine and British personnel maintained good relations, and the British long-distance sledging expeditions on occasion received valuable air support from the Argentines. After 1964, the British base was occupied only periodically through the summer, until it was finally transferred to Uruguay in 1997 and renamed Teniente Ruperto Elichiribehety. Esperanza remains an important Argentine station conducting a significant scientific program, with sufficient accommodation for forty-two in winter and nearly 100 in summer. On 7 January 1951 they found that in their absence the Argentine meteorological station Esperanza had been set up in December 1951. Shots were fired by Argentines over the heads of the FIDS survey team, provoking a serious diplomatic incident between Great Britain and Argentina. The British base was nevertheless reopened in February 1952 and a second Argentine station built in 1953, the latter operating for a few years only. Despite this unfortunate occurrence, in general Argentine and British personnel maintained good relations, and the British long-distance sledging expeditions on occasion received valuable air support from the Argentines. After 1964, the British base was occupied only periodically through the summer, until it was finally transferred to Uruguay in 1997 and renamed Teniente Ruperto Elichiribehety. Esperanza remains an important Argentine station conducting a significant scientific program, with sufficient accommodation for forty-two in winter and nearly 100 in summer.

See also: Anderson, Gunnar (1902–1903); Antarctic Peninsula; Antarctic Sound; Argentina; British Antarctic Survey; Cope, John; Nordenskjöld, Otto; Operation Tabarin; Trinity Peninsula; Uruguay

References and further reading:

Hope Island (Svalbard)
Located at 76°20'N, 25°E, this isolated narrow island—23 miles long and 1 mile across—lies southeast of Edge Island in the Svalbard Archipelago. It was discovered in 1613 by an English whaling expedition, most probably by Thomas Marmaduke. If so, its name is most likely a corruption of that of his ship, Hopewell. The official Norwegian name is Hopen. The island’s position was first accurately fixed by Emil Bessels on a German sealing and exploring expedition on Albert in 1869. Heavy swell makes the island generally difficult to land on. The first landing for scientific purposes was made by Albert I, Prince of Monaco, in 1898, but given the island's position, that was likely to have been long preceded by visits by polar bear and walrus hunters. Sivert Tobiason, for example, is known to have hunted around the island in 1871 and may well have made an undocumented landing.

During World War II, two secret meteorological stations—Svarstis (1943–1944) and Helhus (1944–1945)—were maintained by Germany. The Norwegian meteorological station was opened in 1945. Scientists from the Norwegian Polar Institute have conducted research here since 1948.

See also: Svalbard; Whaling and Arctic Exploration

References and further reading:

Hoseason Island (Palmer Archipelago, Antarctic Peninsula)
Located at 63°44'S, 61°41'W, this small island, at 6 miles long by 3 miles wide, is one of the most northerly members of the Palmer Archipelago. Although possibly preceded by sealers, the first recorded landing was made by Henry Foster on 17 January 1829, who took possession of the island for Great Britain and named it for James Hoseason, first mate of the British sealer Sprightly (1824), who surveyed the Hughes Bay area of the Antarctic Peninsula nearby.

See also: Foster, Henry; Palmer Archipelago; Sealing and Antarctic Exploration

Hudson Bay (Canada)
This very large inland sea—316,000 square miles—is joined to the Atlantic Ocean through Hudson Strait. It is named for Henry Hudson, its assumed discoverer in 1610, though it may have been reached by Gaspar Corte-Real in 1501 or—more likely—Sebastian Cabot in 1508–1509. Evidence for the latter is provided by several maps predating 1610, which appear to show an inland sea in approximately the correct location. The 1537 globe of Gemma Frisius shows not just the bay but also details of its coastline and islands, suggesting thorough investigation. An inlet at 60°N is depicted by Gerard Mercator (1569) as “Golfam de Merosro” and by Abraham Ortelius (1570) as “Baia dos Medaus.” The bay also appears on the world map of Peter Plancius (1594). The significance of these depictions remains disputed, but if they preserve genuine knowledge, they would seem to confirm claims made by Cabot concerning a voyage for which there is little other evidence.
Hudson himself believed that he had reached the Pacific Ocean, not an inland sea. In consequence, early-seventeenth-century maps use the name “Button's Bay” in honor of Thomas Button's discovery of the west coast in 1612–1613, thus proving that what had been discovered formed a bay. Maps of this date show “Hudson's Bay” where Hudson wintered, that is, the bay known today as James Bay for Thomas James, who wintered there in 1631–1632. Current nomenclature was established by the widespread popularity of James's book, in which he referred to the bay where he and Hudson had stayed as James Bay and the inland sea as a whole as Hudson Bay.

Hudson, Button, James, and other seventeenth-century navigators explored Hudson Bay not for itself but in the hope of finding the Northwest Passage. When Hudson's mutineers returned to London in 1611, they announced that they had discovered the passage. Merchants clubbed together to form the Northwest Company, and three expeditions in succession were organized through Hudson Strait, beginning with Button and ending with Robert Bylot in 1615. With William Gibbons unable to get beyond the strait and Bylot exploring Foxe Channel to the north of Southampton Island, Button alone contributed to knowledge of Hudson Bay. Jens Munk found little new during his disastrous expedition of 1619–1620. Luke Foxe and Thomas James charted the southern coast in 1631. The short season during which Hudson Strait is navigable meant that, with the notable exception of Foxe, expeditions tended to reach the bay too late in the year to do much exploration and were therefore forced to winter. Several then experienced heavy loss of life from the unexpectedly cold winters, scurvy, and in some cases (Button and Munk) probably trichinosis.

The history of the bay is dominated between 1670 and 1869 by the Hudson's Bay Company (HBC). Its foundation followed a successful fur-trading voyage by Pierre Radisson and Médard des Grosseilliers in Nonsuch in 1668–1669. Trading posts were established at strategic locations along the south coast, and a profitable trade developed with the local Indians. Although HBC's charter included the obligation to continue the search for the Northwest Passage, once suitable sites were found for the stations, little further exploration was attempted until 1719, when James Knight led a disastrous expedition along the west coast in search of the passage. The search was later continued by Christopher Middleton, who discovered Wager Bay in 1742, and William Moor, who found Chesterfield Inlet in 1747. The latter was sought for in vain by several HBC vessels before being finally relocated by William Christopher in 1761.

Although the process of charting the west coast began with Button in 1612–1613 and that of the south coast with Foxe and James in 1631, the east coast was not mapped until the mid-eighteenth century. For early navigators visiting the bay to search for the Northwest Passage, the east coast was naturally of no interest. The annual HBC supply voyages avoided persistent ice offshore by following a course far from land. Not until 1739, when Indians reported three large lakes as occupying much of northern Labrador, did the HBC consider organizing an expedition there in the hope of discovering a route leading through to the Atlantic Ocean, allowing their vessels to avoid difficult Hudson Strait. Thomas Mitchell achieved little in 1744, the main work being accomplished five years later by William Coats.

Thus, by 1750, the bay's coastlines were known, and little further exploration remained to be done. Albert Low wintered at Fullerton Harbour, north of Chesterfield Inlet, in 1903–1904, when establishing the Royal Canadian Mounted Police post. Knud Rasmussen pursued ethnographic studies among the Caribou Inuit of Keewatin in 1922 and sent his colleague Kaj Birk-Smith along the length of the coast to Churchill the following year to continue his research among the Chipewyan Indians. An extended research program was conducted between 1947 and 1952 by the Canadian Fisheries Research Board, chiefly in the research ketch Calanus. Much of what is known today concerning the bay's oceanography, fisheries, marine mammals, and biology in general derives from these voyages.

See also: Button, Thomas; Bylot, Robert; Cabot, Sebastian; Corte-Real Brothers; Foxe, Luke; Hudson, Henry (1610–1611); Hudson Strait; Hudson's Bay Company; James, Thomas; Knight, James; Low, Albert; Middleton, Christopher; Moor, William; Munk, Jens; Northwest Passage; Rasmussen, Knud (1921–1924)

References and further reading:


**Hudson, Henry**

(ca. 1550–1611)

Most famous for the manner of his death, in which he was cast away by mutineers in a small boat in Hudson Bay to share his fate with his son and loyal members of the crew, the English navigator Henry Hudson made a notable contribution to Arctic exploration. He is indeed unique in the variety of routes he attempted to reach the trading riches of the Far East: directly over the North Pole in 1607 and 1608 and through the Northeast and Northwest Passages in 1608 and 1609 and 1610–1611 respectively. On all his expeditions, he was particularly assiduous in pursuing each possibility until it was proved beyond doubt to offer no chance of a navigable route, and it was this unshakeable resolve that contributed to his own untimely end, one of the most dramatic of all episodes in polar exploration.

**Across the North Pole to Cathay, 1607**

In 1527, Robert Thorne, an English merchant based in Seville, wrote a letter to King Henry VIII of England proposing that the best way to reach Cathay and the Far East lay across the
North Pole. This route was not attempted until 1607, when the Muscovy Company, disappointed by repeated failures to reach Cathay by either Northeast or Northwest Passages, appointed the experienced navigator Henry Hudson to try this direct route.

On 1 May 1607, Hudson sailed from Gravesend, England, in the 40-ton Hopewell, which must have been largely rebuilt after severe damage the previous year on John Knight's ill-fated Northwest Passage voyage. Hopewell was crewed by ten men and a boy. In the hope of making new discoveries, Hudson adopted a westerly course north of Iceland and was rewarded by sighting unknown land at 67°30'N and 73°N on 13 and 20–22 June. It was the east coast of Greenland. “Hold with Hope,” Hudson's more northerly sighting, was probably the eastern termination of a large peninsula known in his honor since as Hudson Land (see King Christian X Land). His own hope of finding open water across to the Pole was disappointed when he met pack ice extending in an unbroken mass east from Greenland. Following this ice northeastward, he made landfall on Svalbard on 27 June, near the northern point of King Charles Foreland. For the next two weeks, Hudson explored the west coast of Spitsbergen, partly from curiosity and partly looking for a way through to the east. He also considered sailing around the archipelago's southern tip to attempt to get north by going farther east. Promising inlets such as Bell Sound and King's Bay were investigated, and many whales were seen, the latter observation soon leading to the establishment of the Arctic whaling industry.

Hudson's next plan was to round the archipelago to the north, reaching his highest latitude at 80°23'N off Hakluyt's Headland on 13 July 1607. This latitude remained the farthest north reached by any ship until Vasily Chichagov achieved 80°28'N in 1766. Having seen land apparently stretching much farther north on 16 July, even Hudson was reluctantly persuaded that there was no possible route to the Pole between Spitsbergen and Greenland. He now implemented his plan of seeking a northern passage to the east of the archipelago, which he would reach by sailing south of it. This was easier said than done, as Hopewell repeatedly battled against contrary winds, eventually leading Hudson to reconsider his course and sail west instead in the hope of sailing north of Greenland and down Davis Strait. That this was impossible soon became apparent from the quantities of ice encountered, while an ice sky above showed just how much more ice lay beyond. Not until 1 August was Hopewell off Bear Island, by which time Hudson had decided to return to England. He reached the Faroe Islands on 15 August. In between these two dates, the British whaling captain Thomas Edge reports him as having discovered the island “Hudsons Tutches.” If Hudson discovered any island at the reported position of 71°N, it must have been Jan Mayen, though it lies well to the west of his direct course, and no sighting is recorded in the surviving journal. Hopewell returned to London on 15 September.

Mermaids, Walruses, and Ice in the Northeast Passage, 1608

Although misleadingly described as an attempt to reach Cathay by means of the Northeast Passage, Hudson's second voyage essentially continued his first expedition's search for a high-latitude route close to the Pole. Contrary winds had prevented him from exploring the region east of Svalbard on his previous voyage, but he would have known the view of the widely respected Flemish geographer Peter Plancius that Willem Barents had come close to breaking through to open water near the Pole in 1594 west of Novaya Zemlya and was only prevented from doing so by a mutinous crew.

Hudson was again sponsored by the Muscovy Company and sailed in Hopewell, whose crew now increased to fourteen. Sailing from London on 22 April 1608, they rounded the North Cape of Norway on 3 June, and from there Hopewell headed northeast through seas clear of ice until 9 June. On 15 June at 75°07'N, one of the crew spotted a mermaid and summoned a companion: “By that time shee was come close to the ship's side, looking earnestly on the men: a little after a sea came and overturned her; from the navill upwards her backe and breasts were like a woman's. . . her body as big as one of us; her skin very white, and long hairie hanging downe behinde, of colour black; in her going downe they saw her tayle, which was like the tayle of a porposse, and speckled like a macrell” (Asher 1860, 28). This presumably was a seal caught up with seaweed, but it remains one of the most graphically observed sightings of a “mermaid.” Ice posed considerable problems to Hopewell's progress northward, and the ship was repeatedly turned about in Hudson's determined attempt to find the passage just missed by Barents. Although he was to achieve no farther north than 75°30'N, reached as early as 12 June, it was not until thirteen days later that Hudson was forced to admit that his efforts were futile.

Hopewell was now off Novaya Zemlya, whose southwest coast was sighted the next day at 72°12'N. Hudson sent some of his men ashore to fill casks with fresh water and to see whether anything profitable might be obtained for his employers. Walrus tusks offered the best hope of return, but few walruses could be found hauled out on land, and only one was taken when fifty were found asleep on a small rock. On 29 June 1608, after coming upon a promising channel through which a strong current raced, Hudson considered that if it cut right through to the other side of the island, it would offer an excellent route into the Kara Sea. Several days were spent sending out boat parties before the channel proved to be too shallow. Hudson believed he had reached “Kostin Strait,” which Olivier Brunel had reported sailing through in 1584–1585 but that had been erroneously depicted too far north by Dutch maps. In fact, Brunel's discovery was most probably Matochkin Strait, a navigable channel through to the Kara Sea some way farther north.

On 6 July anchor was weighed, and Hopewell headed west. Hudson had given up any expectation of finding the Northeast
Passage and now showed no interest in exploring the one remaining possibility: Yugor Strait south of Vaygach Island. Investigating it had been one of his original aims, but several previous expeditions had demonstrated its potential to be limited by shallow waters and ice to a brief open season, when alone it could be navigated and then only by small vessels. Instead, he decided to search for “Willoughby Land,” reportedly discovered by Sir Hugh Willoughby in 1553. Since “Willoughby Land” was actually Novaya Zemlya but had been given an inaccurate longitude, not surprisingly he failed to find it.

Upon his arrival in London on 7 August, Hudson wrote that had he experienced more favorable winds, rather than returning home he would have headed across the Atlantic Ocean to Davis Strait. Here John Davis had reported four possible openings, any of which might lead to the Northwest Passage. The southernmost of these was soon to be immortalized as Hudson Strait, after being explored by him on his famous last voyage. If Hudson had had his way, he would have done this two years earlier.

**A Convenient Mutiny Sends Hudson to Search for the Northwest Passage, 1609**

From his journal for the second voyage, we know that Hudson no longer believed in the possibility of a navigable Northeast Passage. He had personally explored all the options, apart from Yugor Strait. This view was shared by the Muscovy Company, which sponsored no more exploring expeditions in this region. Hudson now wished to look for the Northwest Passage, but to do so he needed a sponsor. The sponsor he found, however, the Amsterdam Chapter of the Dutch East India Company, was only interested in exploring the Northeast Passage. Indeed, this company was forbidden by its charter from making use of the passage unless by a route discovered by itself. Despite his own doubts, Hudson agreed to take on this task.

Although far from the least significant of Hudson’s expeditions, the story of his third expedition will here be told briefly, since its chief discoveries took place far south of the regions with which we are concerned. On 25 March 1609, he sailed from Amsterdam in *De Halve Maen* (Half Moon) with a largely Dutch crew. Some time between 5 May, when the North Cape was first rounded, and 19 May, when it was rounded again but in the reverse direction with Hudson now heading for the coast of North America, the crew is said to have mutinied and to have presented him with no option but to do what he most dearly wanted: to abandon his quest for the Northeast Passage and search instead for the Northwest Passage. Indeed, he had come...
well-equipped to explore the latter, having had the forethought to bring with him maps supplied by his good friend Captain John Smith, the well-known American colonist. These maps seemed to confirm the earlier conjecture of the Italian navigator Giovanni da Verrazano that at about 40°N, the Atlantic and Pacific Oceans were separated by only a narrow isthmus. How Hudson reached Nova Scotia on 22 June and then sailed south to 37°45’N, from where he explored northward, hugging close to the coast and investigating each promising opening to finally enter the Hudson River, is a story better told elsewhere. Ultimately, of course, it led to the founding of the Dutch colony of New Amsterdam and thus to the establishment of New York.

**Mutiny in Hudson Bay, 1610–1611**

Hudson's interest in the southernmost of the possible entrances to the Northwest Passage indicated by John Davis in the 1580s was evident since at least his journal of 1608, but it is probable that he had been planning an expedition there some time earlier. Davis's "furious overfall," as it was marked on contemporary maps, had since been investigated only by George Weymouth in 1602. He had sailed some 300 miles into it and, like Davis, thought it most likely to be the Northwest Passage. Hudson had visited Plancius in Amsterdam, where he had been able to consult Weymouth's journal. On this new voyage Hudson sailed in the same ship as Weymouth—the 70-ton *Discovery*—and, until the two men fell out, was accompanied by William Cobrith, the former master of *Godspeed*, *Discovery*’s sister ship during Weymouth's expedition.

Hudson was clearly persuasive in urging the case for his new expedition, for his sponsors included many of the most prominent figures at the court of James I, in addition to the three chief backers: Sir Thomas Smith, Sir Dudley Digges, and John Wolstenholme. In his crew of twenty-two, Hudson was less fortunate, but there he had only himself to blame. Robert Juet, the mate, had sailed with him during his second and third expeditions. An argumentative and often ill-tempered old man, Juet was at least an experienced seaman and an able navigator. Hudson's quirky choice of personnel was also demonstrated in his selection of the ne'er-do-well Henry Greene, whom he had done much to rescue from a dissolute life and now chose to take with him as a seaman, perhaps fearing what Greene might do when apart from him.

*Discovery* sailed from Gravesend on 17 April 1610, and the first signs of unhappiness among the crew arose soon afterward. Greene's presence in the ship and his special relationship to the captain were resented by many of his fellow seamen, feelings that were intensified after he beat up the surgeon during a stop at Iceland. When Hudson learned later that Juet was spreading a story that Greene had been appointed to spy on the crew, he raged that he would return to Iceland and leave Juet there.

While tempers simmered, they reached the entrance to Hudson Strait in late June. There, *Discovery* was caught up in the strait's notorious tidal race and swept south of Resolution Island, with ice repeatedly battering against the hull in the heaving water. Juet had seen enough, and with his fellow dissenters now attempted to force Hudson to turn back. Others remained loyal, and the mutiny was put down. Soon afterward, *Discovery* emerged into the calmer waters of what we know today as Hudson Bay. Mistaking his discovery for the Pacific Ocean, Hudson basked in glory as the Northwest Passage's discoverer and felt himself sufficiently secure to arraign Juet before the crew for incitement to disobedience, a crime of which he was duly convicted and then stripped of his position as mate. Robert Bylot was appointed in his place.

By October, it was clear that the riches of the Far East were not to be theirs that year and that instead they would have to find a suitable place to winter in the maze of islands in southern James Bay. Morale again sank and was further reduced by Hudson's erratic leadership: Greene was alternately cast as favorite and villain, while the loyal carpenter, Philip Staffe, was berated for his reluctance to build a hut, after previously suggesting just this course and then having to wait while Hudson vacillated, until the cold became so intense that the carpenter doubted whether he could build it. Not only were they cold, but also they were ill-supplied with food. Perhaps to ensure that his ship was kept as light as possible in order to better negotiate shallow waters, Hudson had not taken on board all the provisions offered to him. Ptarmigan and fish augmented their sparse rations to a small degree, but scurvy ran rampant. Hudson now compounded his previous errors in man-management by replacing his competent and loyal mate Bylot by John King, a man who commanded little credibility among the crew. With Greene, Juet, and the boatswain William Wilson all plotting against Hudson, full-scale mutiny was not to be delayed long after *Discovery* finally left winter quarters on 12 June 1611.

According to the journal of Abacuk Prickett, a self-serving account written primarily to defend the action taken by the mutineers, the final straw was Hudson's decision, when dividing up the remaining rations among the men and stating that each must live off his allotted portion until they got to the entrance to Hudson Strait, to secretly withhold for himself some of the food and store it in his own cabin. Hudson's motive was presumably to ensure a contingency supply, but his men suspected unfairness and a secret determination to pursue exploration further. On the night of 23 June, the mutineers took over the ship, placing Hudson, his son John, and six others in the shallop, where they were joined voluntarily by the carpenter Staffe. A few supplies were handed over, and then they were cut adrift with no hope of survival. Greene, through force of personality, took over command of *Discovery*, his first act being to reappoint Bylot mate, being confident that he alone could get them safely back to England.

Finding the entrance to Hudson Strait itself was not easy,
but once this task was accomplished, a party led by Greene and William Wilson landed on an island to seek food from the Inuit. Misunderstanding their purpose, the Inuit set on them, and Greene, Wilson, and two others were killed. Two of the ringleaders were now dead, and the third—Juet—died of malnutrition during the nightmare voyage home. Only eight men survived to reach Ireland in September. They were repeatedly questioned upon their arrival in London. Prickett’s journal stated their case, and Bylot’s skill and heroism in bringing Discovery back were widely recognized. Most in their favor, however, was the news they brought of finding the Northwest Passage, and when an expedition was organized under Thomas Button the following year to pursue Hudson’s discoveries, both Bylot and Prickett were on board.

The drama of Hudson’s end overshadows his very great achievements. Among polar explorers, he appears particularly cerebral, always casting about for a new route as soon as he had thoroughly exhausted the possibilities of the one he had initially been sent to investigate. Such single-mindedness may have endeared him to some of his men but probably exasperated most, and who can doubt that Juet, for one—based on knowledge of his captain from two previous voyages—would have been certain that Hudson would never turn back with Cathay apparently within his grasp but yet unreached and that he would continue to pursue discovery, even if it meant inflicting another terrible winter on his men.

See also: Barents, Willem; Brunel, Olivier; Button, Thomas; Bylot, Robert; Chichagov, Vasily; Davis, John (ca. 1550–1605); Farthest North; Greenland, East; Hudson Bay; Hudson Strait; Jan Mayen; Knight, John; Muscovy Company; Northeast Passage; Northwest Passage; Novaya Zemlya; Open Polar Sea; Spitsbergen; Weymouth, George; Willoughby, Hugh

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Hudson Strait (Canada)

More than one-quarter of the entire area of North America drains into Hudson Bay and out into the North Atlantic through the 450-mile-long Hudson Strait, which lies between Baffin Island and the Ungava Peninsula of northern Quebec. Farther west, Hudson Bay is reached through straits east and south of Southampton Island, and north of this island lies Foxe Basin, a source of massed ice each summer. Blocked by ice for eight months each year, even when it is comparatively open, Hudson Strait presents a formidable challenge to navigators, with strong tidal streams and persistent fog, particularly toward the west.

Early cartographic depictions provide some support for the view that the strait may have been sailed through as early as 1508 by Sebastian Cabot (see Hudson Bay), who himself may have been anticipated by Gaspar Corte-Real in 1501. Martin Frobisher entered it in 1578, mistaking it for Frobisher Strait, and John Davis sailed past in 1587 describing it as “a very great gulfe, the water whirlinge and roaring as it were the meetings of tydes” (Hakluyt 1903, vol. 7, 421). George Weymouth claimed to have penetrated 400 miles in 1602. The first known to have navigated its full extent is Henry Hudson, when he reached the great inland sea of Hudson Bay in 1610. Some among his crew found conditions sufficiently disturbing to provoke them into an unsuccessful mutiny, a portent of what was to occur later in the voyage. Hudson followed close along the southern shore, as did Thomas Button in 1612. First to explore the northern shore was Robert Bylot in 1615, enabling William Baffin to compile a reasonably accurate chart of the south coast of Baffin Island. Nottingham, Salisbury, and Mill Islands at the western end of the strait were all discovered by Bylot, the last being so named because of “the grinding of the ice” (Purchas 1905–1907, vol. 14, 389).

Hudson Strait posed a considerable obstacle for explorers and trading vessels from the seventeenth through to the nineteenth centuries. The limited navigation season meant that expeditions tended to reach Hudson Bay and Foxe Basin too late in the year to permit extended exploration, with most therefore being forced to winter and pursue their investigations the following year. The annual trading voyages of the Hudson’s Bay Company did not always get through, particularly in the early years of its operation, leading it to examine the possibility of finding an alternative route through Quebec and Labrador in the mid-eighteenth century, following reports of large lakes occupying much of the interior.

Such was the importance of this seaway that it was made the subject of the first Arctic expeditions organized by the Dominion of Canada. Between 1884 and 1886, Andrew Robertson Gordon made three voyages with the purpose of establishing stations to observe ice conditions. The scientists accompanying him were charged with discovering when the navigation season began and all that they could about the ice, currents, and winds likely to be encountered by shipping. Three-man wintering stations were set up at Port Burwell, Ashe Inlet, Stupart Bay, Nottingham Island (Port de Boucherville), and Digges Island (Port Lapérouse), with a sixth station at Nachvak on the Labrador coast (Tuttle 1885). These investigations were continued in 1897 by William Wakeham, and by N. B. McLean’s Hudson Strait Expedition in 1927–1928. The latter was organized in response to plans to build a railway linking Churchill to the Canadian prairies. A considerable expansion of shipping was envisaged, and action was considered essential to do whatever possible to make the strait easier to navigate. Equipped with two Fokker planes complete with floats, skis, and wheels to cope with varying conditions, McLean completed the first air survey and made detailed recommendations relating to the establishment of direction-finding stations and the use of icebreakers. Nicholas Polunin
In May 1670, King Charles II granted a royal charter founding the Company of Adventurers of England Trading into Hudson's Bay. Soon known as the Hudson's Bay Company (HBC), its purpose was to trade in furs, precious metals, and gems and, if possible, to discover a Northwest Passage to the Pacific Ocean. HBC was granted the territory of Rupert’s Land, encompassing much of modern Canada, including northern Ontario and Quebec, all of Manitoba, most of Saskatchewan, the southern part of Alberta, and much of the Northwest Territories. The governor and company were appointed “absolute Lords and Proprietors” of this vast area and granted a complete monopoly on all trade. Rupert’s Land was reckoned a new colony, and HBC was given full legal jurisdiction and the right to build forts and raise troops, which were soon needed: there was a long period of bitter and violent rivalry with the French for control of the fur trade, until the French were compelled to recognize HBC’s claims in 1713 by the Treaty of Utrecht.

For some time, the undeclared war with the French and preoccupation with company profits discouraged HBC from paying much attention to exploring its vast lands, Arctic or otherwise. Rumors of copper to the northwest of Hudson Bay led the retiring governor in chief in Hudson Bay, James Knight, to propose an expedition to the Hudson’s Bay Committee in London to search for copper and the Northwest Passage, which he believed likely to lie nearby. An account of Knight’s disastrous expedition of 1719–1721 is given under his name. At the same time, the new governor, Henry Kelsey, began a series of annual voyages north from Prince of Wales’s Fort on the mouth of the Churchill River in an attempt to cultivate trade with the Inuit, which continued fitfully through the eighteenth century. The financial losses incurred by the Knight disaster provided further cause for HBC to concentrate on fur trading rather than exploration, a policy condemned by the Irish politician Arthur Dobbs. In a concerted attempt to break HBC’s monopoly, Dobbs instigated two expeditions led by Christopher Middleton (1741–1742) and William Moor (1746–1747) to search for the Northwest Passage and through finding it to demonstrate HBC’s incapacity to serve British interests in northern North America. (Middleton’s and Moor’s expeditions receive their own entries.) Partly in response to its London critics, HBC organized a number of exploring voyages of its own: James Napper investigated the west coast of Hudson Bay (1736–1737), and Thomas Mitchell (1744) and William Coats (1749) explored the little-known east coast. Several attempts were made to relocate Moor’s discovery, Chesterfield Inlet, which William Christopher finally found again in 1761, after sailing 100 miles into it in the sloop Churchill before being forced to turn back by unfavorable winds. Returning the following year, Christopher explored the inlet to the head of Baker Lake, thus demonstrating that it did not offer an entrance to the Northwest Passage.

Christopher’s voyages were made at the instigation of Moses Norton, then second factor at Prince of Wales’s Fort, who believed that he had located deposits of salt, coal, and copper as well as rich fur-producing areas northwest of the bay on the basis of Indian reports. By the end of 1764, the London committee was ready to accept Norton’s assertion that there was no western passage out of the bay. Four years later, Norton returned to London with samples of copper and a map two Indians had brought to him, on the basis of which he proposed that a true Arctic expedition be launched to locate the source of the copper and, if possible, discover the “Straits of Anian.” The committee agreed and appointed Samuel Hearne, the twenty-four-year-old mate of Churchill, to lead an expedition to trace the river whence the copper came to its mouth and to determine whether there was a Northwest Passage high in the Arctic. (Hearne’s three attempts to fulfill this mission in 1770, 1771, and 1772 are described under his name.)

Shortly afterward, HBC acquired a powerful rival in the North West Company (NWC), which sought to break into the fur trade in defiance of the monopoly granted under the terms of its charter. HBC traditionally relied on Indians bringing their furs to its trading posts. NWC adopted the policy of establishing its own posts far into the interior, where they proved highly successful at intercepting both Indians and their furs. The NWC strategy involved greater travel by its traders, which resulted in several significant discoveries, including those of Peter Pond and Alexander Mackenzie, which are described under the latter’s name. It was not until after the merger of the two rival companies in 1821 that HBC resumed its role in Arctic exploration, although in 1819, at the request of the British Admiralty, HBC did provide guides, equipment, and advice to John Franklin’s expedition to explore the Canadian Arctic coast eastward from the mouth of the Coppermine River. Similar assistance was provided for Franklin’s second expedition of 1824–1827, and in 1833 there was close cooperation between HBC and the Admiralty in the organization of George Back’s expedition to search for John Ross, from whom nothing had been heard since 1829, and to explore the Great Fish [now Back] River.

Stimulated by these expeditions, as well as by awareness of the advantages for HBC of staying on good terms with the British government, Governor George Simpson determined to
complete the exploration of the North American Arctic coastline. He had observed the heavily manned and cumbersome British expeditions and believed HBC could make better use of its own employees, traveling swiftly in small, well-provisioned parties, using lightweight equipment, and living off the land where necessary. The first of these expeditions set out in 1837 under Peter Dease, assisted by Simpson's cousin Thomas Simpson, who had done much of the initial planning. During travels that were to provide clear demonstration of the superiority of small, expert groups, Dease and Simpson succeeded in exploring the entire length of the Arctic coastline from Point Barrow, Alaska, east to beyond the Back River. Simpson was killed in 1840 before the HBC's next expedition could be mounted, but in 1844 a worthy successor was found in Dr. John Rae, an HBC surgeon and highly accomplished traveler. As described in his entry, it was Rae who finally discovered from the Inuit what had happened to Franklin's missing third expedition, when he recovered some of its effects and brought them back to London. HBC had already assisted the Franklin search by helping equip Sir John Ross in 1850 and sending out Rae in 1850–1851 and 1853–1854. Following Rae's revelations, chief factors James Anderson and James Stewart were sent down the Back River in 1855 in an abortive attempt to reach the region where Franklin's men were reported to have died.

Not long afterward, HBC surrendered ownership of its Rupert's Land territories in 1869 to the newly constituted Dominion of Canada in return for grants of cash and fertile belt land, though it continued in the fur trade until the 1990s. Developing a chain of department stores in the southern cities and a network of trading stores across the Arctic, HBC today is Canada's leading retailer.

David Clammer

See also: Back, George; Dease, Peter; Franklin, John; Franklin Search Expeditions; Hearne, Samuel; Hudson Bay; Knight, James; Mackenzie, Alexander; Middleton, Christopher; Moor, William; Northwest Passage; Rae, John; Ross, John (1850–1851)

References and further reading:
Caswell, J. E. 1969. The sponsors of Canadian Arctic exploration. Beaver, 300 (summer), 38–45; 300 (autumn), 26–33.
**IGY**

See International Geophysical Year

**India**

India’s involvement in Antarctica began with ratification of the Antarctic Treaty on 19 August 1983. Consultative status was achieved on 12 September 1983, following organization of national expeditions from 1981–1982 onward.

The first Indian scientist to work in Antarctica was Ran Charan, who participated in the Australian national expedition of 1960–1961. Other scientists accompanied later expeditions organized by other nations, but not until January 1982 did an Indian party of fourteen men land to construct the refuge hut Dakshin Gangotri on the Princess Astrid Coast. An automatic weather station was deployed during the same visit 50 miles inland in the Schirmacher Oasis. A start was made on the scientific program, which was considerably expanded the following year. The first party, led by Satya Swaroop Sharma, wintered in 1984 after the station had been substantially rebuilt and expanded. In 1988, a new station, Maitri, was opened in the Schirmacher Oasis. Operated throughout the year, it is now the main Indian scientific station with Dakshin Gangotri reverting to summer-only occupation after 1990. India has also undertaken preliminary investigations into possible sites for a station in the Weddell Sea region, but to date any ambitions there remain unrealized. The national Antarctic program is coordinated and executed by the Department of Ocean Development.

See also: Princess Astrid Coast

References and further reading:

**Indigenous Peoples**

Much of the Arctic was inhabited long before it was reached by the explorers with whom this encyclopedia is concerned. Variously referred to as indigenous, native, aboriginal, or first peoples, they themselves may have been anticipated by others, for parts of the Arctic have been lived in for thousands of years. Some areas, now unpopulated, once had resident populations or at least were visited by hunting parties. The Inuit of Arctic North America and Greenland receive their own entry. Here are treated the North American Indians (or Amerindians) and the Saami, Nentsy, and Chukchi of Arctic Eurasia, as well as the Ainu of Sakhalin and northern Japan.

Apart from a few years in the 1850s, when a number of Maori and Mori ori settled in the Auckland Islands, the Antarctic and sub-Antarctic had no indigenous peoples, though “native” peoples nevertheless did contribute to Antarctic exploration by participating in expeditions, generally as dog handlers.

In inhabited regions, the quickest way to acquire information about the land is to discover what one can from those who have made it their home. Thus for explorers such as Alexander Mackenzie, the first priority was to look for local Indians, and the narrative of his 1789 journey down the Mackenzie River is more concerned with describing them than the land traversed. From indigenous peoples too, explorers obtained guides, and European “exploration” quite often meant little more than following along the well-established paths and portages used by generations of native peoples. Clearly, these peoples had their own means of communicating knowledge. What was new with the Europeans was the recording of what they learned in widely circulated narratives, maps, and drawings so that what previously had been purely local knowledge became generally known. Although more universal, this new knowledge did not exactly replicate—nor did it seek to do so—the “indigenous knowledge” of the native peoples, which continues to be passed down by oral tradition and involves not simply the lay of the land but the whereabouts of resources, the seasonality of their availability, and the memory of actual and mythic events (Nuttall 1991).

Among the first Arctic peoples to be encountered were the Nentsy, or Samoyeds. Stephen Borough learned of their existence from the Russian Pomors but appears not to have met any in 1556 when visiting Vaygach Island. Some time in the 1570s, Olivier Brunel made an overland journey to the Ob’ River, guided by Nentsy, thus becoming the first Western European to reach this river. It was from the Nentsy that Cornelis Nai and Brant Ysbrantszoon learned in 1594 of a large sea east of Vaygach, which could be reached during a six-week ice-free period through Yugor Strait (see Barents, Willem). The Nentsy themselves, however, were not seafarers. Their expertise lay rather in overland travel with the aid of reindeer, and it was by this means that Alexander von Middendorff reached the upper Taymyr River in 1843 and Frederick Jackson explored Vaygach Island and then traveled west to the Pechora River in 1893, both men accompanying the annual migration of the herders for much of their way.

Jackson also visited the Saami. For the ninth-century Norseman Ohthere, the Saami, or Lapps, were his immediate neighbors inland and to the north. The expeditions with which this book is concerned generally had but fleeting contact with this people, whose lands they were not concerned to
explored. In 1872, Adolf Erik Nordenskiöld recruited four Saami to look after the forty reindeer he was hoping to employ on a journey across the ice toward the North Pole. In 1883, he took two more—Pava Tuorda and Anders Rossa—to Greenland to assist him in exploring the Inland Ice. It was their extended ski journey that convinced Fridtjof Nansen that skis provided the best means of crossing Greenland, and when he mounted his own expedition in 1888, two Saami, Samuel Balto and Ole Ravna, were included in the party. Two more, Ole Must and Persen Savio, accompanied Carsten Borchgrevink’s 1898–1900 expedition to Antarctica, initially as dog handlers, though they distinguished themselves also in other respects. Given this record of achievement, it is perhaps surprising that Saami were not included in more expeditions. That they were not may probably be attributed to the growing number of nonnatives with polar skills, the inconvenience of recruitment, and difficulties of integrating natives within primarily nonnative expeditions.

Although few expeditions experimented with reindeer and none with any success in the High Arctic, skis and Saami footwear were widely adopted. Finneskoes, or finskàs, were winter boots made using fur from the legs of reindeer, which possessed the property of shedding snow. They were widely used in Antarctica during the “Heroic Era,” as was senneggrass (Carex vesicaria), often in combination with finneskoes. Placed in handfuls within boots, senneggrass absorbed moisture and acted as a false sole, providing insulation against the cold. Each morning, it was taken out and shaken to remove moisture and then replaced. Eventually it would crumble away and require replacement by a new handful.

The contribution of the Chukchi to exploration was more mixed. On the one hand, information communicated to them by Russian traders inspired Semen Dezhnev’s voyage round the Chukotka Peninsula and through Bering Strait, as well as the searches by Vitus Bering and Mikhail Gvozdev for the “Great Land”—Alaska—reported by the Chukchi as lying east of Chukotka. It was also they who informed Ferdinand von Wrangel of the existence of Wrangel Island in 1823. On the other hand, their sheer military competence and warlike disposition kept this proud people beyond Russian control until the nineteenth century. Thus the 750-mile coast of the Chukotka Peninsula was omitted from Bering’s Great Northern Expedition (1733–1743), which otherwise succeeded in mapping Arctic and Far Eastern Russia between Archangel and the Kamchatka Peninsula.

The Ainu are the aboriginal people of Hokkaido, northern Japan, and Sakhalin, now part of Russia. Nobu Shirase took with him two Ainu on his Antarctic expedition of 1910–1912. Hanamori and Yamabe were recruited primarily for their expertise with dogs, with Shirase and two others forming the “Dash Patrol,” which achieved a farthest south of 80°5’S, 156°37’W on 28 January 1912 across the Ross Ice Shelf. As with other northern peoples, their long familiarity with the cold equipped them well as members of a polar expedition, and the completely waterproof Ainu boots were found to be much superior to other footwear.

Explorers have always varied in their ability to assimilate native knowledge, a process largely dependent on their willingness to go fully “native,” adopting clothing, food, accommodations, and travel methods rather than simply sampling what they thought useful while retaining a “civilized” veneer. Samuel Hearne was readier than most to adopt Amerindian methods. His story also exemplifies the importance of finding suitable traveling companions. He was abandoned by his first guide, and his second had limited knowledge of the region to be explored and, being of low-status, was unable to protect Hearne against pilfering by other Indians. Hearne’s third choice, the Chipewyan Matonabbee, was well-respected and used to traveling along the route Hearne wished to take. Once with Matonabbee, his travels became something of a “conducted tour” (Bliss 1989), as would those of Mackenzie and to some extent John Franklin and George Back. Not surprisingly, the Indians possessed detailed knowledge of the river systems flowing through Arctic Canada—the Coppermine, Mackenzie, and Back Rivers—as far as their territory extended. They knew little, however, of the treeless Barrens and Arctic coast, areas that they had little cause to visit and some need to avoid because relations with the Inuit were often poor.

See also: Back, George (1833–1835); Barents, Willem (1594); Bering, Vitus; Borchgrevink, Carsten; Brunel, Olivier; Dezhnev, Semen; Dogs; Franklin, John (1819–1822, 1825–1827); Gvozdev, Mikhail; Hearne, Samuel; Heroic Era of Antarctic Exploration; Indigenous Peoples; Inuit Contribution to Polar Exploration; Jackson, Frederick (1893–1894); Mackenzie, Alexander; Middendorff, Alexander von; Nansen, Fridtjof (1888–1889); Nordenskiöld, Adolf Erik (1872–1873, 1883); Othere; Shirase, Nobu; Sledges and Sleds; Wrangel, Ferdinand von

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Ingrid Christensen Coast (Antarctica)
The Ingrid Christensen Coast lies between Jennings Promontory at 72°33’E and the western end of the West Ice Shelf, at 81°24’E in the vicinity of Prydz Bay. It was discovered on 20 February 1935 by Captain Klaarius Mikkelsen of the whaler Thorshavn. Mikkelsen named his discovery for the wife of his employer, Lars Christensen, and landed on an offshore island, where his own wife, Karoline, raised the Norwegian flag. This act was controversial in that this coast lies far to the east of 45°E, the meridian agreed between Great Britain and Norway to mark the easternmost limit of Norwegian territorial claims, as well as within the region discovered by Sir Douglas Mawson in February 1931 and named Princess Elizabeth Land. Although occurring on an island just off the Antarctic mainland, Karoline Mikkelsen’s landing
is generally viewed as the first landing by a woman on Antarctica.

See also: Christensen, Lars; Princess Elizabeth Land; Whaling and Antarctic Exploration

References and further reading:

International Geophysical Year

From 1 July 1957 to 31 December 1958, scientific understanding of Antarctica was transformed by a collaborative research program in which no fewer than sixty-seven countries participated. The idea for the International Geophysical Year (IGY) originated in the concept of International Polar Years, the first of which had been held in 1882–1883 and the second in 1932–1933. In 1949, Lloyd Berkner, a veteran of Richard Byrd’s first Antarctic expedition (1928–1930), proposed holding a third international polar year. This idea was taken up by others, most notably James van Allen and Sydney Chapman and eventually by the International Council of Scientific Unions, which in 1952 set up Comité Spéciale de l’Année Géophysique Internationale to coordinate planning for the proposed IGY. Rather than being devoted entirely to the polar regions, IGY embraced the entire planet, with Antarctica and outer space receiving special attention.

Subjects to be studied included the aurora, cosmic rays, geology, physics, and seismology. These fields were selected because it was believed that they would benefit most from a coordinated program involving simultaneous observations across the globe. The most dramatic episode during IGY was the Commonwealth Trans-Antarctic Expedition (see Fuchs, Vivian; Hillary, Edmund).

Although some countries—Argentina, Australia, Chile, France, Great Britain—already maintained stations on Antarctica, others now began the process of identifying suitable sites and constructing facilities. Operation Deep Freeze was organized by the United States to establish a major air facility in McMurdo Sound and scientific stations at several locations, including the South Pole. Insofar as was possible, the intention was to construct a network of stations spaced evenly around the continent. One region where this could not be achieved was the Filchner-Ronne Ice Shelf, where, for lack of any suitable site on the Ronne Ice Shelf, three stations had to be placed close together on the Filchner Ice Shelf farther east. Another unfilled gap lay between 70° and 160°W, where ice conditions in the Bellingshausen and Amundsen Seas made the coast unapproachable by ship. Several countries organized their construction programs so that a relatively accessible coastal station served as the logistics center for less accessible stations inland. Thus, the South Pole station was supplied by air from McMurdo Sound, and tractor trails linked inland Byrd to coastal Little America V and, in the French program, inland Charcot to coastal Dumont d’Urville. The largest Soviet base, Mirmyr, was at the coastal end of a tractor trail leading inland through Pionerskaya and Komsomalskaya to Sovetskaya and Vostok. The Soviet plan was to site Sovetskaya at the Pole of Inaccessibility, by definition the most difficult place to reach on the continent, and Vostok at the Geomagnetic South Pole, an important location for geophysical studies. Vostok eventually opened where intended, but the Pole of Inaccessibility lived up to its name, with Sovetskaya having to be established 450 miles short of its destination.

In all, forty-six stations maintained by eleven countries in Antarctica contributed results to IGY. They included most, but not all, of the existing Argentine, Chilean, and British stations, some of which were omitted because they lacked the appropriate instruments.

At the conclusion of IGY, more than 10 tons of scientific data were brought back from Antarctica. IGY’s success led directly to the negotiation and agreement of the Antarctic Treaty, whose original signatories were the eleven countries maintaining stations on the continent together with South America.

IGY was a global program in which the Arctic also figured significantly. Unlike Antarctica, few stations were built specifically for IGY, and most observations came from established meteorological stations, sometimes enlarged and equipped with additional instruments. In the Soviet Union, no fewer than

<table>
<thead>
<tr>
<th>IGY Participating Stations</th>
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<tr>
<td>Argentina—Almirante Brown, Esperanza, General Belgrano, General San Martin, Melchior, Orcadas, Primero de Mayo, and Teniente Camara</td>
</tr>
<tr>
<td>Australia—Davis and Mawson</td>
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<tr>
<td>Belgium—Roi Baudoin</td>
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<tr>
<td>Chile—Capitán Arturo Prat, General Bernardo O’Higgins, Presidente Gabriel González Videla, and Presidente Pedro Aguirre Cerda</td>
</tr>
<tr>
<td>France—Charcot and Dumont d’Urville, Great Britain—Admiralty Bay, Argentine Islands, Deception Island, Detaille Island, Halley Bay, Hope Bay, Horseshoe Island, Port Lockroy, Prospect Point, Shackleton, Signy Island, South Ice, and View Point</td>
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<tr>
<td>Japan—Syowa</td>
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<tr>
<td>New Zealand—Scott</td>
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<tr>
<td>Norway—Princess Martha Coast</td>
</tr>
<tr>
<td>Soviet Union—Komsomalskaya, Mirmyr, Oazis, Pionerskaya, Sovetskaya, and Vostok</td>
</tr>
<tr>
<td>United States—Amundsen-Scott, Byrd, Ellsworth, Little America V, McMurdo Sound, and Wilkes. Hallett was operated jointly by New Zealand and the United States.</td>
</tr>
</tbody>
</table>
thirty-four stations north of the Arctic Circle, as well as two ice stations in the Arctic Ocean (NP-6 and NP-7), were instructed to contribute information. Three U.S. ice stations—Alpha, Bravo, and Charlie—also reported results. A Canadian expedition led by Geoffrey Hattersley-Smith opened a station at Lake Hazen on Ellesmere Island. Elsewhere in the Canadian High Arctic, observations were conducted at the existing meteorological stations of Alert and Eureka (both Ellesmere), Isachsen, Mould Bay, and Resolute on Ellesmere, Prince Patrick, and Cornwallis Islands, respectively. In Svalbard, stations were opened by Poland in Horn Sound, southern Spitsbergen, and on North East Land by a joint Swedish-Finnish-Swiss expedition led by Gösta Liljequist, in addition to those operated by Norway and the Soviet Union.

See also: Byrd, Richard (1928–1930); Drifting Ice Stations; Ellesmere Island; Fuchs, Vivian; Hillary, Edmund; International Polar Years; North East Land; Operation Deep Freeze; Svalbard

References and further reading:

International Polar Years

Although much can be achieved by individual expeditions, for certain types of study, nothing can substitute for a more coordinated approach. A one-off expedition, for example to northeast Greenland, can record meteorological and magnetic observations, which are useful, but much more so are such observations when collected simultaneously at many points using identical instruments. The International Polar Year (IPY) was the brainchild of Karl Weyprecht (1838–1881), who conceived the idea while discovering Franz Josef Land as coleader of the Austro-Hungarian expedition of 1872–1874 (see Payer, Julius).

The First International Polar Year, 1882–1883

Fresh from the Arctic and with audiences clamoring to hear him, Weyprecht used the opportunity to decry expeditions conducted "as a sort of international steeple-chase," seeking to better each other’s records by a few miles. Instead, he asserted that "decisive scientific results can only be attained through a series of synchronous expeditions," distributed evenly across the Arctic, each using identical methods to record the same phenomena for a full year (Payer and Weyprecht 1875, 33). Weyprecht’s suggestion was not entirely new, in that Alexander von Humboldt (1769–1859) had proposed establishment of a worldwide network of geomagnetic stations in the 1830s and Matthew Fontaine Maury (1806–1873) had repeatedly urged better coordination of meteorological and oceanographic observations. Weyprecht’s originality lay in his appreciation of the impracticality of establishing a network of permanent stations in the Arctic, and his proposed solution in the organization of several simultaneous expeditions, which he hoped would be mounted to the Antarctic as well as to the Arctic.

Good ideas don’t always come to fruition, but Weyprecht was more than usually determined, and following adoption of his scheme at the First International Polar Conference in 1879, a special meeting was convened in Bern, Switzerland, the following year to discuss the details of its implementation. It was agreed that the subjects most likely to benefit from an International Polar Year (IPY) were meteorology, geomagnetism, and the aurora, and an International Polar Year Commission was set up to take charge of coordination. On 29 March 1881, Weyprecht died of tuberculosis, almost certainly contracted during his Arctic expedition. Just six days later, the United States agreed to join Austro-Hungary, Denmark, Norway, Russia, and Sweden, which together committed themselves to operating eight stations through IPY, sufficient for the scheme to go ahead. These countries were later joined by Finland, France, Germany, Great Britain, and the Netherlands.

Table 12 lists the fourteen stations maintained by the eleven participating countries: twelve in the Arctic, one in South America, and one in the sub-Antarctic. For an account of the German station on South Georgia, see the entry on Karl Schrader. Adolphus Greely’s American expedition to

Table 12  First International Polar Year Stations

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<thead>
<tr>
<th>State</th>
<th>Station</th>
<th>Leader</th>
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<tbody>
<tr>
<td>Austria-Hungary</td>
<td>Jan Mayen</td>
<td>E. von Wohlgemuth</td>
</tr>
<tr>
<td>Denmark</td>
<td>Godthåb, Greenland</td>
<td>A. Paulsen</td>
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<tr>
<td>Finland</td>
<td>Sodankylä, Finland</td>
<td>E. Biese</td>
</tr>
<tr>
<td>France</td>
<td>Orange Bay, Tierra del Fuego</td>
<td>Courcelles-Seneuil</td>
</tr>
<tr>
<td>Germany</td>
<td>Cumberland Sound, Baffin Island</td>
<td>W. Giese</td>
</tr>
<tr>
<td>Great Britain</td>
<td>Royal Bay, South Georgia</td>
<td>K. Schrader</td>
</tr>
<tr>
<td>Netherlands</td>
<td>Great Slave Lake, Canada</td>
<td>H. Ph. Dawson</td>
</tr>
<tr>
<td>Norway</td>
<td>Kara Sea</td>
<td>M. Snellen</td>
</tr>
<tr>
<td>Sweden</td>
<td>Cape Thordsen, Spitsbergen</td>
<td>A. Steen</td>
</tr>
<tr>
<td>United States</td>
<td>Fort Conger, Ellesmere Island</td>
<td>K. P. Andrenev</td>
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<tr>
<td></td>
<td>Point Barrow, Alaska</td>
<td>N. Jürgens</td>
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<td></td>
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<td>N. G. Ekholm</td>
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<tr>
<td></td>
<td></td>
<td>A. W. Greely</td>
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<td></td>
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<td>P. H. Ray</td>
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</table>
Ellesmere Island also receives a separate entry. Greely apart, the IPY expeditions generally involved less dramatic incidents than most exploring expeditions. Once the destination was reached and the station erected, the staff settled into the intensive routine of measurement described in Schrader’s entry. Maurits Snellen’s Dutch expedition had to conduct its observations on the ice in the Kara Sea, when his ship became beset on its way to Dikson Island at the mouth of the Yenisey River. Despite having eventually to abandon his ship, Snellen nevertheless brought back his IPY results safely across the ice.

The Second International Polar Year, 1932–1933

After Wegener’s death, one of those most prominent in organizing IPY had been the director of the German Hydrographic Office, Georg von Neumayer. It was at a meeting of this institution in 1927 that Dr. Johannes Georgi, later to participate in Alfred Wegener’s last expedition to Greenland, made the suggestion that a second IPY be held in 1932–1933 to commemorate the fiftieth anniversary of the first IPY. This proposal was taken up by the International Meteorological Committee in 1928 and then by the International Union of Geodesy and Geophysics in 1930. A new International Polar Commission was established, and forty-four countries originally agreed to take part, many planning to establish stations outside the polar regions since this IPY covered all areas of the globe. The second IPY extended from 1 August 1932 to 31 August 1933. Preparations were made for four stations in the Antarctic, including one in the interior, but the stock market crash in 1929 and the deepening international economic crisis led to a scaling back of plans. All Antarctic stations had to be abandoned, and the only meteorological data received from this region was supplied by two existing sub-Antarctic stations maintained by Argentina in the South Orkney Islands and Great Britain on South Georgia. Meteorology, geomagnetism, and the aurora were again the chief fields of research, though studies were also extended to the upper atmosphere. In terms of stations, the second IPY was dominated by the Soviet Union, which operated ninety-two. Table 13 lists those opened by other countries in the polar regions.

The second IPY was largely free from incident. An account of Otto Schmidt’s transit of the Northeast Passage in Sibiryukov is given under his name. It was intended to be the climax of the important Soviet contribution. The presence of no fewer than five Norwegian stations in East Greenland should also be noted, their presence reflecting Norway’s dispute with Denmark regarding sovereignty over this region.

Much as was learned from the first two IPY’s, in many ways their greatest contribution was to pave the way for the International Geophysical Year (IGY), held after another twenty-five years in 1957–1958. A landmark event in the history of Antarctica, IGY receives its own entry. At the time of writing, plans have been announced for a third IPY, to be held fifty years after IGY in 2007. As with previous IPY’s and the IGY, the aim will be to obtain synoptic measurements enabling the study of large-scale processes at high latitudes.

See also: Franz Josef Land; Greely, Adolphus; International Geophysical Year; Norway; Payer, Julius; Schrader, Karl; Shmidt, Otto (1932); Wegener, Alfred (1930–1931)

References and further reading:


### Table 13 Second International Polar Year Stations

<table>
<thead>
<tr>
<th>State</th>
<th>Station</th>
<th>Leader</th>
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<tr>
<td>Argentina</td>
<td>Laurie Island, South Orkneys</td>
<td>E. Bruhns</td>
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<tr>
<td>Austria</td>
<td>Jan Mayen</td>
<td>H. Tollner</td>
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<tr>
<td>Canada</td>
<td>Chesterfield Inlet</td>
<td>F. T. Davies</td>
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<td></td>
<td>Coppermine</td>
<td>R. C. Jacobsen</td>
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<td>Denmark</td>
<td>Godhavn, Greenland</td>
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<td>Julianehâb, Greenland</td>
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<td></td>
<td>Thule, Greenland</td>
<td>V. Laursen</td>
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<td>Finland</td>
<td>Petsamo, Finland</td>
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<tr>
<td>France</td>
<td>Scoresby Sound, Greenland</td>
<td>J. Habert</td>
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<tr>
<td>Great Britain</td>
<td>Fort Rae, Canada</td>
<td>J. M. Stagg</td>
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<td></td>
<td>South Georgia</td>
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<tr>
<td>Netherlands</td>
<td>Ammassalik, Greenland</td>
<td>Van Zuyle</td>
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<tr>
<td>Norway</td>
<td>Finnsbu, East Greenland</td>
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<td>Jonsbu, East Greenland</td>
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<td>Myggbukta, East Greenland</td>
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<td>Torgilsbu, East Greenland</td>
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<td>Poland</td>
<td>Bear Island</td>
<td>C. Centkiewicz</td>
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<tr>
<td>Sweden</td>
<td>Sveagruvan, Spitsbergen</td>
<td>V. G. V. Lindholm</td>
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<td>Mount Nordenskiöld, Spitsbergen</td>
<td>H. Olsson</td>
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<tr>
<td>United States</td>
<td>Point Barrow, Alaska</td>
<td>C. J. McGregor</td>
</tr>
<tr>
<td></td>
<td>Peary Lodge, West Greenland</td>
<td>R. L. Belknap</td>
</tr>
</tbody>
</table>

Inuit Contribution to Polar Exploration

“[I]t is one of the least explicable things in the history of Arctic exploration that Eskimo methods of travel were not
sooner and more generally adopted” (Stefansson 1908, 211). Centuries of adaptation to Arctic living meant that by the time that first contact was made by European explorers, the Inuit of North America and Greenland had developed the expertise necessary for the thorough exploration of these regions far in advance of those venturing north to meet them. This “cold-living culture” encompassed clothing, hunting and traveling techniques, diet, and shelter, as well as a broader intellectual framework that, in more subtle ways, assisted accommodation to an environment perceived as harsh and dangerous by outsiders but not by the Inuit themselves (Brody 1987).

So long as exploration could be conducted primarily from ships, there was obviously less to be learned from the Inuit, though early expeditions did seek to acquire interpreters—sometimes by force—to help them discover what they could from the inhabitants. Maps were particularly useful, not infrequently demonstrating an expert knowledge of regions far beyond the local area. Once, however, exploration required travel away from ships—over ice, land, or water—explorers would have been well-advised to copy Inuit techniques, though very few did. Some transference of knowledge did occur in West Greenland, where Danish missionaries and traders lived among the Inuit. It also took place to a more limited extent when expeditions wintered close to Inuit communities (e.g., those of Edward Parry in 1821–1823 and John Ross in 1829–1833) or recruited Inuit dog drivers (e.g., those of Elisha Kent Kane and Isaac Hayes), but not until Charles Francis Hall in 1860 was any explorer prepared to accept that the secret of efficient Arctic travel lay in wholehearted adoption of Inuit techniques and lifestyle, and not until Robert Peary did any explorer acquire mastery of Inuit methods.

One of the most effective of the early travelers was the Hudson’s Bay Company (HBC) surgeon and fur trader John Rae, whose explorations in the 1840s and 1850s anticipated the lightweight, self-sufficient practices later advocated by Vilhjalmur Stefansson. Like other HBC employees—Samuel Hearne, Peter Dease, and Thomas Simpson, for example—Rae’s methods were initially derived from the Indians, although he did go beyond them to construct igloos and was the first to ice the runners of his sledge to reduce friction.

Fridtjof Nansen used the opportunity of his enforced stay in West Greenland in 1888–1889 to learn how to kayak but not how to handle dogs. This skill he acquired the hard way, through repeated error, while practicing for his polar journey from Fram. Peary chose a relatively southerly winter quarters in northwest Greenland in 1891 so as to be close to areas populated by the Inuit. It was there that he acquired both Inuit clothes and knowledge of how to wear them, allowing the cold air to circulate at times to avoid becoming overheated. Following Inuit practice, he was able to dispense with tents (by sleeping in igloos) and sleeping bags (unnecessary in igloos).
Such improvements resulted in a considerable savings in weight, particularly in the later stages of a journey as the tents and sleeping bags accumulated moisture, becoming heavier and heavier as well as more and more uncomfortable. Although Peary learned much from the polar Inuit, the learning was not all one way, especially where he had access to better materials. Thus, instead of piecing his sledges together from whalebone and driftwood, Peary’s sledges were constructed from timber brought north from the United States. These materials enabled him to build larger sledges that still retained the traditional shape and lashings employed by the Inuit. Peary also introduced the use of iron under the runners. Roald Amundsen learned much from the Inuit when he spent twenty-three months on King William Island in the Canadian Arctic during his first transit of the Northwest Passage. He too learned to wear furs, and several members of his expedition became expert dog drivers, including Helmer Hanssen, who was later to make good use of his skills during Amundsen’s journey to the South Pole.

Knud Rasmussen’s account of equipment and materials taken with him on his first Thule Expedition gives a good idea of what an Inuit hunting party might carry on an extended journey. “We took with us . . . harpoons, spears, bladders, lines and implements of all kinds, both those used in hunting on the ice and those for kayak work. . . . In addition, we had a number of strong seal-hide lines, 15–20 fathoms long; these were intended partly as extra traces in reserve, and partly as lashings etc. in case of need. We had also skins of bladder-nose seal, reindeer, musk ox and bear to lie on. . . . [F]inally, we had with us a big and very strong reindeer horn, from which Eskimo bows could be made.” (Rasmussen et al. 1915, 290). Rasmussen’s description of methods adopted during his first and later expeditions are the nearest we have to a manual of Inuit traveling techniques.

Stefansson recommended that all expeditions make a point of cultivating good relations with the Inuit, for whom they should take care to bring appropriate gifts. For those already used to contact with outsiders, they should bring tea, tobacco, and flour. For those not yet contacted, needles and files were more suitable. They should also match their activities to those of the Inuit, who had long experience of which areas were best visited at different times of the year. Thus, the best time to explore the interior was when the Inuit hunted caribou inland. Fishing season was the time to undertake boat journeys. Knowledge of how to build an igloo was mandatory. It was quite unnecessary to freeze to death in the Arctic, when one and a half hour’s labor could erect a warm shelter.

Gino Watkins and the members of his British Arctic Air Route Expedition of 1930–1931 learned about polar travel from the East Greenlanders. One of those with him, John Rymill, later attributed the success of his British Graham Land Expedition of 1934–1937 to its adoption of Inuit practices, particularly with regard to dogs. Through Edward Bing-ham, these practices were later passed to the Falkland Islands Dependencies Survey and through it to the British Antarctic Survey and to other expeditions and agencies operating in Antarctica. Thus, much of Antarctica as well as North America and Greenland was explored using methods evolved by the Inuit over generations. As far as North America and Greenland are concerned, Inuit also participated in many, if not most, expeditions. Knud Rasmussen, one of the greatest of all explorers, was partly of Inuit descent.

See also: Amundsen, Roald; British Antarctic Survey; Dease, Peter; Dogs; Hall, Charles Francis; Hearne, Samuel; Indigenous Peoples; Nansen, Fridtjof; Parry, Edward (1821–1823); Peary, Robert; Rae, John; Rasmussen, Knud; Ross, John (1829–1833); Rymill, John; Sledges and Sleds; Stefansson, Vilhjalmur; Watkins, Gino (1930–1931)

References and further reading:

Irizar, Julian (1869–1935)

Lieutenant Julian Irízar led the first Argentine Antarctic expedition. His purpose was to assist the Swedish Antarctic Expedition of Otto Nordenskjöld when its ship, Antarctic, was crushed in the Weddell Sea, leaving three separate wintering parties. Three relief expeditions in all were dispatched, but it was Irízar who first reached Nordenskjöld.

To Nordenskjöld’s Rescue, 1903–1904

Concern mounted when no news was heard of the Swedish Antarctic Expedition after Antarctic sailed from Tierra del Fuego on 5 November 1902. Concern was particularly great in Argentina, which had offered generous support to the expedition in return for the inclusion of Argentine naval sub-lieutenant José María Sobral as a member of the wintering party at Snow Hill, an island to the east of the Antarctic Peninsula. Before Antarctic sailed to collect Nordenskjöld’s wintering party, a letter had been sent to the Swedish-Norwegian consul-general in Buenos Aires, asking that a relief expedition be organized should Antarctic not return to the Falkland Islands by 30 April 1903 and giving details of where the expedition should be sought.

In early October 1903 Lieutenant Irizar of the Argentine navy sailed south from Buenos Aires in the corvette Uruguay. By 4 November, Uruguay had reached the South Shetland Islands on a course set for Joinville Island to the north of the Antarctic Peninsula. Faced with a choice of following the Swedish expedition through the newly discovered Antarctic Sound or sailing east of Joinville and then south, Irizar chose the latter in the expectation that the ice would be lighter there,
and although heavy ice was encountered northwest of Joinville, once through it the sea was relatively clear. Uruguay now sailed south through Erebus and Terror Gulf, past large tabular icebergs but with little other ice to impede its progress. Heavy pack ice was again encountered off Seymour Island on 6 November, but Irízar was able to maneuver his ship into clear water behind it until he was brought to a halt by a barrier of solid ice extending beyond the island. After the ship dropped anchor, a sledding party now landed to inspect the depot known to have been left there and to see whether it contained a message. Nothing was found, but the sledding party was able to report that the ice had been blown away from the island toward the south by a strong northwest wind and that it was now possible for Uruguay to sail farther south. However, soon after the ship weighed anchor, the wind changed to the south, and Irízar once more found his course blocked by ice. Now, however, a looming mirage came to his aid, projecting through the atmosphere the greatly enlarged silhouette of a tent. Closer approach revealed that there was indeed a tent on Seymour Island, where Irízar landed to discover Gösta Bodman and Gustav Åkerlund, two members of Nordenskjöld’s wintering party. Informed that he was just 12 miles from the winter station, Irízar determined to walk there immediately, accompanied by Lieutenant Jorge Valour, Bodman, and Åkerlund.

Snow Hill Island was reached after a seven-hour march, Irízar arriving shortly after Nordenskjöld himself had returned, together with Gunnar Andersson and his two companions who had wintered at Hope Bay (see Andersson, Gunnar). Relieved as Nordenskjöld was to see Irízar, from him he now learned of Antarctic’s failure to return north the previous year. Clearly some accident had befallen the ship, but what, and where was the crew? With no time to be lost, Irízar and Nordenskjöld decided to set out the next day. To facilitate rapid embarkation, orders were given for Uruguay to be brought as close to Snow Hill as possible, while Nordenskjöld’s party made hurried preparations to leave. To everyone’s surprise and joy, Carl Anton Larsen now appeared with five of Antarctic’s crew, having come from Paulet Island via Hope Bay (see Larsen, Carl Anton). From Larsen, Irízar learned that the remaining members of the expedition were on Paulet. After a scare in which Lieutenant Fliess and eight men were sent out in the launch to retrieve the whaleboat in Tierra del Fuego, there, Sobral and Bodman landed to check their instruments, and nine Greenland huskies were deposited as a gift to the Argentine government. Buenos Aires was reached on 9 December to a tumultuous welcome.

See also: Andersson, Gunnar; Charcot, Jean-Baptiste (1903–1905); Larsen, Carl Anton (1901–1904); Nordenskjöld, Otto; Snow Hill Island

References and further reading:

Italy

Had Lieutenant Giacomo Bové (1852–1887) had his way, one of the earliest Antarctic expeditions would have been undertaken by Italy. Bové was a member of Adolf Erik Nordenskjöld’s Northeast Passage expedition, and his proposal was for an Italian Antarctic expedition to follow up the explorations of Eduard Dallmann (1873–1874) by sailing westward round the continent in as high a latitude as possible. Unfortunately, Bové was unable to obtain sufficient funding and therefore had to restrict his activities in 1881–1882 to Tierra del Fuego and the Falkland Islands.

Although no Italian expedition visited Antarctica until the late 1960s, major explorations of the Arctic were conducted by Luigi, Duke of the Abruzzi (1899–1900) and Umberto Nobile (1928). For details of what they did, see the entries under their names.

The first Italian expedition to reach Antarctica took place in 1968–1969, when a mountaineering party led by Carlo Mauri climbed Mount Erebus and ten other peaks in the Dry Valleys region of Victoria Land, while a scientific party led by Alde G. Segré carried out geophysical studies at Scott Base and in Victoria Land. Logistical support for this expedition was provided by the New Zealand Antarctic Program, which also assisted further Italian scientific expeditions to Victoria Land and the Transantarctic Mountains in 1973–1974 and 1976–1977.

On the other side of the continent, private Italian expeditions were organized to the South Shetland Islands and nearby islands by Giovanni Ajmone Cat in the motorized yacht San Giuseppe Due in 1970–1971 and 1973–1974 and by Renato Cepparo in Rig Mate in 1976. This last expedition set up the station Concha Italia in Admiralty Bay, King George Island, where a full scientific program was established. Concha Italia did not last long. Considering it built without permission on Argentine territory, the Argentine navy demolished it the following season.

Despite these earlier activities, Italy was comparatively late in ratifying the Antarctic Treaty, doing so only on 18 March 1981. Consultative status was achieved on 5 October 1987, following initiation of a national Antarctic program. In 1986, the summer station Terra Nova was opened in Victoria Land at Terra Nova Bay, where a comprehensive scientific program was...
soon established. Since 1993, a second station, Concordia, has been operated jointly with France. Sited on Dome C, an elevated area of the ice sheet far inland in Wilkes Land at 74°40’S, 124°10’E, this station’s primary purpose is to conduct a major ice-drilling project.

Italy’s polar tradition was continued in the Arctic by Guido Monzino, who reached the North Pole by dog team in May 1971. Among the thirteen Inuit accompanying him were Peter and Talilanguaq Peary, two grandsons of Robert Peary by his Inuk “wife” Aleqasina, and Avatak Henson, grandson of Matthew Henson. More recently, members of Associazione Grand Norde, led by Franco Giardini, have conducted a series of expeditions to Svalbard, Ellesmere Island, and Franz Josef Land. Italy also maintains the station Dirigibile Italia at Ny-Ålesund, Spitsbergen.

See also: Abruzzi, Luigi, Duke of; Dallmann, Eduard (1873–1874); King George Island; Nobile, Umberto; Nordenskiöld, Adolf Erik (1878–1880); South Shetland Islands; Spitsbergen; Victoria Land; Wilkes Land

References and further reading:
Jackson, Frederick  
(1860–1938)
The expedition to the high Arctic archipelago of Franz Josef Land led by the British explorer and big game hunter Frederick George Jackson is remembered today primarily for the unexpected meeting that saved the life of the Norwegian explorer Fridtjof Nansen, after he had left Fram in an attempt to reach the North Pole. Practices adopted by Jackson, particularly the use of ponies for transport, significantly influenced British Antarctic expeditions taking place soon afterward.

Jackson first visited the Arctic on board the steam-whaler Eric during a sealing and whaling voyage to East Greenland in 1887. Six years later he applied to join Fridtjof Nansen in his attempt to drift across the North Pole in Fram. Nansen turned him down on the grounds that he was not Norwegian, a rebuff that inspired Jackson to proceed with his own plans for an expedition, which he had first published in The Times that same year, in 1893. At this date, the high Arctic archipelago of Franz Josef Land had been visited by only three expeditions: Julius Payer and Karl Weyprecht in 1873–1874, and Benjamin Leigh Smith in 1880 and 1881–1882. Payer and Weyprecht had chanced upon this land when their ship, Tegetthoff, was beset off Novaya Zemlya and drifted north and west with the ice for eleven months. Smith’s achievement was to have discovered a navigable route to Franz Josef Land across the northern Barents Sea from Svalbard. Both Tegetthoff and Smith’s vessel, Eira, had been wrecked, and those on board escaped only after lengthy journeys through the pack and open sea to Novaya Zemlya. Franz Josef Land thus had something of a formidable reputation, but its potential as a forward base for attempts on the North Pole was widely recognized. Jackson proposed an expedition to make just such an attempt.

From Vaygach Island to Lapland along the Coast of Arctic Russia, 1893–1894
With no previous expeditionary experience behind him, Jackson was unable to obtain sufficient backing for what inevitably would be an expensive undertaking. He therefore determined to make a preliminary journey to test his equipment, clothing, and food. By traveling as much as possible with the indigenous peoples, he hoped to learn from them how best to live and travel in the far north, an enlightened attitude that other explorers would have done well to emulate.

On 29 August 1893, Jackson disembarked from Joseph Wiggins’s trading vessel Orestes at Khaboroovo. Located in Yugor Strait opposite Vaygach Island, this small settlement was chiefly inhabited by Nentsy reindeer herders. Jackson’s original intention was to visit the Yamal Peninsula some way farther east, but he had to give up that idea when he was informed that it was a place of ill omen to which no one would go. A Nentsy couple, however, was prepared to act as guides across the strait to Vaygach, where he spent two weeks in September exploring the interior and compiling a rough map. On 13 October, the Nentsy and their reindeer herds began their annual migration southwest to the Pechora River. There Jackson left them to continue up the Pechora to Ust’-Tsil’ma and then west to Archangel, where he arrived on 21 December. Although he had wished to continue with reindeer, at the Pechora the Nentsy had informed him that the next part of his journey would be too long for reindeer and that he should use Siberian ponies instead to pull his sledges. Jackson was to remark later that had he learned nothing else from his travels, they would have been worthwhile just for the discovery of these hardy draught animals. Strong and easily maintained, they were ideal for Arctic work, and he later recommended them to all who would listen, including Robert Falcon Scott and Ernest Shackleton.

At Archangel, Jackson received a telegram bearing the excellent news that the newspaper proprietor Alfred Harmsworth (1865–1922) had agreed to fund the expedition to Franz Josef Land. Rather than hurrying immediately home, Jackson decided to continue on round the White Sea coast to Lapland to study Saami methods of travel. What he saw confirmed his view that the difficulties of finding suitable food made reindeer unsuitable for the High Arctic.

Strange Meeting at Cape Flora, 1894–1897
On 5 February 1894 Jackson arrived back in London. If his expedition was to set out this year, much had to be done and quickly. Perhaps surprisingly for a newspaper proprietor who might have been expected to be interested above all in an attempt on the Pole, which was certain to provide good copy for his publications, Harmsworth insisted that the expedition be more than simply a “dash for the Pole” and should include members capable of scientific work. It was on Harmsworth’s initiative that the merchant naval officer Albert Borlase Armitage was appointed second-in-command, in addition to his responsibilities for making astronomical, meteorological, and magnetic observations. Others selected for the eight-man shore party were Dr. Reginald Koettlitz (physician, geology), Harry Fisher (geology, botany), Josiah F. Child (mineralogy), and three assistants—H. A. H. Dunsford, John William Heyward, and S. Burgess. The thirty-year-old whaler, Windward, with a 75-horsepower engine, was purchased and refitted for Arctic use.

On 12 July 1894, Windward left London. From 31 July to 5 August, the ship anchored at Archangel to take on four ponies,
furs for clothing, and a prefabricated log cabin. *Windward* was now heavily overloaded and became even more so after stopping at Khabarovo, where reindeer meat, more furs, and thirty dogs were obtained. Franz Josef Land was sighted on 25 August, but they were prevented from coming within 35 miles of it by a thick band of ice. The next two weeks were spent in ineffectual attempts to get through, with the captain only prevented from turning back by Jackson’s insistence that eventually they would find an opening. Finally, on 8 September, *Windward* succeeded in reaching Cape Flora on Northbrook Island, where Smith had wintered when his ship, *Eira*, sank in 1881. Jackson’s party was accommodated much more comfortably than was Smith’s, their winter quarters—Elmwood—consisting of a log cabin, four wood-and-canvas storage huts, a doghouse, and a stable for the ponies. When *Windward* was unable to return home as planned, a safe anchorage was found for it nearby, expanding the wintering party from eight to forty-one.

Maps compiled by Payer and Smith suggested that Franz Josef Land consisted of an extensive mainland fringed by islands. To date, only the latter had been explored in any detail. Jackson’s plan was to lay depots as far north as possible across the mainland in preparation for a journey toward the Pole. Payer himself had reached no farther than 82°05’N on Rudolf Island, but beyond he had reported possible land extending northward, which he had named “King Oscar Land” and “Petermann Land.” Farther west, Smith had reported “Alexandra Land” as stretching far to the northwest. It was quite possible that Franz Josef Land was continental in size and that the North Pole itself might be found on it. That was certainly what Jackson hoped.

On 23 February 1895, the sun rose for the first time that year, and on 10 March, Jackson was ready to begin his first sledging journey. Accompanied by Armitage and able seaman Karl Blomkvist with four sledges pulled by two ponies, he laid a depot on Hooker Island, the first of several planned to assist the polar journey. The same trio set out again on 16 April, this time with eight sledges pulled by four ponies and accompanied
for the first week by Koettitz and Heyward. By means of the British Channel, a wide strait separating the western from the central islands of Franz Josef Land, 81°20'N was reached off the west coast of Jackson Island on 2 May. Instead of Payer's “Zichy Land,” Jackson discovered what land there was to consist of a series of narrow islands. Beyond the British Channel he had found “Queen Victoria Sea.” With every appearance that the ice there was about to break up, Jackson decided to turn back. Clearly, all his plans would have to be revised.

By 3 July, the sea was sufficiently open for Windward to depart for London. Eight days later, Jackson set out with five men in the whaleboat Mary Harmsworth, with the intention of investigating just how far west “Alexandra Land” extended. From what he had seen farther north, he was already sure that it consisted of several islands rather than one landmass, a conclusion he was able to confirm as he sailed along the southern coasts of George and Alexandra Lands to reach Cape Mary Harmsworth, the westernmost point in the archipelago and some way beyond Cape Lofley, the farthest point seen by Smith in 1881.

The following spring, on 18 March 1896, Jackson, Armitage, and Blomkvist went up British Channel, hoping to extend their discoveries of the previous year. With three of the ponies dead, the seven sledges were now pulled by sixteen dogs and the remaining pony, which had learned to eat meat. Again, open water prevented them from traveling a great distance. Ascending to the summit of a prominent headland, Jackson was able to see far out to the west and north. West was largely sea, much of it open, with islands to the southwest (“Alexandra Land”) and northwest (possibly “King Oscar Land”). Due north, a dark water sky was seen in the location suggested by Payer for “Petersmann Land.” “What a part of the world this is for ‘Fly-away Lands!’” Jackson later wrote (1899, vol.2, 138).

On 17 June 1896 occurred the most famous meeting in the history of polar exploration. Shortly after dinner, Armitage noted a man out on the sea ice near Cape Flora. Initially thinking that it might be a walrus hunter who had got into trouble, Jackson approached a figure, whom he described as being “as black as a stoker from head to foot.” The conversation went as follows:

Jackson: I’m awfully glad to see you.
Nansen: So am I to see you.
Jackson: Have you a ship here?
Nansen: No, my ship is not here.
Jackson: How many are there of you?
Nansen: I have one companion in the distance there.

As they were speaking, Jackson slowly began to appreciate that he had met this man before. “Aren’t you Nansen?” he asked. “Yes,” the stranger replied, “I am Nansen.” “By Jove,” Jackson responded, “By Jove, I’m damned glad to see you!” (1899, vol.2, 62). The two then returned to the cabin, Nansen answering Jackson’s questions about when and where he had left Fram and how close he and his colleague Hjalmar Johansen had got to the Pole. As the other members of Jackson’s expedition came up, they were introduced and gave him three rousing cheers. Jackson reports Nansen as appearing to be “very pleased.” So he should have been, for this meeting had saved his life.

Nansen and Johansen remained with them for six weeks. On 26 July 1896, Windward returned with supplies and two new members, the naturalist William Speirs Bruce and dog handler David Wilton. Windward had experienced extreme difficulty in escaping from the ice the previous year, and two men had died before the ship finally arrived at the northern Norwegian port of Vardo. This time the voyage was considerably easier: Windward departed on 7 August with Nansen and Johansen on board, together with Fisher, Child, Blomkvist, and Burgess. These four members of the shore party were reluctant to take up Jackson’s proposal to remain one more year, particularly since there was no guarantee of support from Harmsworth. Jackson indeed was now seriously considering extending the expedition by two years in order to complete all the work he had in mind, including another attempt on the Pole based on what he had learned from Nansen. Although Jackson’s books exude a certain measure of geniality and humor, he was not a natural expedition leader, being happiest traveling solo and “roughing it” with local native peoples. To give himself greater solitude, he insisted on spending the winters sleeping on the roof of the log cabin, a practice he explained by saying that he was testing the suitability of the sleeping bags. Man-management, such as it was, consisted of posting written orders on a notice board. Discussion was not encouraged. Jackson was an enthusiastic and highly competent marksman, and largely thanks to his success in “bagging” polar bears and walruses, fresh meat was plentiful, and there was no scurvy.

On its 1896 voyage, Windward had brought four reindeer but no ponies. Harmsworth had also refused to make the ship available to assist Jackson’s plans to explore farther north, considering the risks of damage too great. Without adequate transportation, Jackson had to postpone his plans to try again for the Pole. Instead, on 15 March 1897, he and Armitage departed with thirteen dogs and the one surviving pony to spend eight weeks exploring the western islands, first traveling up British Channel before heading west to survey most of the coastlines of George and Alexandra Lands. From high on a glacier in westernmost Alexandra Land, they looked in vain for “Gillis Land,” which the Dutch whaler Cornelius Giles had reported seeing in 1707. It was yet another “fly-away land.” By 8 May, they were back at Cape Flora, setting out again twelve days later to the east to survey the islands beyond Hooker Island. Broken ice soon forced them to abandon this plan. Windward returned on 22 July, and when the ship left on 6 August, the entire expedition was on board. Jackson had intended to remain another year, but Harmsworth was unwilling to send the ship out again. On the way home, the captain kindly agreed to deviate from his course to allow one final
search for “Gillis Land” before heading back to reach London on 3 September.

After Jackson's expeditions, it was no longer possible to believe that Franz Josef Land might be the long-sought continent lying in the heart of the Arctic Ocean. Although the North Pole might still be found on land, it now seemed unlikely. He is remembered today primarily for the extraordinary meeting with Nansen, but Jackson's achievements should not be overlooked. During the first stay of any duration on the archipelago, much pioneering survey work and science was conducted and the western islands in particular were mapped with some accuracy. Through Armitage's appointment as second-in-command to Robert Falcon Scott's first expedition to Antarctica (1901–1904), practices adopted on Jackson's expedition were influential in the planning and conduct of this and later British expeditions during the “Heroic Era” of Antarctic exploration, a legacy that, although beneficial in certain respects (pyramid tents), was less so in others (the use of ponies rather than dogs). On his return from the north, Jackson himself joined the army, serving with distinction during the Boer War and World War I. In later life, he traveled widely in central Africa in pursuit of big game.

See also: Armitage, Albert; Bruce, William Speirs; Franz Josef Land; Indigenous Peoples; Nansen, Fridtjof; Northbrook Island; North Pole; Payer, Julius; Ponies; Scott, Robert Falcon; Shackleton, Ernest (1907–1909); Smith, Benjamin Leigh; Vaygach Island

References and further reading:

Jackson Island (Franz Josef Land)

Located at 81°15’N, 56°40’E, this almost entirely ice-covered island in Franz Josef Land is notable as the site where Fridtjof Nansen and Hjalmar Johansen wintered on their way south after reaching 86°13’N, having set out for the North Pole from Fram. The island was later named by Nansen for Frederick Jackson, whom he was famously to meet at Cape Flora, Northbrook Island, on 17 June 1896, some time after setting out from here. Jackson had in fact been the first to visit the island, reaching Cape Mill at 81°20’N on 2 May 1895. The official Russian name is Ostrov Dzheksona.

Nansen and Johansen reached Cape Norway on 27 August 1895 and remained here until 19 May 1896. While they were...
constructing their “hut,” so as to have at least some minimal shelter, they piled up some stones and roofed them over with the remains of their tent. The resulting den was so small that Nansen was unable to sit up in it and had to sleep with his feet stretched outside. He was lucky not to have had them bitten off by a passing polar bear, the location of hut being close to their customary route along the shore. For the hut in which they proposed to winter, a shallow pit was first scraped out with the aid of whatever tools they had—a walrus shoulder blade and tooth, ski stick, and broken sledge runner. Round this they heaped up walls using flat stones brought from a nearby talus. Moss was used to plug the many holes. A large driftwood log—the only one nearby—was dragged on top, and walrus hides were draped over it to form a roof. In all, the hut measured 3 by 2 meters, with a maximum height of 2 meters. For light, heating, and cooking they relied on a primitive blubber lamp and for food ate almost exclusively walrus and polar bear meat and blubber. For seven and a half months, they spent much of their time lying in near darkness in their double sleeping bag. Christmas was celebrated by turning their blubber-stained clothes inside out and New Year by formally agreeing to call each other by the familiar du (you) rather than the formal de, which they had used up to this point. When they headed south in the spring, Nansen left a note behind describing their experiences. In it, he explained that he believed that they were on “Gillis Land” and would head southwest across it before attempting to reach Svalbard over the sea. This note was found by Evelyn Baldwin in 1902 and is now in the library of Oslo University. The hut was visited again in 1904 by two members of Anthony Fiala’s expedition, but then not afterward until it was rediscovered in 1990 (Barr 1991). The site remains eminently recognizable.

See also: Baldwin, Evelyn; Fiala, Anthony; Franz Josef Land; Jackson, Frederick (1894–1897); Nansen, Fridtjof (1893–1896)

References and further reading:

James Ross Island (Antarctic Peninsula)
Located at 64°09’S, 57°45’W, this large island 40 miles in diameter to the east of the Antarctic Peninsula was first sighted by James Clark Ross on 6 January 1843 and roughly mapped as forming, with Snow Hill Island, part of the Trinity Peninsula rather than a separate island. It was named for its discoverer by Otto Nordenskjöld, who proved that it was an island by his identification of Crown Prince Gustav Channel in October 1903. The highest point is Mount Haddington (1,630 meters).

In 1945, a British sledding party from Hope Bay during Operation Tabarin was the first to circumnavigate the island. Further work was conducted by Falkland Islands Dependencies Survey parties working out of Hope Bay through the 1950s and early 1960s, and two Argentine refuge huts—San Carlos and San Juan—were built in 1958–1959 by parties from Esperanza, the Argentine station at Hope Bay. More recent work has been carried out by the British Antarctic Survey, including a paleontological survey in 1985–1986 and geological work by a Swedish party in 1992–1993. The Czech Republic plans to build a station on the Ulu Peninsula on the north coast in 2003.

See also: Antarctic Peninsula; Argentina; British Antarctic Survey; Czech Republic; Hope Bay; Nordenskjöld, Otto; Operation Tabarin; Ross, James Clark; Snow Hill Island; Trinity Peninsula

James, Thomas (ca. 1590–ca. 1635)
Most explorers make light of dangers faced and certainly do not draw attention to those that might be attributed to their own incompetence. Thomas James was an exception. His account of sufferings endured on his “strange and dangerous voyage” was to be the first best-selling narrative of a polar expedition and one that was later to influence Samuel Taylor Coleridge’s famous poem The Rime of the Ancient Mariner.

A Strange and Dangerous Voyage to Hudson Bay, 1631–1632
The little we know about Thomas James prior to his voyage appears to indicate that he had qualified as a barrister in 1612 and that he later abandoned this profession for the sea. Although of Welsh origin, he seems to have had family connections with the Bristol civic elite, and that and his reputation as an experienced navigator won him leadership of the expedition.

The plan to renew exploration of the Northwest Passage was provoked by a rival expedition to be led by Luke Foxe with the backing of London merchants. From the perspective of the Bristol Society of Merchant Adventurers, too many monopolies had in recent years been awarded to London, and its members wished to ensure that this did not occur again. James was therefore sent to represent his city’s interests at court, where Charles I was persuaded to grant privileges to both expeditions in proportion to the amount invested by each.

On 3 May 1631, James sailed from Bristol in the 70-ton Henrietta Maria, named for the English queen in gratitude for royal support. No expense had been spared in fitting out the ship, which was provisioned for eighteen months. James had taken particular care to ensure that his navigational instruments were of the best quality, many being specially made for this voyage. He also exercised care in the selection of his men—all unmarried and healthy—but controversially decided to choose none with any previous experience of northern waters on the grounds that he himself having none, his authority might be diminished if others had greater expertise. This decision contributed significantly to his many later difficulties.
Greenland was sighted on 4 June 1631, and by 17 June the entrance to Hudson Strait was reached. All early expeditions found passage through this strait difficult, but James makes more of his various alarms than others, with ice almost crushing his ship on more than one occasion. Having reached Nottingham Island at the strait’s western end, James’s instructions, like those of Foxe, were to search to the northwest. Also like Foxe, he was unable to do so in the face of masses of ice brought down through Foxe Channel. Reluctantly, he was forced to turn southwest to explore his secondary objective, the western and southern coast of “Button’s Bay,” as Hudson Bay then was known, for the explorer Thomas Button, whose course James was now following. Again, James reported more difficulties than others in crossing the bay, finding himself almost continuously beset by ice between 16 July and 11 August, when he finally reached the west coast near present-day Churchill. From there, he followed the coast south, but not without further alarms when he ran upon rocks—all this while James had been pursuing essentially the same course as Foxe, though some way behind. With Foxe delaying to fit out a pinnace at Port Nelson, James temporarily got ahead of him as he began exploration of the bay’s southern coast, which he named the “New Principality of South Wales.” Soon afterward, he was again overtaken by Foxe, who named the same coast “New Yorkshire.” Neither name is now used. On board Henrietta Maria, disasters continued as a rope fouled on the capstan, killing one and injuring several others. James and Foxe finally met on 29 August off Cape Henrietta Maria, named by James for his ship. Next followed something of a comic interlude, as James extended warm hospitality to the gruff Foxe, who was reluctant to spend any time at all in his company and made derisory comments about his ship, food, conversation, and course, none of which prevented the well-mannered and no doubt slightly desperate James from suggesting that Foxe winter with him.

Apart from a short stretch of the southern coast, which he had been first to see, James’s sole contribution to geographical knowledge was his exploration of the west coast of James Bay, where numerous small islands were discovered. He was looking for a suitable anchorage to winter, but he also hoped to discover a route to the St. Lawrence River. Several times Henrietta Maria ran aground, and during most of this period, James reports his ship as being close to disaster. By early October, the onset of winter was unmistakable, and the decision was made to winter at Charlton Island. Three huts, a store, a cookhouse, and sleeping accommodations were built. The latter was just over 6 meters square and had walls formed by logs piled up between stakes and lined by sails, with the mainsail forming the roof. On 29 November, James sank his ship to prevent its bottom being knocked out in the frequent storms. Despite being only 30 miles north of London’s latitude, they endured a harsh winter during which scurvy broke out, two dying from this and two more from accidents soon after reaching Charlton Island. All these sufferings and misadventures were graphically described by James, who finally judged the summer mosquitoes to be worse than the winter cold. Unsure as to whether it would be possible to refloat Henrietta Maria, he had the crew spend much of the winter building a pinnace. Fortunately, pumping out Henrietta Maria proved successful, and it was ready to sail on 2 July 1632, but not before one of the crew had set fire to the forest and come close to incinerating James.

Not having fulfilled his primary instruction of searching to the northwest of Hudson Strait, it was James’s main aim for the coming season. Nothing was ever straightforward for him, and instead of being able to sail directly north, he was forced by packed ice to follow close to the coast westward and then go north and east, the reverse of his course the previous year. He finally reached Foxe Channel in late August, sailing as far north as 65°30'N in a violent storm but not discovering anything new. Again, Foxe had been ahead of him and had reached farther. The Henrietta Maria left Hudson Strait behind on 3 September and arrived in Bristol on 22 October 1632.

Foxe had received a frosty welcome upon his return home, but James was accorded nothing but admiration, especially after his fellow Bristolians noted the condition of his ship. It appeared miraculous that James had brought so battered a hulk safely across the Atlantic Ocean. Foxe’s failure must have braced his backers to expect no discovery of the Northwest Passage, and at least they could boast that their man had spent eighteen months in the search, as against the six of the much-criticized Foxe. James’s training in rhetoric as a barrister no doubt came in handy in his eloquent descriptions of his terrifying voyage. The king was persuaded that he should meet him and spent an enthralled two hours listening to James’s tale of woe and disaster. This was the end for the Northwest Passage, the search for which was not renewed until the eighteenth century.

See also: Button, Thomas; Foxe, Luke; Hudson Bay; Northwest Passage

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Jan Mayen (Norway)

Located at 71°00’N, 8°30’W, this volcanic island lies on the Mid-Atlantic Ridge about 240 miles east of Greenland and 310 miles north of Iceland. At 35 miles long and 9 miles across at its widest, it has an area of 144 square miles. Because its high peak, Beerenberg (2,277 meters), is visible in good conditions from a considerable distance, this island was repeatedly rediscovered. It was most likely the “Svalbard” (Cold Coast) reported by the Norse in 1194, being much more
likely to have been seen than the suggested alternatives, East Greenland or present-day Svalbard.

Although not recorded in the journal surviving from Henry Hudson’s voyage of 1607—not Hudson’s own—the English whaling captain Thomas Edge, generally a reliable source, reported Hudson to have discovered the island “Hudson’s Tutches” at 71°N. Jan Mayen is some way west of Hudson’s direct route returning from Spitsbergen to London via the Faroe Islands, but it would have been quite consistent with his behavior on other voyages for him to have deviated in the hope of making new discoveries. It is said to have been seen by Thomas Marmaduke in 1612, who named it “Trinity Island,” and also by John Clarke, an Englishman sailing with a French whaling expedition in June 1614. Despite these reported sightings, discovery is generally credited to a Dutch whaling expedition, which saw the island in July 1614 and named it initially “Mr. Joris Eylan” for the pilot, Joris Carolus. It was subsequently named for Jan Jacobsz May, captain of De Goude Cath, one of the ships making the discovery.

The island was an important whaling center in the early seventeenth century, with the Dutch establishing a substantial shore station in 1616. Following a raid by Basque whalers in 1632, an unsuccessful attempt to winter was made in 1633–1634 by seven Dutch whalers led by Outger Jacobsz, who were left here on 26 August 1633 to protect the whaling facilities. Unlike the contemporary wintering party left at Smeerenburg on Amsterdam Island, none survived, all dying of scurvy and associated illnesses. This failure to winter and the consequent inability to protect shore facilities outside the hunting season was an important factor in the abandonment of Jan Mayen by the Dutch whalers, who made few landings after 1635.

Only one landing is known from the eighteenth century, when Alickie Payens landed in 1732, following the report of a volcanic eruption by the whaling captain Jacob Jacobsen Laab. The next recorded landing was made by William Scoresby Jr. on 4 August 1817 on the central east coast. Scoresby climbed the volcanic crater Eskkrateret and made observations on natural history. The first detailed survey was conducted by an Austro-Hungarian International Polar Year (IPY) expedition led by Emil von Wohlgemuth. This expedition was the major Austro-Hungarian contribution to the first IPY, reaching Jan Mayen on 13 July 1882 and setting up a station at Maria Muschbukta, which was occupied until 6 August 1883. In addition to a comprehensive scientific program, the expedition carried out a topographic survey of the whole island, resulting in a published map at the scale of 1:100,000 and the naming of many geographical features. A party led by Graf Josef Pally made the first recorded attempt to climb Beerenberg but was forced to turn back at 1,572 meters, 700 meters short of the summit. Other nineteenth-century landings were made by Lord Dufferin (1856), Carl Vogt (1861), Benjamin Leigh Smith (1872), Henrik Mohn (1877), A. P. L. Bienaimé (1892), C. F. Wandel (1896), and Alfred Nathorst (1899). Jean-Baptiste Charcot made several visits to the island, coming first in 1902 to inspect the condition of the IPY station for the Austrian government. He returned in 1912 and 1913 to conduct natural history studies and was able to demonstrate that the volcanic crater Eggøya had not been recently active.

A meteorological station was established by the Norwegian Meteorological Institute in 1921 at the foot of Beerenberg. Although the island was unofficially annexed by Norway the following year, this claim was only formally announced in 1929. No attempt was made to restrict access by other nations, and Jan Mayen continued to be visited by non-Norwegian expeditions. Thus, the first ascent of Beerenberg was achieved on 11 August 1921 by a British expedition led by James Wordie, and an Austrian party led by Hanns Töller was based here during the second IPY in 1932–1933.

Following Germany’s invasion of Norway in 1940, the meteorological station was evacuated, and its facilities were partially destroyed to prevent them falling into German hands. It was reoccupied six months later and maintained by a Free Norwegian garrison throughout the remainder of World War II. The station has remained open ever since. Scientists from the Norwegian Polar Institute have worked here on an occasional basis since 1948.

See also: Charcot, Jean-Baptiste; Hudson, Henry (1607); International Polar Years; Nathorst, Alfred (1899); Norse Arctic Exploration; Norway; Scoresby, William; Smith, Benjamin Leigh; Whaling and Arctic Exploration

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Japan

Japan’s involvement in Antarctic exploration began with Nobu Shirase’s attempt to reach the South Pole in 1910–1912. From the mid-1930s onward, Japanese whaling fleets visited the Southern Ocean, and their presence assisted initiation of a national Antarctic program in 1955–1956, when the research vessel Syowa (Captain Mitsuji Matsumoto) accompanied the whaling fleet to search for a suitable site for a station on Prince Harald Coast. In the following year, Syowa—or Showa—was established on East Ongul Island in Lützow-Holm Bay by an expedition led by Takesi Nagata, the first of the Japanese Antarctic Research Expeditions (JARE). Syowa was intended to be Japan’s major contribution to the International Geophysical Year and included a comprehensive scientific program. Although planned for operation throughout the year, Syowa had to be evacuated in February 1958,
when ice conditions prevented its relief by ship. It was reopened in October 1958, and its interrupted program resumed until February 1962, when the station was closed until January 1966. It has remained open ever since.

JARE has operated a number of other stations. In 1970, Mizuho was opened 170 miles inland of Prince Olav Coast, primarily to conduct ice coring studies. Since 1976, Mizuho has been maintained as an all-year station. Between 1986 and 1995, JARE operated the summer station Asuka in the Sør-Rondane Mountains inland of Princess Ragnhild Coast. The most recent field station is at Dome Fuji high on the ice plateau of interior Queen Maud Land. This all-year station was established in January 1995 in a major new ice coring program.

Japanese expeditions have made significant contributions to both scientific understanding and exploration of Antarctica. Among the more notable feats were two traverses made from Syowa in 1966–1967 to the U.S. Plateau station at 79°15’S, 40°30’E, and to the South Pole and back two years later, when a party led by Masayoshi Murayama traveled a total distance of 3,240 miles. Setting out on 28 September 1968, Murayama reached the Pole on 19 December and returned to Syowa on 16 February 1969. One field in which Japanese scientists have been particularly prominent is the collection and study of meteorites. Extensive areas of Antarctica are occupied by blue ice, that is, locations where the wind scours the ice free of snow. Subject to physical erosion but not chemical weathering, any meteorites falling here persist for millennia, standing out black against the surrounding blueness. Beginning with the finding of the first meteorites in the Yamato Mountains in 1968–1969, detailed searches were subsequently conducted in that region and later in the Dry Valleys region of Victoria Land.

Japan was one of the twelve original signatories to the Antarctic Treaty. The National Institute of Polar Research (NIPR) was founded in 1973, having originated in 1962 as the Polar Section of the National Museum. JARE is the national Antarctic operating agency. NIPR also maintains a station at Ny-Ålesund, Spitsbergen, and was prominent in the foundation of the International Arctic Research Center at the University of Alaska, Fairbanks, where many Japanese scientists work.

See also: Enderby Land; International Geophysical Year; Prince Harald Coast; Prince Olav Coast; Princess Ragnhild Coast; Queen Maud Land; Shirase, Nobu; Spitsbergen

Joinville Island (Antarctic Peninsula)

Located at 63°15’S, 55°45’W, Joinville is the largest of the Joinville Island Group, which is separated from Trinity Peninsula by Antarctic Strait. The island is about 40 miles long and 12 miles wide. It was discovered and roughly charted by Jules Dumont d’Urville on 27 February 1838, who believed that it and the adjacent D’Urville and Dundee Islands together formed one island, which he named “Terre Joinville” after François Philippe Louis Marie, Prince de Joinville (1818–1900), third son of the Duc d’Orléans. Discovery of Active Sound in January 1893 by members of the Dundee Antarctic Whaling Expedition and Larsen Channel in December 1902 by Otto Nordenskjöld’s Swedish Antarctic Expedition proved the existence of three islands rather than one. Extensive topographic surveys were conducted by the Falkland Islands Dependencies Survey in 1953–1954 and 1960–1961, with further geodetic work conducted in 1977–1978 by the British Antarctic Survey.

See also: Antarctic Peninsula; Antarctic Sound; British Antarctic Survey; Dumont d’Urville, Jules; Dundee Antarctic Whaling Expedition; Dundee Island; D’Urville Island; Nordenskjöld, Otto; Trinity Peninsula

Jones Sound (Canada)

This channel, 40 miles wide and 130 miles long, lies between Ellesmere and Devon Islands, connecting Baffin Bay to the east with Belcher Channel and Norwegian Bay to the west through Cardigan Strait and Hell Gate. It was discovered in 1616 by William Baffin and Robert Bylot and named for Sir Thomas Jones, merchant and lord mayor of London, one of the sponsors of their voyage. John Ross mistakenly identified it as a bay in 1818.

The first to penetrate any distance was the whaler Thomas Lee in 1848, who claimed to have sailed 150 miles into it in *Prince of Wales*, turning back when he failed to find whales. If so, he must have reached close to Cardigan Strait and Hell Gate. Others met less favorable conditions. William Penny and Horatio Austin found their way blocked by ice in 1850 and 1851, respectively, when they sought to explore the adjacent coasts for signs of Sir John Franklin. Edward Inglefield succeeded in charting Devon Island’s north coast to Cape Sparbo in 1852. Sir Edward Belcher’s sighting of open water extending far to the west beyond Belcher Channel in May 1853 was the first indication that Jones Sound was linked to channels farther west, thus providing a potential Northwest Passage.

From winter quarters in Harbour Fiord (1899–1900) and Goose Fiord (1900–1902) on the south coast of Ellesmere Island, members of Otto Sverdrup’s expedition completed a survey of the northern shore and extended Inglefield’s survey of Devon Island farther east. Frederick Cook spent two weeks in a 4-meter canvas boat making his way east from Eidsbotten, West Fiord, to Cape Sparbo, where he wintered. The Royal Canadian Mounted Police post at Craig Harbour was established by Joseph-Elzéar Bernier in 1922 and remained open intermittently until 1956, when it was transferred to Grise Fiord, where an Inuit community had been established three years earlier.

See also: Austin, Horatio; Baffin, William; Belcher, Edward; Bernier, Joseph-Elzéar (1922–1925); Cook, Frederick (1907–1909); Devon Island; Ellesmere Island; Kane, Elisha Kent; Northwest Passage; Peary, Robert; Ross, John (1818); Sverdrup, Otto (1898–1902)
Kane, Elisha Kent (1820–1857)
The dramatic exploits and hugely popular publications of the U.S. explorer Elisha Kent Kane did much to arouse interest in “the frozen north,” especially among his fellow countrymen. Kane’s stated objective in organizing his expedition of 1853–1855 was to search for Sir John Franklin. Not stated but perhaps even more influential in his preparations was his intense desire to reach the “open polar sea” and thus become the first man to attain the North Pole.

Serious illness stimulated rather than reduced Kane’s determination to travel the world and live life to the full. As a student, he was left with a permanently damaged heart following a severe bout of rheumatic fever. After receiving his medical degree at the University of Pennsylvania, he embarked upon wide-ranging travels, serving as a diplomat and naval surgeon in China, the Philippines, India, Egypt, Europe, and Mexico. In March 1850, he applied to join Lieutenant Edwin De Haven’s expedition to search for Sir John Franklin.

The First U.S. Expedition to the Arctic, 1850–1851
De Haven’s was the first U.S. expedition to the Arctic. Following an appeal by Lady Franklin to President Zachary Taylor, the New York merchant Henry Grinnell (1799–1874) offered to fund an expedition to assist the search effort for her husband, from whom no news had been heard since July 1845. Grinnell, a founding member of the American Geographical and Statistical Society—the precursor of the American Geographical Society—was determined to do whatever he could to assist. Relations between Great Britain and the United States were not good at this time, but Grinnell’s organization of an expedition to help the British search effort, mounted with some assistance from his government, did much to improve relations between the two countries.

De Haven, along with Kane, who would serve as the expedition surgeon, sailed from New York on 22 May 1850 in the 144-ton brig Advance, accompanied by Samuel P. Griffin in the 81-ton schooner Rescue. In August 1850, they reached Lancaster Sound, where they joined British expeditions led by Horatio Austin and William Penny. Not long afterward, Advance and Rescue were caught in ice while drifting north through Wellington Channel. Carried as far as 75°24’N, they were able to compile maps of a region seen previously only by Franklin. Fortunately for all on board, the ice drifted back south, bearing them back to Barrow Strait and then east through Lancaster Sound to Baffin Bay. They were not released off West Greenland until June 1851. After taking some time to recuperate at Prøven and Godhavn, De Haven attempted to sail north again on 22 June, only to find his way obstructed by massed ice. By 19 August, it was clear that there was nothing more that could be done to assist the search effort, so he gave orders to return home.

Once back in the United States, De Haven resumed his naval duties, leaving Kane to act as the expedition’s chief publicist. No one could have been better suited for the role. Kane was a spellbinding orator. His lectures were attended by packed audiences, and when his official account was published it proved an immediate best-seller (Kane 1853b).

A Calamitous Expedition Is Redeemed Only by “Discovery” of the Open Polar Sea, 1853–1855
Kane now planned to organize his own expedition. It too would search for Franklin, whom Kane believed had sailed north through Wellington Channel to reach the open polar sea beyond (1853a). Sir Edward Belcher had been sent with a British fleet to explore Wellington Channel, but Kane was not sanguine as to his chances of success. From his own experience with De Haven, he knew just how difficult it was to navigate through this tortuous, ice-clogged waterway. Instead, he would seek the open polar sea north of Greenland, where another British explorer, Edward Inglefield, had reported reaching 78°28’N on 27 August 1852 through Smith Sound. Inglefield had found the water ahead of him still open even at this latitude and had only been prevented from continuing on by a gale and the lateness of the season. In his published account, Inglefield had written that through Smith Sound “the pole of the earth might easily be attained and passed, or a direct course shaped towards Behring Strait” (Inglefield 1853, 125). It is an open question whether Kane truly believed that he might find survivors from Franklin’s expedition on the shores of the open polar sea. What, however, is not in doubt is his intense desire to be first to reach this sea and, by means of it, the North Pole. Whatever his motives, Grinnell was persuaded to sponsor the expedition, as was the financier George Peabody, the U.S. Naval Department, and several scientific societies.

Despite his many great talents, Kane was an unlikely expedition leader. His only previous experience of command was with a party of guerrillas during the Mexican-American War, and he was distinctly naive in his approach, believing that all that was necessary was to enjoin upon his crew obedience to their captain, as well as to ban alcohol and bad language. This might have been well had he shown good judgment in his choice of men but, apart from first officer Henry Brooks and steward William Morton, who had both been with De Haven, those chosen were generally young and inexperienced—Dr.
Isaac Hayes (surgeon), August Sonntag (astronomer), Amos Bonsall, and Henry Goodfellow—or incorrigible—William Godfrey and John Blake. Even the sailing master had not previously navigated through ice; but in truth, at this date, there were very few Americans with any kind of Arctic experience.

On 30 May 1853, Advance set sail from New York, heading first for West Greenland. At Fiskernæsset, the expedition was joined by the young Greenlander Hans Hendrik, with the Danish interpreter and sledge driver Carl Petersen coming aboard with forty-six dogs at Upernavik. Having previously assisted William Penny in 1850–1851, Petersen was unimpressed by the crew and puzzled by the captain. As for the provisions, they seemed inadequate, and he could only share Kane's hope that the hunting was good in Smith Sound.

By 23 August, Advance had reached 78°41'N, the farthest north achieved by any vessel in the Western Hemisphere. Kane had passed beyond the regions explored by Inglefield to discover a broad basin. This he had named for Peabody, though it was later renamed Kane Basin. The crew was increasingly restless and unsure of his purpose in attempting to get so far north, where there seemed little prospect of finding Franklin. To appease them, Advance was anchored in Rensselaer Harbor on the coast of North Greenland. Kane was still eager to winter farther north and so looked for a suitable anchorage in the whaleboat, in the process discovering the great Humboldt Glacier, the largest glacier outside Antarctica.

No one had ever wintered so far north. Advance was banked about with snow, and a canopy erected over the deck, to insulate the ship from the cold. As temperatures descended to −57°C (−70°F), Petersen's fears about the provisions proved correct. As Kane himself admitted, forethought was not one of his strengths, and in addition to failing to bring feed for the dogs, he had relied on supplementing his supplies with fish from Greenland, which proved unavailable. With little fresh meat obtained by hunting prior to the onset of winter, the crew was soon ravaged by scurvy; grated raw potatoes served as an unpalatable remedy. By March they were virtually out of fuel. The intense cold led to an outbreak among the dogs of piblockto—or Arctic canine hysteria—from which all but six were to die.

To the relief of all, the sun rose again on 21 February 1854. Kane was eager for sledging to begin as early as possible, and on 16 March Brooks was sent out with six men and the remaining dogs to lay a depot on Ellesmere Island, on the other side of Kane Basin. But it was just too cold. In temperatures down to −49°C (−70°F), Brooks and three of his companions became so badly frostbitten they could not move. Sheltering in their tent, Brooks sent the others back to summon help from Advance. It took eighteen hours for Kane's search party to find
them, but eventually the tent was spotted, and a much-relieved Kane found all four still alive. The return journey proved a nightmare. Kane himself retained very little recollection of how they finally made it back, after having been out on the ice for seventy-two hours. More than once, it seemed likely that the entire party would be lost, and two indeed were to die not long after their return to Advance. Pierre Schubert, the cook, and Jefferson Baker, a former hunting companion of Kane and one of the few upon whom he could depend.

In early April, Advance was visited by a party of Inuit from Etah, which lay some way south. From them Kane purchased four more dogs to give him one full team. Undeterred by what had happened to Brooks, he departed on 27 April with the aim of sledging as far north as possible along the coastal ice off Greenland. Having reached as far as 79°05'N, he fell ill and had to be carried back to the ship. He and his men were still weakened by scurvy, and they barely made it back after finding their depot destroyed by a polar bear. Six days after returning, Hayes and Godfrey were sent out on 20 May to explore Ellesmere Island, or Grinnell Land, as Kane called it. After crossing Kane Basin to reach Cape Sabine, they followed the coast north to 79°45'N. Having set out with food for just ten days, by now they were in poor shape. Godfrey threatened to shoot Hayes unless he turned back, but Hayes wrestled the gun from him. They were to owe their lives to their dogs, who hauled their sledge 120 miles, with Godfrey on it much of the way, led only on the two men's trousseens dressed with lamp oil. Three days after their return, second officer James McGary and Bonsall followed the west coast of Greenland to the northern end of the Kane Basin before returning on 26 June. The final journey, however, was by far the most successful. Between 1 June and 4 July, Morton and Hendrik sledged beyond Kane Basin to discover Kennedy Channel. At 81°22'N, they turned back with open water visible leading toward the Pole. At last, Kane's long-sought open polar sea had been discovered!

As summer progressed with no sign of Advance being freed to continue its voyage, Kane grew increasingly concerned that he would be forced to endure another Arctic winter. In an attempt to avert this, he set out on 11 July with six men in the whaleboat toward Beechy Island, 1,000 miles away, where Belcher's fleet was based. After dragging the 6-meter boat to the nearest water, solid ice was found blocking Smith Sound, and Kane was forced to return. By 8 August, he was back at Advance and attempting to blast the ship free with explosives. It was moved just 300 meters before the attempt was given up as futile. Soon afterward, Kane called his crew together and offered the option of making for Upernavik in the whaleboat to all who preferred this to remaining with him through what undoubtedly would be a very hard winter. To his mortification, eleven voted to go, led by Hayes, Sonntag, and Bonsall, upon whom he had counted to remain. Kane now reversed his decision, saying that those who left did so without his approval. Although two more were persuaded to remain, the others departed on 28 August with two sledges and provisions sufficient for five weeks. Several days later, the ne'er-do-well Blake was back with another seaman, George Riley. Riley stayed with Kane while Blake left shortly afterward to rejoin the group, whom Kane now regarded as deserters and on whom he privately wished vengeance once all were back in the United States.

For those with the whaleboat, the journey proved even more difficult than they could have imagined. The little open water remaining from the summer had now frozen over, and the heavy boat had to be heaved across uneven ice. The party was led by Petersen, with Hayes in support. They were at Northumberland Island, some 50 miles south of the entrance to Smith Sound, when Inuit from Etah found them. In exchange for needles, the party was given fresh meat and—reinvigorated—managed to reach open water, through which they came within a few days' distance of Upernavik. By now they should have been safe, but the ice was bad this year and they could get no farther. Dragging the battered whaleboat ashore, out of its timbers they built a hut. Here they hoped to be discovered by the Inuit and, with the aid of whatever the natives could supply, eventually to reach Upernavik. The hut, such as it was, was ready by 9 October. What food remained was consumed within a week, and like Franklin in 1822, they were reduced to scraping lichen off rocks for sustenance. The Inuit were aware of the party's situation and on a second visit two weeks later brought much needed meat and blubber. This was not altruism. The white men had much to give them in return, and Petersen did his best to hide his party's true weakness out of concern that once the Inuit became aware of it they might simply abandon them and return to collect everything after all members of the party were dead. Over the next few weeks the Inuit continued to visit, bringing meat, over which increasingly hard bargains were driven. The plight of Petersen's party could hardly be disguised, and soon they became an object of curiosity, attracting many visitors. An armed guard was mounted to deter any thought of attack, but they could not hope to survive the winter where they were and so decided to return to Advance. Petersen and Bonsall set out first on 29 November. Hayes and the remaining five followed three days later, after first dragging their Inuit visitors with laudanum and stealing their dogs and sledges, but they were unable to control the dogs. The Inuit soon caught up with them; at gunpoint the natives were persuaded to guide the party to the ship. After a hazardous journey, they arrived at Advance on 12 December, five days after Petersen and Bonsall. Kane allowed them to appeal to his magnanimity. Provisions were insufficient for the eight men already on board. Now they would have to be stretched to feed sixteen.

By March, fourteen had scurvy, and only Kane was reasonably healthy, having long subsisted on a diet of rats. The ship had been gutted to provide fuel. Furniture and shelves had been the first to go, then the bulkheads, and then the timber used to sheathe the inside of the hull. Kane's "loyal eight" ate
and slept separately from “the deserters,” though in truth few on board retained much loyalty or respect for their captain, who, apart from his objectionable practice of eating rats, was quarrelsome and ill-tempered. Having got them into this mess, he seemed an unlikely man to get them out of it. Godfrey now absconded, and the Greenlander Hendrik failed to return from a hunting foray. The latter was serious, since they relied upon Hendrik for what little fresh meat he could bring in. On 2 April, Godfrey returned with Hendrik’s sledge loaded with walrus meat. He told how Hendrik was happily ensconced at Etah, where Godfrey also planned to go once he had delivered the meat. Kane was unable to prevent him from escaping back to Etah but soon afterward organized a raiding party to capture both men.

Preparations now began to abandon Advance and make their way in the three remaining boats southward to Upernavik. Out of the ship’s timbers were fashioned sturdy sledges, upon which the boats would have to be transported across 80 miles of ice between Rensselaer Harbor and open water. On 17 May 1855, they set out. It took all sixteen to move each boat, which had to be relayed in turn during a very slow journey south. Meat obtained at Etah helped mitigate the effects of scurvy, though the carpenter Christian Ohlsen died not long after, having ruptured his bladder through overexertion. Open water was at last reached on 16 June, just north of Cape Alexander. Baffin Bay lay beyond and a long row along the coast to Upernavik. Several times they all but gave up hope but which had to be relayed in turn during a very slow journey south. Meat obtained at Etah helped mitigate the effects of scurvy, though the carpenter Christian Ohlsen died not long after, having ruptured his bladder through overexertion. Open water was at last reached on 16 June, just north of Cape Alexander. Baffin Bay lay beyond and a long row along the coast to Upernavik. Several times they all but gave up hope but

Kara Sea (Arctic Ocean)

This sea, marginal to the Arctic Ocean, lies on the continental shelf north of Russia, between Novaya Zemlya and Severnaya Zemlya, being partially enclosed from the main Arctic Ocean by the long arc of the former. It is connected to the Barents Sea to its west by Yugor, Kara, and Matochkin Straits, and to the Laptev Sea to its east by Vil’kitskiy, Shokal’skiy, and Red Army Straits. It has an area of 340,000 square miles. Reaching the Kara Sea was the goal of all early Northeast Passage expeditions, though very few managed to do so.

Two major river systems outlet into the Kara Sea: the Ob’ and the Yenisey, each among the world’s largest rivers in terms of length and outflow. The quantity of freshwater flowing into the sea, particularly after the spring breakup, results in low and seasonally variable salinity. During summer, a surface layer of warm and virtually fresh water forms above saltier and colder water beneath, assisting the melting of the ice, so that by late summer the Kara Sea is largely ice-free. Earlier in the year conditions are very different, resulting in the sea’s formidable mid-nineteenth-century reputation as an “ice cell.” East of the Yenisey, conditions are more difficult with most of the freshwater outflow diverted west by the Coriolis effect. Ice is prevalent at all seasons off the Taymyr Peninsula, and with fog frequently restricting visibility, this region is particularly dangerous for shipping and becomes yet more so near Cape Chelyuskin. There are numerous islands, most of which are low-lying and sandy.

By the mid-sixteenth century, there was an established Pomor trading route through Yugor Strait, along the southern coast and across Yamal Peninsula to the Ob’ estuary by portage. Western European expeditions exploring the Northeast Passage had great difficulty navigating the narrow straits leading through from the Barents Sea, and only Arthur Pet in 1580 and Willem Barents’s companions Cornelis Corneliszoon Nai and

See also: Austin, Horatio; Belcher, Edward; Devon Island; Ellesmere Island; Franklin, Jane; Franklin, John (1845–1848); Franklin Search Expeditions; Greenland, North; Hayes, Isaac; Nares Strait; North Pole; Open Polar Sea; Peary, Robert; Penny, William (1850–1851)

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Brant Ysbrantszoon in 1594 briefly reached the Kara Sea. All shipping east of the Pechora River was banned by decree of the tsar between 1619 and 1753, in an effort to concentrate trade along more easily taxed overland routes. This effectively brought to an end the use of the Kara Sea as a shipping route until the mid-nineteenth century.

Several detachments of the Great Northern Expedition (see Bering, Vitus) surveyed the southern coast. Stepan Muravyev and Mikhail Pavlov made preliminary charts as far as the west coast of the Yamal (1734–1736). These were improved upon by Stepan Malygin (1736–1739). The section between the Ob’ and Yenisey Estuaries was surveyed by Dmitry Otvsyn (1734–1738). The exceptionally difficult section off the west coast of the Taymyr Peninsula was begun by Fedor Minin (1738–1741) and concluded by Khariton Laptev (1739–1742).

By the middle of the nineteenth century, so little shipping visited the Kara Sea that it was possible for the view to become established that it was virtually un navigatable. This was proved to be far from the case in 1869 when the Norwegian walrus hunter Edward Holm Johannesen went there to investigate the possibilities for sealing and walrus hunting following the decline in walrus stocks off Svalbard. During an extended voyage, he was able to demonstrate that by mid-August the sea was generally navigable and, in September, largely ice-free. Johannesen’s report soon led to a revival of shipping, pioneered by Mikhail Konstantinovich Sidorov and culminating in the voyage of Joseph Wiggins to the Ob’ in 1874 and Adolf Erik Nordenskiöld’s first transit of the Northeast Passage (1878–1880). Nordenskiöld had previously undertaken two reconnaissance voyages in 1875 and 1876. In bad ice years, however, the sea could live up to its former formidable reputation. In 1882–1883, the Dutch International Polar Year expedition in Varma led by Maurits Snellen and a Danish exploring expedition led by Andreas Hovgaard in Djymphna became beset and drifted throughout the winter between Vaygach Island and the Yamal Peninsula. Varma had to be abandoned. Mystery still surrounds the fate of Vladimir Aleksandrovich Rusanov, whose last voyage, left at Matochkin Strait, reported his heading east to attempt the first Russian transit of the Northeast Passage. He was never seen again. Relics found off the Taymyr Peninsula suggest that his vessel, Gerkeles, was wrecked here in 1913. Again, in 1914–1915 the icebreakers Taymyr and Vaygach, under the command of Boris Vil’kitskiy, were beset entering the sea through Vil’kitskiy Strait and forced to spend the winter off Taymyr Peninsula. Several of the islands have figured significantly in exploration history. Uyedineniy Island (77°30’N, 82°30’E) was discovered by Johannesen in 1878, being next visited by Otto Sverdrup in 1915 while looking for Rusanov. The large scientific station finally closed in November 1996. The story of its abandonment is probably typical for other Russian polar stations at this time. A shortage of fuel was reported. The occupants were fully expecting to be resupplied with fuel and food when a helicopter arrived, and they were informed that they had thirty minutes to abandon the island. Most of their possessions had to be left at the station, which was replaced by an automatic weather station powered by a nuclear reactor. The existence of Vize Island (79°30’N, 76°59’E) was first suspected on the basis of marine currents by Professor Vladimir Vize of the Arctic Institute (Leningrad) in 1924. It was discovered six years later by Otto Shmidt in Sedov. Established in 1945, the station remains one of very few still open. Ushakov Island (80°55’N, 79°00’E) was discovered on 1 September 1935 during a high-latitude voyage by the Soviet icebreaker Sado, under the command of Georgiy Ushakov, for whom it was subsequently named. Ushakov chose to be buried there, as did his fellow pol’arnik Boris Aleksandrovich Kremer (1908–1976). Until 1989, the island was the site of one of the most northerly meteorological stations in the Soviet Arctic.

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Kellett, Henry (1806–1875)
The British naval officer Henry Kellett was one of many who assisted in the search for Sir John Franklin’s missing Northwest Passage expedition. In 1849, during the course of several voyages made for this purpose, he discovered Herald Island and (probably) Wrangell Island off northeastern Siberia; between 1852 and 1854 he was responsible for charting the western-most members of Canada’s Parry Islands. Kellett, however, is less known for his own achievements and more for providing the means whereby colleague Robert McClure narrowly escaped the same fate as Franklin; McClure would instead survive to complete the first transit of the Northwest Passage.

HMS Herald Explores North of Bering Strait, 1848–1850
Captain Henry Kellett’s introduction to the Arctic took place when he was seconded three times to assist in the Franklin search. For Kellett, this was an unwelcome distraction during his six-year voyage in the 26-gun frigate HMS Herald, the chief task of which was to survey the western coast of the Americas between Ecuador and British Columbia. In 1848, Herald was summoned to Bering Strait to assist Thomas Moore in HMS Plover. The two vessels failed to meet up, and
Kellett accomplished little apart from collecting rumors that white men had been seen in interior Alaska. Almost certainly these were fur traders, but at this date it was possible that they might be Franklin survivors. 

Herald's voyage in 1849 was altogether more significant. Meeting Plover in Kotzebue Sound, the two vessels sailed north to Wainwright Inlet, where Lieutenant William Pullen disembarked to lead a boat party along the northern coast of Alaska to the Mackenzie Delta to investigate the reported "strangers." From there, Kellett headed west into the Chukchi Sea. On 6 August, a small island was seen north of the Chukotka Peninsula. Kellett landed and took possession for Great Britain, naming his discovery Herald Island for his ship. Farther west, more land was seen and named "Plover Island." Most probably, this was the first sighting by an exploring expedition of Wrangell Island, but Kellett is not universally credited with its discovery because, if it was Wrangell, he charted it in the wrong place. Wrangell was not seen again until 1866 or 1867.

In the following year, Kellett was stationed off Cape Lisburne when he encountered Robert McClure in HMS Investigator hastening east to enter the Beaufort Sea before the ice closed in. He was to meet him again several years later in very different circumstances.

**McClure Is Rescued and the Longest Ever Man-Hauling Journeys Conducted, 1852–1854**

Despite having only recently returned from his extended voyage in the Pacific, Kellett did not demur when appointed second-in-command of Sir Edward Belcher's new expedition to search for Franklin. Unlike McClure and Richard Collinson, who were simultaneously seeking Franklin from the west, Belcher was to follow Franklin's own route, entering the supposed Northwest Passage from the Atlantic through Lancaster Sound. Although Belcher would concentrate on Wellington Channel and regions farther north, Kellett was to take charge of the sailing ship HMS Resolute and the steamer HMS Intrepid and establish winter quarters farther west, preferably on Melville Island. From there, his sledging parties would explore the westerly islands for signs of Franklin. He was also to lay a depot at Winter Harbour, Melville Island, just in case McClure or Collinson had need of it. McClure had not been seen since Kellett's brief meeting north of Bering Strait; Collinson had entered the Beaufort Sea one year later.

Departing from London on 15 April 1852, Resolute and Intrepid separated from the other three vessels of Belcher's squadron at Beechy Island on 15 August, before continuing through Barrow Strait and Melville Sound to Melville Island. Winter Harbour took its name from Edward Parry's winter quarters in 1819–1820. Kellett had hoped to base himself there too, but with the pack ice extending in a solid mass 5 miles offshore, he had to turn back and winter instead at Dealy Island, some 50 miles farther east. With a major sledging program to be conducted the following spring, the last weeks of the fall were devoted to depot-laying journeys, one party led by Lieutenant Frederick Mecham being sent to Liddon Gulf. On the way back, Mecham visited Winter Harbour to find a note left by McClure summarizing Investigator's voyage and stating that it was anchored in Mercy Bay on the north coast of Banks Island. It was too late in the year for Kellett to do anything now. In the meantime, McClure's men would have to survive another winter on short rations, and there was a real risk that Investigator might be abandoned early next year before any relief party could reach it. Clearly, whatever help was sent had to depart as soon as there was sufficient light to travel by, regardless of cold, and would have to move quickly. Fortunately, in Lieutenant Bedford Pim Kellett had an officer capable of the challenge. Pim had been with Kellett in Herald and was one of a very few officers engaged in the Franklin search who had previous familiarity with dogsledging. Through the winter, preparations were made for Pim's departure. He was to be accompanied by a second sledge led by the surgeon Dr. William Domville.

On 10 March 1853, Pim and Domville left Dealy Island, heading along the coast to Cape Dundas. Not far out, Pim's sledge broke down. Unable to brook delay, he opted to send Domville back and continue alone across the sea ice to Banks Island with a dog team and the two sailors Robert Hoyle and Thomas Bidgood. On 6 April, he reached Mercy Bay only to see no sign of Investigator. His first thought was that McClure must have succeeded in completing his planned transit of the North-west Passage, but then one of the seamen pointed out a dark shape at the far end of the bay. Pim now hurried ahead. Soon, the ship could be seen quite clearly and on its deck men moving about. He was not too late! McClure was out on the ice when he saw a figure blackened by blubber oil rapidly approaching. Only after Pim had blurted out his name and office did McClure understand that this was not an Inuk and that two British ships lay across the strait to the north. How Kellett overcame McClure's reluctance to be seen to accept any aid in his claimed first transit of the North-west Passage is described in the McClure entry. In brief, Investigator was eventually abandoned on 3 June, and sixty-one men crossed the strait to reach safety at Dealy Island.

While Pim was effecting McClure's rescue from Banks Island, several other sledging parties set out on 4 April. Two of these journeys were especially noteworthy, being among the longest ever conducted by man-hauling. Mecham sledged along the southern coast of Melville Island to discover Eglinton and Prince Patrick Islands during a journey of 1,160 miles. McClintock, on an even longer journey of 1,408 miles, crossed Melville Island to follow the coast northwest, discover Emerald Island, and, together with Mecham complete a near-circuit of Prince Patrick Island. Well over 1,000 miles of previously unknown coast were laid down, but not one trace was seen of Franklin.

Preparations were being made to leave Dealy Island when
matters were taken out of Kellett’s control by a strong gale, which drove the ice that was encasing Resolute and Intrepid out into Melville Sound on 17 August. As long as the pack drifted east, there was some chance that the ships might be carried to open water in Lancaster Sound, but they were to get no farther than Cape Cockburn, Bathurst Island, before the ice froze again into a rigid mass. There they were to spend an uncomfortable winter, especially the crew from Investigator, many of whom were inadequately clothed and without cabins.

With McClure safely on board, and having established that there was little chance of Franklin having sailed west of Barrow Strait, Kellett’s chief remaining task was to establish the whereabouts of Collinson and Enterprise. On 3 April 1854, Mecham was sent to investigate through Prince of Wales Strait. In a cairn on the Princess Royal Islands, he found messages left by Collinson in 1851 and 1852, which indicated that all was well, as did another message deposited some way farther south. Meanwhile, Kellett received communications from Belcher intimating that his vessels should be abandoned. Kellett was unwilling to do this unless under direct order. He therefore sent McClintock to clarify the situation and state that his ships were in no immediate danger. Belcher, however, was adamant, and on 15 May 1854 Resolute and Intrepid were abandoned and their crews walked across the ice to Beechey Island, accompanied by those remaining with them from Investigator. Mecham learned of this change of plan at Dealy Island. As a result, his journey became even more extended, and by the time he rejoined the others on 12 June, he had traveled 1,544 miles, the longest man-hauling journey on record. In all, sledge parties during this expedition traveled 15,399 miles, including more than 2,000 miles along previously unexplored coastlines (Taylor 1955, 54).

Kellett was honorably acquitted at the court-martial held to investigate the loss of his ships, the president of the court going out of his way to congratulate him on his good work. McClure, however, was less appreciative. Parliament had voted an award of £10,000 to those completing the first crossing of the Northwest Passage, and McClure had no intention of sharing this with Kellett and the officers and crews of Resolute and Intrepid. He therefore sought to minimize the help given to him and insisted that his men would have completed their crossing, whether or not relieved by Kellett. This is frankly unbelievable, but McClure was sufficiently convincing to achieve his objective. Such ingratitude disappointed Kellett, himself a warm and generous spirit, who always kept a happy ship regardless of the tensions inherent in Arctic command.

See also: Banks Island; Belcher, Edward; Collinson, Richard; Eglinton Island; Emerald Island; Franklin, John (1845–1848); Franklin Search Expeditions; Herald Island; Man-hauling; McClintock, Leopold; McClure, Robert; McClure Strait; Melville Island; Moore, Thomas (1848–1852); Northwest Passage; Parry, Edward (1819–1820); Prince Patrick Island; Wrangell Island
Kemp Land (Antarctica)

Kemp Land forms that part of East Antarctica lying between 55° and 60°E, with Enderby Land to the west and Mac. Robertson Land to the east. First sighted by the British sealer Peter Kemp on 26 December 1833, it was not visited again until January 1930 when flights from Sir Douglas Mawson's ship RRS Discovery proved Kemp and Enderby Lands to be connected. In 1935–1936, the Discovery Investigations ship RRS William Scoresby charted the coast, in the process discovering Edward VIII Gulf and making the first landing in William Scoresby Bay. The first aerial photographic flights were made from the Western Group during Operation Highjump in February 1947.

The Australian National Antarctic Research Expeditions (ANARE) conducted a topographic and geological survey to Kemp Land from Proclamation Island, Enderby Land, in 1959–1960, and a coastal survey from Mawson station to Kemp Land in 1964–1965. Kemp Land was included in the comprehensive trimetrogon survey of the Australian Antarctic Territory initiated by ANARE in 1961–1962. To date, no stations have been located in this region apart from one deep in the interior, where at the Pole of Inaccessibility (87°07’S, 55°02’E), a Soviet tractor team traveling from Mirnyy on the coast of Queen Mary Land succeeded in maintaining a station briefly between 13 and 28 December 1958.

See also: Australian Antarctic Territory; Discovery Investigations; Kemp, Peter; Mawson, Douglas (1929–1931); Operation Highjump; Poles of Inaccessibility; Sealing and Antarctic Exploration

Kemp, Peter
(d. 1834)

The British sealer Peter Kemp led one of a series of commercial and exploring expeditions sent out by London shipping concerns, though this time by Daniel Bennett & Sons rather than the better-known Enderby Brothers. Very little is known about his voyage other than that during it part of Antarctica's coastline, Kemp Land, was seen for the first time.

A Sealer Reaches Antarctica's Coastline, 1833–1834

Peter Kemp evidently had considerable experience in sailing southern seas when he was appointed captain of the 147-ton snow Magnet in 1833. By this time, he had made many whaling and sealing voyages to the Southern Ocean and had been master on seven. Kemp was supplied with two excellent chronometers and had sufficient provisions to enable him to sail directly for the Kerguelen Islands, 11,000 miles away. Seventeen men sailed with him.

By July 1833 when the Magnet embarked, the important discoveries made during John Biscoe's recent voyage were well known after their announcement by Charles Enderby at the Royal Geographical Society in February 1833. Kemp clearly studied Biscoe's report carefully, noting in particular his advice to adopt an east-to-west course close to the continent where easterly winds were likely.

At Kerguelen, Kemp reprovisioned and on 26 November headed south, intending to reach the Antarctic continent just to the east of Biscoe's discoveries at Enderby Land. He made fast passage, and land was reported on 27 November 180 miles south of Kerguelen. This is a mystery, and it is possible that Kemp may have seen Heard Island, not otherwise discovered until 1853. Although Heard Island is 2,745 meters high and visible in clear conditions from 100 miles, Kemp's position shows him to have been 120 miles from Heard. A combination of exceptionally clear conditions aided by a mirage might together have rendered Heard visible, but it is more likely that Kemp was mistaken. He himself did not investigate further, continuing south until 14 December when the pack was encountered. Threading his way through this with difficulty, he sighted land on 26 December, but no closer approach could be made through the impassable ice. Remembering Biscoe's failure in similar circumstances despite weeks of effort, Kemp turned north on 29 December and sailed back to Kerguelen, where the next three months were spent hunting elephant seals. Magnet left for South Africa on 24 March 1834, but Kemp himself was not to complete the passage home, tragically falling overboard and drowning on 21 April.

Kemp's voyage added more circumstantial detail to the growing knowledge of the Antarctic continent. In fact, he had managed to reach one of its least accessible coastlines, not seen afterward until January 1930 by Sir Douglas Mawson. With Kemp's log lost in a London cab, what little we know of his voyage derives from Charles Enderby's report to the Royal Geographical Society and a surviving chart in the Hydrographic Department showing his course. Kemp Land remains his best memorial.

See also: Biscoe, John; Heard Island; Kemp Land; Kerguelen Islands; Mawson, Douglas (1929–1931); Sealing and Antarctic Exploration

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Kemp, Peter (d. 1834)

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See also: Biscoe, John; Heard Island; Kemp Land; Kerguelen Islands; Mawson, Douglas (1929–1931); Sealing and Antarctic Exploration

References and further reading:


Kennedy, William (1814–1890)

The former Canadian fur trader William Kennedy made an unlikely leader of a British voyage to search for Sir John
Franklin. Unfortunately, he chose to ignore instructions directing him to explore the vicinity of King William Island, where Franklin’s fate awaited discovery.

**Lady Franklin’s Knights-Errant Go Astray, 1851–1852**

In contrast to the serried ranks of British naval officers leading the majority of expeditions in search of Franklin and his missing Northwest Passage expedition, William Kennedy was the mixed-race offspring of a Scottish employee of the Hudson’s Bay Company (HBC) and his Swampy Cree wife. Born at the HBC trading station of Cumberland House, he recalled meeting Franklin as a small child in 1819, during the latter’s first expedition to the Canadian Arctic. Kennedy later worked for the HBC before resigning in 1846 in protest of its policy of selling alcohol to the natives. The famous explorer had clearly left an impression, because when Kennedy heard of the effort being made to find Franklin, he lost no time in traveling across the Atlantic to offer his services to Lady Franklin.

Aware that official expeditions could not explore the entire Canadian Arctic, Lady Franklin had decided that she must organize expeditions of her own to search areas omitted from the Admiralty’s plans. Given her husband’s instructions, the region west of the Boothia Peninsula seemed a likely location for him to have reached, but the naval effort was concentrated farther north. Although some funds were obtained through public subscription, the considerable costs incurred in fitting out Lady Franklin’s five expeditions fell largely upon her own limited means, and this was to be a factor both in choice of vessels and in those chosen to lead. Thus, the 90-ton schooner *Prince Albert* had previously been used in the Azores fruit trade. It was small, not ice-strengthened, and its shallow draft made it difficult to handle in the open sea. For officers, Lady Franklin had a natural preference for enthusiastic volunteers and was not put off by lack of relevant experience. Thus, Commander Charles Codrington Forsyth (ca. 1810–1873) was appointed leader of *Prince Albert*’s first voyage in 1850, despite having sailed previously only in the tropics. To assist him, she chose William Parker Snow (1817–1895), a man whose varied résumé encompassed hotel management and secretarial duties for the historian and poet William Babbington Macaulay. Snow was placed in charge of one of the overland parties. Given such leadership, it was fortunate that the resulting voyage proved no worse than a fiasco, accomplishing little beyond a tentative venture into Prince Regent Inlet. *Prince Albert*, however, did return with news that traces of Franklin had been found at Cape Riley and adjacent Beechey Island. Lady Franklin was bitterly disappointed by Forsyth’s failure and determined she would choose another leader for her next expedition.

Kennedy’s appearance in London in 1851 was thus timely. Unlike Forsyth, he had traveled extensively in the Canadian wilds but had no nautical experience, barring a period in charge of a boat on Lake Huron. To assist him as second-in-command, she chose *enseigne de vaisseau* Joseph-René Bellot (1826–1853), a French naval officer of humble background who had not previously visited the Arctic; but like Forsyth, Snow, and Kennedy, he was prepared to serve without payment. Equally idealistic and dedicated to the cause, Kennedy and Bellot were to make a surprisingly successful pairing, the latter’s nautical experience complementing the former’s expertise overland. Another unlikely member of the eighteen-man party was the sixty-one-year-old John Hepburn, a survivor of Franklin’s horrific first expedition of 1819–1822, who—in Lady Franklin’s words—“would not be left behind.”

As against the armada of search vessels departing the previous year, Kennedy alone set out in 1851, sailing from Aberdeen on 22 May. After a difficult voyage across Baffin Bay, *Prince Albert* entered Lancaster Sound. Reaching the entrance to Prince Regent Inlet, Kennedy insisted on visiting Port Leopold, Somerset Island, to examine the depot and see...
whether any messages had been left by other search expeditions. Before his boat could reach land, the ice came in, cutting him off from the ship, and Bellot was forced to abandon him without knowing whether he had managed to get ashore. After some indecision, he decided to establish winter quarters some 40 miles farther south in Batty Bay. It took him three attempts to reach Port Leopold overland, finally arriving on 17 October to find Kennedy ensconced in reasonable comfort in a boat roofed over by canvas and surviving off the substantial stores left behind by Sir James Clark Ross.

Lady Franklin’s instructions for Kennedy were to cross Somerset Island and explore south of the regions examined by Ross in 1849. At that location there was also the possibility that Inuit might be encountered with some knowledge of what had happened to Sir John. Had he followed these orders, he would almost certainly have learned of the death of many white men on King William Island. Although it is unlikely that anyone remained alive, he might have discovered journals and other written records, long scattered by the Inuit and/or winds by the time Leopold McClintock finally reached this island in 1859. Unfortunately, having crossed Somerset Island, he thought that land could be seen farther north barring Peel Sound. If so, Sir John could not have come this way, from which Kennedy concluded that there was little point in exploring the south. Instead, he decided to continue across Peel Sound to the western coast of Prince of Wales Island. Given his experience of wilderness travel in Canada, not surprisingly he had no truck with man-hauling and, with the aid of dogs, accomplished with Bellot the highly commendable journey of 1,265 miles in ninety-five days. Their most significant discovery was made early on during their journey. Departing from Batty Bay on 28 February 1852, they had come upon what appeared to be a strait on 7 April separating Somerset Island from Boothia Peninsula farther south. Although Kennedy was eventually convinced that this was a strait, which he named for his traveling companion, Bellot was less sure. Visibility was poor, and Kennedy was not prepared to grant him time to conduct a proper survey. It was to be left to McClintock in 1858 to prove that Kennedy was right. Bellot Strait marks the northernmost point of the North American continent, and although seldom navigated, it provides a link in one of several possible North-west Passages.

Future fortune favored neither Kennedy nor Bellot. Although disappointed that nothing had been discovered concerning her husband, Lady Franklin appreciated Kennedy’s sincere efforts on her behalf, and he was therefore entrusted with leading another expedition, this time to Bering Strait in the steamer *Sophia*; he was to explore west or east according to ice conditions. He was not to get so far. Whatever their motives for originally joining the expedition, and having endured many months of Kennedy’s teetotal regime on the long voyage round Cape Horn, most officers and crew jumped ship when *Sophia* reached Valparaiso to join the Californian and Australian gold rushes. No replacements were available, and the planned search had to be abandoned. Bellot was still more unlucky. He had been offered command of *Sophia* (with Kennedy said to be prepared to serve under him) but instead preferred to go north with the supply ship HMS *Phoenix*. Having reached Beechey Island, he volunteered to carry mail to Sir Edward Belcher, based farther north in Wellington Channel. On 17 August 1853, he and his companions had erected their tent on the sea ice. Stating that he was going out briefly to examine conditions, he failed to return; the others looked out for him and found the ice breaking up with his stick on the far side of a widening crack. Lady Franklin was heartbroken. See also: Belcher, Edward; Franklin, Jane; Franklin, John (1845–1848); Franklin Search Expeditions; Hudson’s Bay Company; King William Island; McClintock, Leopold; Northwest Passage; Peel Sound; Prince of Wales Island; Prince Regent Inlet; Ross, James Clark (1848–1849); Somerset Island; Wellington Channel

References and further reading:

Kerguelen Islands (Sub-Antarctic)
Located at 49°30’S, 69°30’E, at a position 1,900 miles from Africa and Australia and 1,250 miles north of Antarctica, these are the largest of the sub-Antarctic islands with a total area of about 2,800 square miles. Consisting of one large island, several smaller ones, and numerous off-liers, the archipelago is one-sixth covered by ice and deeply indented by bays and fiords. The highest mountain is Mount Ross (1,850 meters).

The islands were first sighted by Yves Joseph de Kerguelen-Trémarec on 12 February 1772. The first landing was made during the same expedition by a boat party from *Gros Ventre* commanded by M. Boisguenneuc, who landed in Baie du Lion Marin at Anse du Gros Ventre on 14 February. On Kerguelen’s second expedition, the Kerguelen Islands were reached on 14 December 1773. Kerguelen himself again failed to land despite being offshore for five weeks, but a landing was made from *Oiseau* on 6 January 1774 at Baie de l’Oiseau by the ship’s captain, Saulx de Rosnevetz.

The next recorded landing was made by James Cook on 25 December 1776. Bearing in mind the date of his landing, Cook named his anchorage “Christmas Harbor,” though this was in fact the same bay where de Rosnevetz had landed. Cook was
good at coining memorable names, and he referred to the
archipelago as a whole as “the Island of Desolation.” His names
were widely adopted, particularly by the American whalers and
sealers based on the islands from the last years of the eight-
teenth century who found the original French names unpro-
nounceable. Robert Rhodes (Hillsborough) made an excellent
chart of the island’s northern and northeastern coasts while
whaling and sealing here for eight months in 1799–1800.
Another sealer visiting Kerguelen was Peter Kemp, who landed
here in 1833 before heading south to Antarctica. After discov-
ering Kemp Land, he returned again to Kerguelen to hunt ele-
phant seals.

For both sealers and explorers, the islands represented an
important revictualling point, offering fresh water, fresh meat
(originally penguin, duck, and seals, but later also pigs, oxen,
rabbits, etc.), and—no less important—fresh vegetables, in
the form of the Kerguelen cabbage, Pringlea antiscorbutica.
 Recognized from Cook onward as a highly effective preventative against scurvy especially when eaten raw, this unique and valuable plant is now much reduced in distribution, being found today only on isolated islands and in the west, which rabbits and other herbivores have been unable to reach. With food and water in relatively plentiful supply, sealing parties spent extended periods on the islands throughout the earlier part of the nineteenth century, and shipwrecked sailors such as the British sealer John Nunn and his companions could survive for four years before being rescued after their ship Favorite was lost in 1825.

The first explorer to make more than a brief visit to Ker-
guelen was James Clark Ross, who anchored for two months
at Christmas Harbor between 12 May and 12 July 1840. Ross’s primary objective was to set up a temporary magnetic observatory where observations could be taken on the interna-
tional term days 29 and 30 May, when it had been agreed that simultaneous readings should be made at frequent inter-
vals at all British and European stations. By good fortune, these observations happened to coincide with a magnetic storm clearly depicted in the measurements taken at Ker-
guelen, and every movement of the needle there was later shown to have occurred simultaneously with those recorded by the Toronto observatory, the antipodes of Kerguelen, pro-
viding early evidence for the existence of conjugate points.

Although Ross himself was engaged in magnetic studies, nat-
ural history collections were made by the expedition’s sur-
geons; those made by Joseph Hooker of the plants found here and at other scattered localities in the Southern Ocean proved

particularly influential in the development of Charles Darwin's ideas on evolution.

During the 1870s, four more scientific expeditions were to visit Kerguelen. The oceanographic vessel HMS Challenger was based there through much of January 1874, anchoring first at Christmas Harbor on 6 January before moving farther east to Betsy Cove, from where survey parties were sent out to explore the mainland. Further survey work was conducted from other anchorages on the eastern and along the little-known southern coast, making a considerable contribution to knowledge of the latter in particular (see Nares, George). One of Challenger's tasks was to identify possible locations for the British Transit of Venus Expedition, which was to arrive here on 5 November the same year and remain until 27 February 1875. This was one of three Transit of Venus Expeditions to Kerguelen at this time; similar expeditions were being organized by Germany and the United States. The transit of the planet Venus across the disk of the Sun provides a rare opportunity to accurately calculate the Earth's distance from the Sun. Such transits are rare, occurring in pairs eight years apart at intervals of more than 100 years. (Thus the most recent transit occurred on 6 December 1882, with the next being due on 8 June 2004 and again on 6 June 2012.) Ever since the phenomenon and its potential use was pointed out by the British astronomer Edmund Halley in 1679, expeditions have been sent out to distant parts of the world to record the event to ensure that as many observations as possible were made and to ensure against bad weather. For the transit of 9 December 1874, a station in the southern Indian Ocean was astronomically best (hence the choice of Kerguelen). Although the weather was initially favorable, only the American party managed to record the entire event from the Courbet Peninsula; the Germans at Betsy Cove and the British at three stations in the Gulf of Morbihan were less fortunate.

Toward the end of the nineteenth century, Kerguelen was visited briefly by the Antarctic expeditions of Henrik Bull from 19 December 1893 to 3 February 1894 and Carl Chun from 25 to 29 December 1898. Bull had high hopes of recouping some of his expedition expenses by whaling and sealing. Finding no right whales, members of his expedition killed over 1,600 elephant seals for their oil and skins. The German expedition of Erich von Drygalski included plans for establishing a station in Observatory Bay, one of the sites used by the British Transit of Venus Expedition. Here geophysical and meteorological studies were to be carried out in conjunction with those made by Drygalski on or near Antarctica. Unfortunately, there had been an outbreak of beri-beri in the ship landing this party on Kerguelen. This was to recur six months later and claim the life of the station leader, Dr. Joseph Enzensperger. The station was relieved on 30 March 1903, having been established in December 1901. On his return from Antarctica, Drygalski chose to leave his sledge dogs, adding yet one more species to those already introduced by the sealers and subsequent visitors; the introduction of rabbits by the British Transit of Venus Expedition was particularly disastrous for local wildlife and vegetation, especially for the Kerguelen cabbage, the food of preference for all introduced herbivores.

The first expedition to set out specifically to further geographical knowledge of Kerguelen was carried out by two brothers, Raymond and Henri Rallier du Baty. As a young naval apprentice, Raymond had participated in the first Antarctic expedition of Jean-Baptiste Charcot. Together with two friends, the two brothers sailed to Kerguelen in the tiny 45-ton ketch J. B. Charcot. Reaching the islands on 9 March 1908, they remained there for fifteen months while conducting an extensive survey of the deeply indented eastern coast. In October 1913, Raymond returned, this time without his brother but accompanied by Jean Loranchet and G. Saint-Lanne Gramont, together with six sailors, in the even tinier 32-ton La Curieuse. By the time of his departure in April 1914, Rallier du Baty had completed his survey of the coastline, spending much of his time on this visit charting the exceedingly dangerous western coast—dangerous because a lee shore is exposed to the full force of the prevailing westerlies. The resulting chart was published in 1922.

Rallier du Baty received a certain amount of assistance from Henri and René-Émile Bossière, who in 1894 had obtained a concession from the French government to exploit the island's resources. Some help was also received from whalers based at Port Jeanne d'Arc, where a whaling station had been established in 1908 by the Kerguelen Whaling and Sealing Company. In 1923–1924, transport provided in whaling vessels enabled Etienne Peau to collect natural history specimens on behalf of the Museum of Le Havre. The next major exploration resulted from the decision of the Bossière brothers to commission the young geologist Edgar Aubert de la Rüe to survey the interior of the islands for exploitable minerals. Aubert de la Rüe's connection with Kerguelen continued until 1953. On his first visit, between 12 November 1928 and 25 February 1929, he and his wife, Andrée, made the first extensive examination of inland Kerguelen. On a second visit, from 24 January to late March 1931, they continued their survey, this time sponsored by the French Ministry of Colonies, one of the first signs of French government interest in Kerguelen.

The strategic significance of the islands was clearly demonstrated during World War II by the German raiders Atlantis and Pinguin, which made use of the many excellent anchorages. With Australia also showing an interest following the visit of Sir Douglas Mawson's British, Australian, and New Zealand Antarctic Research Expedition, which spent three months surveying the islands between November 1929 and February 1930, once World War II had ended the French government took steps to secure its claim. In 1949, an official expedition was dispatched to set up a meteorological station at Port-aux-Français (49°21'S, 70°12'E) in the Gulf of Morbihan. Facilities
were expanded during the following season, and the meteorological station opened on a permanent basis from 3 January 1951. Since then annual expeditions have conducted an extensive scientific program at the station as well as comprehensive surveys of the islands themselves.

See also: Chun, Carl; Drygalski, Erich von; France; Kemp, Peter; Kerguelen-Trémarec, Yves; Nares, George (1872–1874); Ross, James Clark (1839–1843); Sealing and Antarctic Exploration; Sub-Antarctic Islands; Whaling and Antarctic Exploration

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Rallier du Baty, R. 1930. 15,000 miles on a ketch. London: Thomas Nelson and Sons.

Kerguelen-Trémarec, Yves (1734–1797)
The discovery of the Kerguelen Islands (South Indian Ocean) remains one of the more curious episodes in the history of Antarctic exploration. According to the initial description of their enigmatic discoverer, these bleak islands were inhabited, temperate in climate, and possessed great prospects for cultivation and trade. From what Kerguelen had seen he must have known different, and it remains unclear what he hoped to achieve through such a transparent lie. During his two voyages to the Southern Ocean, other aspects of his behavior were almost equally bizarre.

“South France Is Discovered,” 1771–1772
Yves-Joseph de Kerguelen-Trémarec was a well-connected Breton noble with twenty years’ experience of service in the French navy when he applied to lead an expedition to search for land south of Amsterdam Island reportedly visited by Binot Paulmyer de Gonneville in 1504. Jean Bouvet de Lozier had searched unsuccessfully for de Gonneville’s land in 1738–1739, but south of the Cape of Good Hope rather than farther to the east where Kerguelen was now instructed to explore. Like Bouvet de Lozier, Kerguelen was to seek harbors suitable for French use and to cultivate the inhabitants with future trade and colonization in mind. France, having recently lost its colonies in North America, hoped it would compensate by finding new ones in the Southern Ocean.

Kerguelen set out from Brest on 1 May 1771 with 300 men and provisions for fourteen months on board the large and unhealthy Berryer, which he was pleased to exchange at Mauritius for two smaller and more suitable vessels, the 24-gun corvette Fortune and the store-ship Gros Ventre. Kerguelen took command of Fortune himself, and François Alesno, Comte de St. Allovaut, was placed in charge of Gros Ventre. On 16 January 1772, the two vessels sailed south and sighted land on 12 February. Kerguelen calculated his position as 49°40’S, 63°30’E, his longitude being inaccurate by 7 degrees, an error that caused James Cook not to find it during his second expedition. Such errors were not uncommon before chronometers became available, though Kerguelen’s error was very large given that he was only one month out from Mauritius. Worse was to follow. Stating that the poor condition of Fortune’s rigging prevented close approach to land, he sent Gros Ventre in to land together with Fortune’s longboat. Caught in strong currents and driven toward rocks, the two vessels clashed together and the longboat was dismantled. Eventually, a boat from Gros Ventre managed to land, and the new discovery was claimed for France. Standing far offshore in Fortune, Kerguelen was in no position to offer assistance and indeed made no attempt even to find out what had happened to Gros Ventre and the longboat, waiting just one more day before setting sail back to Mauritius and abandoning the rest of his expedition to make do as best they could.

On return to France, Kerguelen painted his discovery, which he now named “South France,” in the most roseate terms. Located in the same latitude south as France was north, its similarly temperate climate and fertile soils offered a land of rich opportunity covered in woods and well cultivated by its inhabitants. In extent, it was a “fifth part of the world.” All this from a man who had himself not landed nor heard the reports of those who had, but who would surely have seen enough even from his remote position offshore to know that what he was claiming was not true, and furthermore that it would be immediately disproved by the very next expedition to go there.

A Futile Second Expedition Leads to the Explorer’s Disgrace, 1773–1774
By no means did everyone believe Kerguelen’s account, and further doubt would be cast when very contradictory rumors began to circulate following Gros Ventre’s return to Mauritius after an epic voyage to Australia and back. By this time, however, Kerguelen was a hero at court and nationally and had been commanded to lead a second expedition, now with three vessels, the 64-gun frigate Roland, Oiseau, and the store-ship Dauphine.

The three vessels with 700 men and one woman—on board for Kerguelen’s “personal pleasure”—reached the Cape of Good Hope after an outbreak of fever and the infestation of Roland’s hold by worms. Eighty unfit men had to be put off here. Because of Gros Ventre’s false account of the previous expedition, no warm welcome was afforded this time in Mauritius, from where the expedition was hurried south on 16 October 1773. In December, South France was reached with Kerguelen again showing himself unwilling to land even when Oiseau’s captain, Charles de Saulx de Rosnevetz, offered to guide Roland into a safe anchorage. No attempt was made to
establish a colony—the main purpose for which the expedition had been sent out—and only desultory charting work was carried out along the island's western coast. On 18 January 1774, Kerguelen ordered course to be set for Madagascar, perhaps fearing likely ridicule at Mauritius. Ridicule and worse was to be experienced when he reached France on 7 September. Having raised hopes so high and with so many charges to be laid against him, it is hardly surprising that he was court-martialed. He was charged with abandoning Gros Ventre and Fortune's longboat and for being responsible for Roland's unsanitary state by filling the gangways with personal goods intended to be traded for profit, among other charges, including the unauthorized presence of a prostitute from Brest. He was sentenced to twenty years, later reduced to six—of which he served four—before being released in 1778 in order to fight against Great Britain.

How to account for Kerguelen's strange behavior? Probably the clearest indication is a letter written by Kerguelen after his release, in relation to a proposed third expedition. The French government had granted James Cook a passport safeguarding his expedition from French interference despite the ongoing war with Britain. Kerguelen had persuaded the British government to give him a similar passport. In this letter, Kerguelen admits that he has no intention whatever of carrying out any exploration. This is to be a trading voyage pure and simple—and an extremely lucrative one in which he encourages his correspondent to invest. In the event, his passport was not honored and his ship was captured, but the light cast on the earlier expeditions is revelatory. On his second expedition after revisiting South France, Kerguelen was instructed to continue east to circumnavigate the globe. It appears that he never had any intention of doing this. His personal trade goods on board Roland were for sale in Madagascar and Mauritius, where high prices could be obtained. There is evidence that he made arrangements to collect further trade goods on his return from South France to take back to Europe—clearly impossible if he was to complete his circumnavigation. Having reached South France, he wasted time, hoping perhaps that an accident might happen or that morale would decline among his officers—anything, indeed, that would give him an excuse to not continue with the circumnavigation. As for the glowing report of his discovery during the first expedition, he may possibly have acted in the belief that the land he had discovered might be extensive and that if parts of it were cultivable and inhabited then he wanted to ensure that he, rather than any other explorer, gained the credit. This, however, is hypothesis. In short, Kerguelen was a man of questionable ethics and the privileged product of an increasingly rotten ancien régime, soon to be swept away by the French Revolution. His is among the least reputable names preserved on the map and in the annals of polar exploration.

See also: Bouvet de Lozier, Jean; Cook, James (1772–1775); Kerguelen Islands

References and further reading:

King Charles Land (Svalbard)
Located at 78°40'N, 28°E, south of North East Land, this group of small islands has a total area of 128 square miles. The official Norwegian name is Kong Karls Land for Karl XV, king of Sweden and Norway (1859–1872). The two largest islands are King’s Island (Kongsøya) and Swedish Foreland (Svenskøya). The latter, the westernmost in the group, was first sighted in 1617 by John Ellis on an English whaling and exploring expedition and named by him “Wiches Land” for Richard Wiche, a leading London merchant. It was not seen again until 1853, when the Norwegian sealer Erik Eriksen sighted what he thought was “Gillis Land” (White Island) from high ground on Edge Island. Eriksen did not report his discovery until 1859, the same year that Swedish Foreland was sighted again, this time by Elling Carlsen, who came within 10 miles of it on 22 July. On 27 July 1859, Eriksen made the first recorded landing on Swedish Foreland, from where he saw the southern coast of King’s Island. In attempting to circumnavigate the former, he also discovered Rivalen Strait, where he reported numerous seals, walruses, and bears. The letter in which Eriksen reported his discoveries to the Norwegian naval ministry was initially overlooked, coming to light again only in 1931. In the meantime, credit had been mistakenly given to Carlsen for the first sighting and Nils Johnsen for the first landing. Johnsen was one of three sealing captains exploring the islands in 1872, an unusually good ice year. Credit for first sighting of Abel Island (Abeløya), the easternmost island, is shared by Johan Andreas Altmann (Elvine-Dorothea) and Johannes Nilsen (Freia), both of whom probably sighted it on 29 July. Johnsen (Lydianna) landed on King’s Island on 17 August. In 1897, Arnold Pike landed on both King’s Island and Swedish Foreland, crossing the former from Victoria Bay.

The first accurate surveys were carried out independently in 1898 by Theodor Lerner and Alfred Nathorst. Lerner reached King Charles Land on 23 July, discovering Helgoland Island (Helgolandøya) and carrying out mapping and scientific studies. Nathorst reached Swedish Foreland on 4 August, conducting a mapping and scientific survey there and on King’s Island. A buoy from Salomon Andrée’s North Pole balloon expedition was found on the northern coast of King’s Island by the Norwegian walrus hunter Lars Pettersen Ask (Martha) in 1899, one of five recovered, providing a rare clue to the fate of this expedition before the discoveries made on White Island in 1930. The first recorded wintering was made by a party of six Norwegians from Tromso in 1908–1909. After a successful winter spent hunting bears and seals, the group was confronted by the probability of another winter when bad
ice conditions prevented their relief. They survived by making a difficult crossing of Olga Strait to Barents Island, thence to the Arctic Coal Company's station in Advent Bay in Ice Fjord. The first aerial photographic survey was organized in 1938 by Norwegian Svalbard Expeditions (see Hoel, Adolf). Scientists from the Norwegian Polar Institute have conducted research here on an occasional basis since 1948.

See also: Andrée, Salomon; Hoel, Adlolf; Nathorst, Alfred (1898); Svalbard

References and further reading:

King Christian Island (Canada)
Located at 77°40′N, 102°00′W, this member of the Sverdrup Islands lies south of Ellef Ringnes Island and east of Lougheed Island, from which it is separated by Danish and Maclean Straits, respectively. It was discovered by Gunnar Isachsen and Sverre Hassel on 29 April 1901 during the expedition led by Otto Sverdrup, who named it for Christian IX of Denmark (1818–1906). As mapped by Isachsen, “King Christian Land” extended some way to the southwest of what we know today to be a small island of just 450 square miles, to include “Findlay Land,” which Sherard Osborn had reported seeing in 1853. The latter was subsequently shown to consist of several separate islands by Vilhjalmur Stefansson in August 1916 (see Lougheed Island). The first landing was made by Donald MacMillan on 19 April 1916.

To assert sovereignty over an island discovered by Norwegians and originally claimed for Norway, Royal Canadian Mounted Police patrols led by A. H. Joy in 1926 and 1929 made a particular point of visiting it. In 1955, it was included in the systematic survey conducted by the Geological Survey of Canada during Operation Franklin. The island is inaccessible by sea throughout the year to all but powerful icebreakers.

See also: Lougheed Island; MacMillan, Donald (1913–1917); Stefansson, Vilhjalmur (1913–1918); Sverdrup Islands; Sverdrup, Otto (1898–1902)

References and further reading:

King Christian IX Land (East Greenland)
Extending between 65°N and 70°N, King Christian IX Land lies in southeastern Greenland, south of King Christian X Land and north of King Frederik VI Coast. It was named in September 1884 by Gustav Holm and claimed for Denmark.

Facing Iceland across the Denmark Strait, in this region the East Greenland Current presses close against the coast the ice brought south from the Arctic Ocean, making it particularly difficult to approach from the sea. Although occasionally sighted by whalers and exploring vessels, including the Frenchman Jules de Bloisville in 1823, it was reached by no European explorer before Adolf Erik Nordenskiöld's brief landing in September 1883. More systematic investigations were conducted by Gustav Holm the following year, as he traveled north along the coast by umiak to reach Ammassalik on 1 September 1884, continuing on to Sermiligaaq and Erik the Red Island, where possession was claimed for Denmark. Holm promised to return to establish a mission and trading station at Ammassalik to ensure that its inhabitants no longer experienced famines. Fulfilling this promise required a campaign lasting years, and not until ten years later was he able to found the station. In the meantime, Ammassalik had been visited by Carl Hartvig Ryder in 1892. Once the station was established in 1894, it provided a natural logistics center for expeditions, the first to make use of it being Georg Amundsen in 1898–1899. Staying here one year, he was able to complete a survey of the local region, as well as establish depots farther north in preparation for his 1900 voyage along the coast.


During its west-east crossing of the Inland Ice, the Swiss expedition of Alfred de Quervain discovered an extensive mountainous area inland of Ammassalik, including the high peak Mount Forl (3,600 meters). In 1930, these discoveries were extended by Gino Watkins, who, in addition to mapping the coast south from Kangerdlugssuak, conducted the first aerial survey, during the course of which the Watkins Mountains were sighted inland of the Blosseville Coast. The first ground survey of the interior ranges was made by Martin Lindsay's three-man party in 1934, which was also responsible for discovering the Crown Prince Frederik Mountains. In 1935, a party led by Lawrence Wager achieved the first ascent of Gunnbjørn Fjeld, Greenland's highest peak at 3,693 meters. Mount Forl was first climbed in 1938 by a Swiss expedition led by Michel Perez.

Amid rising concern that Norway might extend its territorial claims south, the Danish government in 1932 funded two expeditions to improve coastal mapping and take other measures to demonstrate Danish occupation. Ejnar Mikkelsen worked south from Scoresby Sound to Kangerdlugssuak, at the same time establishing a chain of hunting lodges. The southern coast of King Christian IX Land was mapped the following year by Knud Rasmussen in a large-scale expedition involving aerial survey. The results of Mikkelsen's and Rasmussen's work were incorporated in maps at 1:250,000 published by the Danish Geodetic Institute.

Since 1895, there has been a meteorological station at Ammassalik, where a Dutch station was also based in 1932–1933, during the Second International Polar Year. In the years immediately following World War II, a meteorological station was also maintained at Kangerdlugssuak.
King Christian X Land (East Greenland)

King Christian X Land lies in central East Greenland, extending between 70°N and 75°N, with King Christian IX Land to the south and King Frederik VIII Land to the north. It is named for Christian X, king of Denmark (1912–1947).

Although no part of East Greenland may be said to be easily approached from the sea, sections of this region are as accessible as anywhere. Thus, among the earliest sightings of East Greenland in the post-Norse period, it is not surprising to note Henry Hudson’s observation of the peninsula Hold with Hope at 73°N in 1607. This coast was not uncommonly seen by whalers during the seventeenth and eighteenth centuries, though they had no interest in exploring it farther, especially since they were generally separated from land by the torrent of ice brought down from the Arctic by the East Greenland Current. In 1817, the British whaler William Scoresby Jr. reported the ice so diminished between 74° and 80°N that he was able to approach quite close to the coast, and in 1822 he managed to survey 400 miles of previously unexplored coastline, in the process discovering Liverpool Land and the great fiord system later known as Scoresby Sound. With regard to the latter, it is possible that Scoresby was anticipated by Volquard Bohn on a whaling voyage from Hamburg, who in 1777 is reported as having found shelter during a gale within a deep fiord in this region. In 1823, a British exploring expedition led by Douglas Clavering succeeded in penetrating the ice stream farther north to reach the coast near 74°N to discover the Pendulum Islands and Shannon Island and explore south to regions visited by Scoresby. During this expedition, a party of Inuit was encountered, the only time that Inuit were seen north of Ammassalik, though the evidence of their ancient occupation of the region is widely apparent in graves, tent rings, and traces of winter huts.

No further exploring expedition was to reach this region before Karl Koldewey wintered on Sabine Island in 1869–1870. In addition to conducting significant explorations of King Frederik VIII Land farther north, Koldewey was also responsible for discovering Franz Josef Fjord. A Danish expedition led by Carl Hartvig Ryder wintered in 1891–1892 on Danmark Island, at Hekla Havn, to make a thorough survey of Scoresby Sound. In 1899, Alfred Nathorst’s Swedish expedition searched
for Salomon Andrée's missing balloon expedition between 73° and 76°N, in the process extending knowledge of Franz Josef Fjord and discovering King Oscar Fjord. In the following year, Carlsberg and Nathorst Fjords were discovered by Nikolaj Hartz during Carl Amdrup's expedition, and the interior of Jameson Land was explored on foot. During the Alabama expedition, Ejnar Mikkelsen wintered on Shannon Island (1909–1911) and Bass Rock (1911–1912).

In the 1920s and 1930s, this region became the subject of a territorial dispute between Denmark and Norway. There was an established tradition of Norwegians trapping in what was referred to as “Eirik Raude Land” (71°30′–75°40′N), and in 1922 a Norwegian meteorological station was established at Myggbukta (73°29′N) in Mackenzie Bay. In support of these claims, from 1929 Adolf Hoel organized annual expeditions to this region and in 1932 opened a second meteorological station at Storfjord (68°10′N). The dispute was resolved in favor of Denmark in 1933 by the International Court of Justice at The Hague. Storfjord was closed in 1933 at the conclusion of the Second International Polar Year, but Norway continued to operate Myggbukta until 1940, when it was destroyed by Allied action. It was reopened in 1946 until finally closing in 1959.

In response to the Norwegian challenge, in 1924 Ejnar Mikkelsen was commissioned to establish a new Danish colony in Scoresby Sound, which was populated the following year by families from Ammassalik. Soon afterward, the Danish government funded a series of large-scale expeditions to the region, led by Lauge Koch. From 1931 to 1934, the Danish Three-Year Expedition completed topographic mapping at 1:250,000 between 72° and 76°N, on the basis of which the Danish Two-Year Expedition mapped the geology of the coastal areas between 1936 and 1938. Throughout much of this period, stations were kept open through the winter at Ella Island, in the interior of King Oscar Fjord, and Eskimonæs, Clavering Island, initially funded by Koch's expeditions and subsequently by the Danish government. The region was the scene of military action during World War II, the secret German meteorological stations Holzauge and Bassgeiger operating on Sabine Island and Shannon Island in 1942–1943 and 1943–1944, respectively. In 1943, German action destroyed Eskimonæs and damaged Ella Island. Koch's surveys were resumed in 1947, resulting in the following year in the discovery of significant lead and molybdenum deposits at Mestersvig. Exploitation of this resource was to transform development of the region, particularly following the construction of a landing strip here in 1952.

The presence of spectacular peaks, with fine rock exposures and challenging ice climbs, has led to many mountaineering expeditions, especially to the vicinity of Franz Josef and King Oscar Fjords and to the adjacent Stauning Alps. The first climbs date back to the discovery of Franz Josef Fjord by Karl Koldewey in 1870 and the ascent of Payer Peak (2,133) by Julius Payer. James Wordie's two Cambridge University expeditions of 1926 and 1929 combined mountaineering with geology. A number of first ascents were achieved, including Petermann Peak (2,975 meters) in 1929. Further notable climbs were made during Louise Boyd's expedition of 1933. Dansketinde (2,930 meters), the highest peak in the Stauning Alps, was first climbed in 1954 by J. Haller, W. Diehl, and F. Schwartzembach.

Since 1927, a meteorological station has been maintained at Cape Tobin (70°48′N, 22°00′W), Scoresby Sound. Several other stations have been operated nearby for shorter periods, including “East Ice” established by Alfred Wegener above the inner fiords of Scoresby Sound (1930–1931), the French Second International Polar Year station “Paul Doumer” at 70°30′N, 22°W (1932–1933), and Gurreholm and Rosenvinge Bay, opened by Koch in 1937. Farther north, the Sirius Patrol has its headquarters at Daneborg (74°11′N, 20°13′W). Run by Patrol North Greenland, the Sirius Patrol is responsible for law and order in the region between Scoresby Sound and Thule. It consists of thirteen men equipped with six sledges, that is, two men per sledge and a patrol leader.

Zackenberg (74°30′N, 20°30′W) is today the most important scientific station in northeast Greenland. Consisting originally of several huts and a petrol depot, it was established in 1947 as a logistical facility by Eigil Knuth's Danish Pearland Expedition. Knuth's main base was much farther north in Peary Land, and he needed an anchorage where ships could get close inshore in ice-free waters, and from where men and stores could be transported north by flying boat. It was also used for this purpose by the British North Greenland Expedition. In 1995, accommodation and laboratories were opened, and Zackenberg has since served as the major research facility maintained in Greenland by the Danish Polar Center.

King Frederik VI Coast (East Greenland)

King Frederik VI Coast forms the southernmost section of East Greenland, stretching north from Cape Farewell (59°50′N) to 65°N and lying immediately south of King Christian IX Land. It was named in 18 August 1829 by Wilhelm Graah and claimed for Denmark.

Because of the constant stream of ice brought south by the East Greenland Current, this coast is difficult to reach by sea, and early attempts to visit it by traveling across the Inland Ice or rounding Cape Farewell proved unsuccessful until
1751–1753, when Peder Olsen Walløe reached it in an umiak by means of Prince Christian Sound before traveling north to 60°56’N. This route had been used by generations of Inuit, and it is not impossible that the Norse before them may have also visited the East Coast through its sheltered, though frequently ice-blocked, waters. The persistently held belief that the Norse Eastern Settlement had been located along this coast was to motivate a long succession of Danish expeditions, dating back to the sixteenth century. Despite frequent rebuffs, they were encouraged by the further erroneous belief that this was the region explored by Martin Frobisher in the 1570s. Maps still showed Frobisher Strait as cutting across southern Greenland well into the 1800s, long after Hans Egede had effectively proved its nonexistence, when he sought it in 1723 as an easy route through to the East Coast. When Wilhelm Graah was finally able to explore the full length of King Frederik VI Coast, between 1828 and 1831, he did so by following Walløe’s route through Prince Christian Sound, like him traveling by umiak rowed by Inuit women. Although the region had clearly been inhabited over an extended period by Inuit, he found no traces of Norse occupation. The next explorer to visit was Gustav Holm in 1883–1885, when he extended Graah’s explorations north to King Christian IX Land. On 29 July 1888, Fridtjof Nansen and his five companions scrambled ashore near Puissortoq near 62°N, having been carried far south of their intended landing point by drifting ice. Making a slow journey up the coast to Umivik at 64°23’N, they headed inland on 15 August to complete the first crossing of Greenland. In 1931, Gino Watkins traveled south along the coast in a motorboat, extending his survey south to Umivik but continuing on to Prince Christian Sound. During the Sixth and Seventh Thule Expeditions, Knud Rasmussen conducted a detailed survey between Cape Farewell and Kangerdlugssuuk. In addition to mapping the region, Rasmussen’s party also conducted ethnographic and archaeological studies and investigated the possibilities for resettlement by the Inuit, concluding that seals were sufficiently plentiful to provide a means of livelihood, although conditions were harsh.

In the 1920s and 1930s, this region became the subject of a territorial dispute between Denmark and Norway. There was an established tradition of Norwegian trapping along what they referred to as the “Southern Coasts,” and many huts had been built demonstrating occupation. Under a royal resolution of 1932, Norway formally claimed the region between 60°30’ and 63°40’N. To further Norwegian claims, Adolf Hoel organized annual expeditions from the late 1920s, and Norwegian meteorological and radio stations were established at Finnsbu (63°24’N) and Torgilsbu (60°32’N). In 1933, the dispute was resolved in favor of Denmark by the International Court of Justice at The Hague. Finnsbu closed this year, but Torgilsbu remained open until 1940, when it was destroyed by the Free Norwegian gunboat Fridtjof Nansen.

Today, the only settlements are to be found in the vicinity of Prince Christian Sound, where there is also a meteorological station (60°03’N, 43°12’W). Other meteorological stations were maintained for some years in the period following World War II at Cape Adelaer (61°52’N, 42°25’W) and Skjoldungen (63°11’N, 41°20’W).

See also: Egede, Hans; Frobisher, Martin; Graah, Wilhelm; Hoel, Adolf; Holm, Gustav; Nansen, Fridtjof (1888); Rasmussen, Knud (1931–1933); Watkins, Gino (1930–1931)

King Frederik VIII Land (East Greenland)

King Frederik VIII Land forms the northernmost region of East Greenland, extending north from King Christian IX Land, between 75°N and the Northeast Foreland (Nordostrundingen) of Crown Prince Christian Land. It was named on 1 June 1907 for Frederik VIII of Denmark by Ludvig Mylius-Erichsen, the first to explore much of the region.

With thick pack ice generally extending 100-plus miles offshore, King Frederik VIII Land is particularly difficult to approach by sea. In 1670, the Dutch whaler Lambert is reported as having seen land near 78°30’N. If so, this is the first recorded sighting, though by no means necessarily the first, since whalers operated at high latitudes in the waters between Greenland and Spitsbergen back to the early seventeenth century; any sightings were not necessarily documented, land being of little interest to whalers. First to explore overland was the German expedition led by Karl Koldewey. In 1870, Koldewey led a sledging party north from Sabine Island to reach 77°01’N at Cape Bismarck, in the process discovering King William Land, Dove Bay, and Germany Land. Koldewey’s farthest north was not exceeded until 1905 when Louis-Philippe-Robert, Duc d’Orléans, discovered Île de France and reached 78°16’N.

The first to winter in the region was Ludvig Mylius-Erichsen’s Danmark expedition (1906–1908), at Danmarkshavn on the northern shore of Dove Bay. Mylius-Erichsen’s objective was to map the unknown coast between Cape Bismarck and Cape Wyckoff, Peary Land, the easternmost point reached by Robert Peary in 1900. At the time, this was one of the most extensive areas of land in the Arctic still requiring exploration. As he sledged north in 1907, his discoveries were to include Lambert Land, Hovgaard Island, and Crown Prince Christian Land, before he completed his preliminary survey of the region by reaching Northeast Foreland. Mylius-Erichsen and his two companions, Niels Peter Høeg-Hagen and Jørgen Brønlund, died on their return journey some way south of Mallemuk Fjeld, where open water had forced them up onto the Inland Ice. King Frederik VIII Land was further explored by Ejnar Mikkelsen, who traveled across the Inland Ice from Dove Bay to Danmark Fjord, returning along the coastal ice to Shannon Island. Before undertaking his journey across the ice sheet to Prøven, West Greenland, Johan Peter Koch (1912–1913) wintered at Borg. In the spring, he began his crossing by passing

352 King Frederik VIII Land
through the mountains of Queen Louise Land, a region cut off from the coast by broad glaciers, which otherwise remained essentially unexplored until the 1950s.

King Frederik VIII Land lay largely north of the territory subject to dispute between Denmark and Norway in the 1920s and 1930s, though “Eirik Raude Land” was considered to extend as far as 75°40’N. In 1932, the Norwegian meteorological and radio station Jonsbu was established in Peter Bay (75°20’N). It was closed at the end of the Second International Polar Year in 1933, following the decision of the International Court of Justice to recognize Danish sovereignty over East Greenland. Largely in response to the Norwegian challenge, Lauge Koch's topographic survey on behalf of the Danish government was extended north to 76°N, where a party wintered at Kulhuse on the Hochstetter Foreland in 1932–1933. In August 1933, Koch made two flights over this region, in the process discovering a previously unsuspected area of ice-free land between 79 Fjord and Danmark Fjord.

Several other expeditions visited King Frederik VIII Land in the 1930s. Bob Bartlett reached as far north as Cape Bismarck in Effie M. Morrissey while assisting scientists to make collections for the American Museum of Natural History and other institutions in 1930 and 1931. In 1937 and 1938, Louise Boyd extended her photogrammetric survey of East Greenland to Île de France and 77°48’N. Between 1938 and 1939, the French explorer Count Gaston Micard occupied the station Micardbu in Germania Land. At the same time, Elmar Dras trup conducted a survey of Ingolf Fjord and the interior of Crown Prince Christian Land. On a somewhat larger scale was Eigil Knuth's Danish Northeast Greenland Expedition (1938–1939), during which sledging journeys were made from Mørke Fjord along the length of the coast north to Prince Knud Peninsula. After Knuth's return, the Danish government took over operation of the Mørke Fjord station until 1941, when it was evacuated. Since 1949, a meteorological station has been maintained at Danmarkshavn (76°77’N, 18°77’W).

The first comprehensive survey of the nunatak region of Queen Louise Land was made by the British North Greenland Expedition led by Jim Simpson in 1952–1954. The main base was established at Britannia Lake (77°09’N, 23°36’W), with a subsidiary station on the Inland Ice at Northice (78°N, 39°40’W). Topographic work conducted during this expedition enabled the Danish Geodetic Institute to extend map coverage at 1:250,000 to this region and its adjacent coastline.

Access to the region was greatly facilitated in 1997 by the opening of a major logistics and research facility at Zackenberg (74°30’N, 20°30’W) that is operated by the Danish Polar Center.

See also: Bartlett, Bob (1926–1945); Greenland, East; Knuth, Eigil; Koch, Lauge (1926–1959); Koldewey, Karl; Mikkelsen, Ejnar (1909–1912); Mylius-Erichsen, Ludvig (1906–1908); Simpson, Jim

References and further reading:

King George Island (South Shetland Islands)
Located at 62°00’S, 58°15’W, this is the largest of the South Shetland Islands, 43 miles long and 16 miles at its widest. On 16 October 1819, it was discovered and the north coast roughly charted by William Smith, who landed at Esther Harbor (Venus Bay), near North Foreland at the northwest tip of the island, claiming possession for Great Britain. This was the first landing on the South Shetland Islands and the first landing on any land in the Antarctic (as opposed to sub-Antarctic) region. Returning with Edward Bransfield, a second landing was made on the south coast at King George Bay on 22 January 1820 and the island named for King George III. Bransfield and Smith then continued west, completing a rough chart of the island's north, east, and south coasts, though they appear to have mistaken Admiralty Bay for a strait dividing the island into two. Admiralty Bay was later correctly charted by the British sealer George Powell and named for the Board of Admiralty. Further charting of the south coast was carried out by Fabian von Bellinghausen in February 1821, who named the island “Waterloo” for the French defeat in 1815.

Sealers were active here from 1820. A British sealer, Lady Troubridge, was wrecked off Cape Melville on 25 December 1820, its captain, Richard Sherratt, using the opportunity to make a rough though interesting map of the central South Shetland Islands before being rescued. In 1821, the chief officer and ten crew members from the British sealer Lord Melville made the first, involuntary, wintering in the South Shetland Islands and thus the first Antarctic wintering. With good shelter and well supplied with provisions, all survived at Esther Harbor. A second sealing party later in the century was less fortunate. In 1876–1877, the mate and crew of the American sealer Florence were landed on Rugged Island off Livingston Island but could not be collected. They managed to make their way to Potter Cove on King George Island and wintered there under their boat. Only the mate survived to be rescued the next year by the Francis Allyn.

Exploring expeditions visiting King George include Eduard Dallmann, who left a plaque at Potter Cove commemorating his visit on 1 March 1874, and Jean-Baptiste Charcot, who compiled a chart of Admiralty Bay in December 1909. RRS Discovery II carried out a running survey between 1930 and 1937, which resulted in the first accurate charts.

Ten countries currently maintain stations on King George Island, though only eight have winter stations. Such popularity is explained by the availability of sites suitable for the construction of bases on an island easily reached by countries without icebreakers or the technology to build and maintain stations on ice shelves or the continent.

The first station was the British Base G, established by the Falkland Islands Dependencies Survey on the Keller Peninsula.

in Admiralty Bay. Initially constructed in 1946–1947 as a summer station using timber transported from the abandoned whaling station on Deception Island, this temporary base was set up out of British concern that the site might otherwise be occupied first by Argentina and become subject to territorial dispute. Base G was expanded the following season, soon afterward being joined by an Argentine refuge hut built only 25 meters away. A second Argentine refuge hut was constructed at Potter Cove—expanded in 1982 into the winter station Teniente Jubany—and a third on the Ardley Peninsula in 1953. Base G was closed in January 1961 when all planned fieldwork had been completed and diplomatic tensions with Argentina much reduced in the wake of the negotiation of the Antarctic Treaty. The Brazilian station Commandante Ferraz (opened 1984) now stands close to the former site of the British base, the latter marked only by its concrete foundations. Also in Admiralty Bay are the Polish station Henryk Arctowski (opened 1977) and the Peruvian summer station Machu Picchu (opened 1988–1989). In 1976, the Italian station Concha Italia was also opened in Admiralty Bay, but it was demolished by the Argentine navy the following season.

The greatest concentration of stations is on the Fildes Peninsula in the extreme southwest of the island. Here are to be found: Artigas (Uruguay, opened 1984), Bellinghausen (Russia, opened 1968), Great Wall (Peoples Republic of China, opened 1984), and the large Chilean station Presidente Eduardo Frei Montalva (opened 1969). In 1979, the new Chilean station Teniente Rodolfo Marsh Martín was opened, incorporating the earlier station with a gravel runway, bank, post office, supermarket, and school. The name for the combined station varies, sometimes being referred to as Frei, sometimes as Marsh. Currently the former is preferred. King Sejong, the Korean winter station (opened 1988), is at Marian Cove. Elsewhere on the island summer stations are maintained by Ecuador, Germany, and the United States.

See also: Argentina; Bellinghausen, Fabian von; Bransfield, Edward; Brazil; British Antarctic Survey; Charcot, Jean-Baptiste (1890–1910); Chile; China; Dallmann, Eduard (1873–1874); Discovery Investigations; Ecuador; Germany; Great Britain; Italy; Korea; Peru; Poland; Powell, George; Russia; Sealing and Antarctic Exploration; Smith, William; South Shetland Islands; United States; Uruguay

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King William Island (Canada)

Forever associated with the tragic end of Sir John Franklin's last expedition, this bleak island is located at 69°00'N, 97°30'W, lying a little way off mainland North America with Victoria Island to its west and Prince of Wales Island farther north. It is separated from Adelaide Peninsula by Simpson Strait, and from Boothia Peninsula by James Ross and Rae Straits. Victoria Strait lies between it and Victoria Island. It has an area of 5,062 square miles, being 110 miles long and 100 miles wide.

Although visited by generations of Inuit hunting parties, who knew it as “Kikerktak” (The Island), for purposes of exploration history it was discovered in 1830 by James Clark Ross, during an expedition led by his uncle, John Ross, and named by him “King William Land” for William IV of Great Britain (1765–1837). Reaching here via the Matty and Ten- nent Islands, Ross failed to appreciate that he had in fact crossed the strait later named for him, which divided it from the mainland. This was to prove a critical omission, especially since Peter Dease and Thomas Simpson also failed to note King William's insularity when surveying its southern coast in 1839. As a result, when Franklin approached “King William Land” from the north through Peel Sound and Franklin Strait, he believed that the only route open to him lay through Victoria Strait. Soon afterward, he was firmly beset off Point Victory, the farthest point reached by Ross, caught up in the dense multiyear ice characteristic of this region, rather than navigating round the island's east coast through James Ross and Rae Straits, as Roald Amundsen was to do in 1903. *Erebus* and *Terror* were abandoned in 1848, the crews making their way along the west and south coasts, dragging heavy boats as far as they could, in a desperate attempt to reach safety. The last survivors died at Starvation Cove on Adelaide Peninsula.

Numerous expeditions have since combed King William Island for relics from Franklin's expedition. The first search was conducted in 1859 by Leopold McClintock, who followed the southern coast as William Hobson simultaneously explored the northern and western coasts. McClintock continued round to complete the first circuit of the island. Charles Francis Hall made a weeklong visit in May 1869. A much more extended investigation was mounted between 5 June and 5 December 1879 by Frederick Schwatka.

Although Inuit continued to visit the island to hunt caribou and fish for trout in the inland lakes, no more outsiders arrived until 1903, when Roald Amundsen spent twenty-three months at Gjoa Haven. Twenty years later, King William was finally opened up to the outside world when Knud Rasmussen spent three months here; later a Hudson's Bay Company station was opened in Douglas Bay to trade in arctic fox pelts. This was moved four years later to Gjoa Haven, where it soon attracted a permanent Inuit settlement that flourishes to this day. Between 1925 and 1942, the station was managed by William “Paddy” Gibson, who became a great authority on the island's history and led an expedition in 1931, discovering the bodies of four of Franklin's men in the Todd Islands and seven more
Knight, James
(ca. 1640–ca. 1720)
In 1971, divers found a submerged wreck at Marble Island, a small island some 10 miles off the west coast of Hudson Bay. The wreck was the *Albany*, the larger of two vessels in which James Knight’s expedition had disappeared in 1719. Forty men had died with Knight, the greatest disaster in the Canadian Arctic until Sir John Franklin failed to return in the 1840s. In a famous passage, the expedition’s end was recorded by the explorer Samuel Hearne, as told to him by local Inuit. During their first winter on the island, the Europeans began to die from sickness and famine. By the second winter, only twenty survived. Despite the Inuit providing them with food when they could, only five were living by the following year, the final two being described as looking plaintively out to sea until they too weakened and died. The mystery was that this account appeared to bear no relation to what archaeologists began to unearth in the late 1980s and early 1990s.

Marooned on Marble Island? 1719–1721
James Knight joined the Hudson's Bay Company in 1676, working his way up from carpenter to governor. His had been
a distinguished career in which he led the company's forces in recapturing Fort Albany from the French in 1693, accepted the surrender of all French territories in Hudson Bay in 1714, and rebuilt Fort Churchill in 1717, choosing a location that would be easy to defend against both French and Inuit, since he also suspected the latter of hostile intentions. Knight's view of the Inuit was very much influenced by the Chipewyan Indians with whom he had long nurtured contacts and from whom he had heard tales of a "copper mountain" somewhere to the northwest. These rumors were confirmed in 1716 by William Stuart on his return from an extended overland journey during which he had reached the vicinity of a "great sea." This last was undoubtedly Great Slave Lake, but Knight interpreted it as the Pacific Ocean or at least some sea marginal to it.

In 1718 Knight retired as governor. Despite approaching eighty and with health problems, he remained enthusiastic for new ventures and applied to the company to lead an expedition to seek gold and copper mines and the "Strait of Anian," a name sometimes given to the Northwest Passage. The Passage had last been sought in the early 1630s by Luke Foxe and Thomas James. There was considerable skepticism that Knight would now achieve any more than they had, but the company was eventually persuaded to back his expensive and uncertain undertaking in the belief that he would otherwise appeal over its head to the government, which was already critical of the company's lack of enthusiasm for exploration. On condition that Knight also made a significant contribution toward expenses, he was assigned two vessels, the 80-ton frigate Albany and the 40-ton sloop Discovery, to be commanded respectively by the experienced company captains George Berley and David Vaughan. A complicating factor was that Knight had fallen out with his successor, Henry Kelsey, whom he had accused of conspiring with Indians to smuggle goods out of company stores for his own benefit. Kelsey remained in post as governor while an inquiry was conducted. Knight was in consequence warned for his own benefit. Kelsey remained in post as governor while an inquiry was conducted. Knight was in consequence warned to have no contact with the company except in an emergency, in which event he was to place himself under Kelsey's orders — clearly not a prospect he would relish. These stipulations were significant to the expedition's fate.

On 5 June 1719, Albany and Discovery sailed from Gravesend. They were accompanied until they entered Hudson Bay by Mary I and Hudson's Bay III, carrying the company's annual supplies. Knight's dispute with Kelsey closed off the option of wintering at one of the company's stations; this meant that although it was already late in the year for exploration, he would have to discover a suitable wintering site elsewhere. This was far from easy, but Foxe had referred to a sheltered harbor at the east end of Marble Island, and it was probably his reference that led Knight to select that location, where he chose a site on the small Quartzite Island overlooking the harbor. Although there was an Inuit encampment on the main island opposite, Knight's location was easily defensible, an important consideration given his suspicion of the Inuit.

At the time, Knight was regarded as simply vanishing after he separated from the company supply ships. His failure to appear the following year aroused very little concern. His vessels were well supplied, and such expeditions often took longer than expected, especially if he had indeed discovered the "Strait of Anian," in which case he might not return for several years. Given his personal grievance against Knight, Governor Kelsey was not prepared to exert himself on his enemy's behalf, merely reporting in 1720 that one of his captains, John Hancock, had met Inuit south of Marble Island who said that Knight had wintered there and had traded with them. Kelsey spitefully recorded that the company's trade had been spoiled by "the gold-finders." In 1721, Kelsey himself undertook the annual voyage north of Churchill and up the west coast to trade with the Inuit. He too was interested in the rumors of copper, but of Knight's expedition he saw nothing other than some articles from his vessels now in the possession of the Inuit, whose nature suggested that he might have met with disaster. Despite this, Kelsey made no attempt to search for survivors, simply noting that unfavorable winds prevented him from sailing farther north. By now there was considerable concern in London, and Kelsey was instructed to organize a search expedition. Receiving these orders late in the year, only after the breakup of the ice in June 1722 was John Scrogs able to set out from Churchill in Whalebone. In addition to his trading duties, he was to fire his cannon morning, noon, and night when he had reached the coast where Knight might be expected to be found. Scrogs sailed up the west coast to reach his farthest north at 64°30'N in Roes Welcome Sound. Visiting Marble Island, he discovered the wrecks of Knight's two vessels and reported every man to have been killed by the Inuit. Scrogs also appears to have made very little effort to look for survivors, and no further searches were made despite annual company trading expeditions up the west coast. On 29 September 1722, Albany and Discovery were written off the company's books, and that was that.

Nothing further was learned until 1767. By this date the company had established a whale fishery. Bowheads, the main prey species, were particularly abundant off Marble Island, which also offered a secure harbor at its west end. This then became an important rendezvous and place of refuge for the whalers who became very familiar with its coast and soon discovered at its east end another harbor, in which were seen two sunken ships near the remains of a brick-built house and other signs of nonnative occupation. Samuel Hearne, then mate of the sloop Churchill, was one of those making the find. Two years later, Hearne returned to Marble Island where he spoke to Inuit elders who gave him the memorable account of the expedition's end, which he subsequently wrote down in his widely read narrative.

For more than 200 years Hearne's account of the expedition's fate was accepted as the simple truth. Knight's men had been cut off on an isolated island with insufficient resources to sustain them and, in particular, to stave off scurvy, the bane...
of sailors and polar explorers. They had progressively weakened and one by one had died, to be buried by the dwindling number of survivors. This being so, there should be a graveyard to examine, and this the archaeologist Owen Beattie came to investigate in 1989. Much to his surprise, he found no graveyard and very few Caucasian as opposed to Inuit human remains. He also discovered the bones of many different animal species, suggesting a full and varied diet, surprisingly rich in vitamin C for men suspected to have died of scurvy. After several seasons of painstaking fieldwork, Beattie was unable to resolve the mystery, but what he had found in no way appeared to bear out Hearne’s tale.

There had always been an inherent implausibility to the idea that experienced men of the caliber of Knight, Berley, and Vaughan, with no doubt many other hardened company hands among the crew, would have simply awaited their fate on an island not more than 10 miles from the mainland, which could be reached across the ice in winter. Hearne was not above embellishing his narrative, which partly as a result of its more “gothic” aspects was to become a best-seller. In light of Beattie’s findings, scurvy now seems an unlikely cause of fatality. Cold most probably would have killed some, but among the animal remains is another possible clue. Knight’s men certainly ate polar bear meat. The parasitical disease trichinosis is endemic in the bears of Hudson Bay. It is fatal to human beings who eat inadequately cooked meat. The heavy losses of life during the expeditions of Jens Munk and Thomas Button are possibly in response to these threats that it now collabo-rated with the East India Company to sponsor an expedition led by John Knight. The involvment of the Muscovy Company is interesting in that this institution, although nominally in possession of a monopoly to trade and explore to the northwest as well as to the northeast, had up to now concentrated its activities exclusively on the northeast, in fact doing all that it could to discourage discovery of a Northwest Passage lest it undercut the company’s established northeast trade. On various occasions, this policy had aroused the wrath of the Privy Council with threats to reduce or rescind its monopoly status, and it was possibly in response to these threats that it now collaborated with the East India Company in launching a small and relatively inexpensive expedition.

The chosen leader, John Knight, is known previously only as captain of one of three ships during John Cunningham’s expedition to Greenland in 1605. It is likely that he initiated the proposal for a new expedition and left the employment of the Danish king specifically in order to lead it. He was to be equipped with the 40-ton Hopewell with a crew of eleven men. On 18 April 1606, Hopewell sailed from the River Thames to make a slow, uneventful crossing of the Atlantic. Heavy ice was encountered off Greenland, the first indication that this was to be a bad ice year. Within sight of the Labrador coast at 57°25’N on 14 June, Hopewell was caught up in a severe storm in which it was severely damaged by ice. Five days later, land was again in sighted at 56°48’N, where Knight sought shelter for his battered vessel in a cove, attaching it to the shore with hawser. Another storm now arose. Unfortunately, the cove was exposed to the full force of the surf, which bore in upon Hopewell great blocks of ice, smashing its rudder away from the stern-post and snapping the hawser. To avoid further damage, Knight ordered the ship, half-full with water, hauled to the bottom of the cove.

The next day, the storm abated. Since the cove clearly offered inadequate shelter, Knight landed with his brother Gabriel, the mate, and one of the crew on a large island about a mile from the ship to look for a more suitable harbor where Hopewell might be repaired. Two others were left behind with the boat. They waited there from ten in the morning to eleven at night before making their way disconsolately back to the
ship. They could only presume that their commander and his companions had been killed by wild beasts or Indians, the latter presumption apparently confirmed when more than fifty Indians attacked them two nights later. Even though the stranded party now numbered only eight men and a dog, the Indians were driven off. At least this is the story told by the survivors, who were initially suspected of mutiny, which was common at this date, especially during exploring expeditions where crews were likely to be exposed to considerable deprivation. This appears, however, not to have been the case. The expedition had only just begun, and there is no indication of discontent among the crew in Knight’s journal. Indeed, the survivors had every need of Knight and his missing companions in the desperate struggle to patch up the ship and make the very difficult crossing of the Atlantic. This itself proved epic, for a path was eventually cut through the ice with axes to more open water for the patched-up but still leaking *Hopewell*. A jerry-rigged rudder was tentatively attached to the stern-post with iron bands torn from the captain’s chest and a highly dangerous passage achieved to Fogo, Newfoundland, where fishermen helped them make *Hopewell* sufficiently seaworthy to brave the Atlantic crossing. Eight very relieved men reached Dartmouth on 24 September.

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**Knuth, Eigil**

(1903–1996)

The greatest discoveries of the Danish explorer and archaeologist Eigil Knuth were not new lands but new peoples or, rather, old peoples, since those he was first to find were the earliest ancestors of the Inuit in Greenland.

Count Eigil Greve Knuth’s maternal grandfather was Augustin Gamel, who had sponsored Fridtjof Nansen’s crossing of Greenland in 1888. On his return to Copenhagen, Nansen gave Gamel his compass, and he in turn gave it to Knuth at his birth. If ever a man was born to polar exploration, this was he! Knuth first came to Greenland in 1932 to assist the National Museum of Denmark in excavating ancient Norse sites. After participating in another dig in 1934, in the following year he joined the Anglo-Danish expedition to East Greenland, led by Augustine Courtauld and Lawrence R. Wager, two veterans of Gino Watkins’s British Arctic Air Route Expedition of 1930–1931. On this, he helped Dr. Helge Larsen excavate sites formerly occupied by the Inuit. Knuth next crossed the Greenland ice sheet from Christianshåb to Ammassalik with Paul-Émile Victor in 1936. He remained through the following winter at Ammassalik, building a house, writing a book about the crossing, and completing a fine series of sculptured heads of the local inhabitants. Knuth had received training as an artist, and at this stage in his life he still considered himself a sculptor first and foremost. Archaeology and exploration were interests rather than a profession.

**Homage to Mylius-Erichsen, 1938–1939**

In Copenhagen, he discussed the exploration of Greenland with Alf Trolle and Ebbe Munck. Trolle (1879–1949) had been captain of *Danmark* on Ludvig Mylius-Erichsen’s expedition to northeast Greenland, while the mountaineer Munck (1905–1974) had been one of Knuth’s colleagues on the expedition led by Courtauld and Wager. Mylius-Erichsen and his two companions, Niels Peter Høeg-Hagen and Jørgen Brønlund, had died in 1907 on a sledging journey, during which they had made many important discoveries in northeast Greenland. To Knuth and his colleagues, their memory could be honored appropriately only by organizing another expedition to northeast Greenland.

On 19 June 1938, co-leaders Knuth and Munck sailed from Copenhagen in the 136-ton motor schooner *Gamma*. By 3 August, they were off East Greenland, where Eigil Nielsen, the paleontologist, boarded from *Gertrud Rask*. He had spent the previous year conducting studies in the vicinity of Scoresby Sound and now wished to extend his research farther north. With a radio-equipped de Havilland Tiger Moth to help *Gamma* navigate through the ice, Danmarkshavn was reached on 12 August. Further flights there helped identify a suitable site for the wintering station at Mørke Fjord on the north shore of Dove Bay. This location offered a dry and level terrace for the building, and salmon could be caught nearby in abundance at the mouth of the Gravelven; there were also interesting remains of earlier Inuit occupation for Knuth to study. Knuth’s original intention had been to winter at Ammassalik to complete more sculptures, but the National Museum had been unable to supply an archaeologist. He therefore took on this role, though it meant that he had to join the wintering party at Mørke Fjord.

Eight men wintered with Knuth: Nielsen, Paul Gelting (botanist), Svend Sølver (meteorologist, geologist, and cartographer), Alwin Pedersen (zoologist), Kurt Bæk (mechanic and wireless operator), and three Greenlanders—Elí Kristiansen, Zakæus Sandgreen, and Ove Rossbach. Munck returned to Copenhagen in *Gamma*. Not until 16 October did the coastal ice freeze sufficiently for the first depot journeys to be made. Not long afterward, on 29 October, the sun set for the last time, to remain 105 days below the horizon until reappearing on 14 February 1939. Its return meant the resumption of sledging, first to lay depots, then longer journeys during which Nielsen, Knuth, and Sølver each traveled separately with dog teams, accompanied by one of the Greenlanders. Nielsen was to go farthest, beyond Northeast Foreland to Cape Prince Knud at 81°80’N. Knuth searched for Inuit sites as far as Amdrup...
Land, just short of 81°N. He had hoped to reach Peary Land but was frustrated by open water north of Crown Prince Christian Land. In August, the wintering party was relieved by Gustav Holm. Trolle and Munck had been unable to raise sufficient funds to support another large party, so instead the meteorologist and radio operator Christian Madsen was left behind with three companions to look after the dogs and send weather reports to Denmark. Knuth planned to return in the future to extend his investigations to Peary Land.

The Danish Peary Land Expedition, 1947–1950
This remained an unrealizable hope until World War II ended. When at last it was over, Knuth and Munck were ready with their plans for an expedition to Peary Land, which they persuaded the newly established Danish Expedition Foundation to fund. Since all previous expeditions visiting Peary Land had been by sledges, none had been able to bring back much more than impressions and diaries. Their expedition was to attach great importance to the collection of natural history specimens; the problem was how to find a means of bringing them back. Knuth and Munck hit on a novel solution. Since Peary Land was completely inaccessible by sea, they concluded that the best option would be to set up a facility farther south, to which men and stores could be shipped. From there, an airlift north would be mounted by flying boat. Their plan required prior identification of suitable sites for the southern and northern bases, both of which had to be immediately adjacent to open water.

On 1 July 1947, Godthåb and Gamma sailed from Copenhagen to Akureyri, Iceland, where Knuth came on board. Assisted by a Catalina flying boat, they made their way through the pack to East Greenland, where Young Sound at 74°30’N was known to be regularly free of ice for at least one month every summer. By 25 July, they were off Zackenberg. Deep water there close inshore simplified unloading. Two days later, the first flight was made to Peary Land. Although Independence Fjord itself proved impossible, since it was ice-covered, the ice in Jørgen Brønlund Fjord had broken up, leaving large areas of open water. This looked promising. Three days later, Knuth landed with six scientists and a radio operator. During the two weeks they remained, a suitable site was found for Brønlund House, and 2.3 tons of equipment was flown up on two further flights. Knuth had hoped to transport much more, but problems with the plane limited the number of flights. It was clear to Knuth that, if at all possible, he should bring several planes rather than one next year.

Next year, Knuth had use of three Catalinas. Reaching Zackenberg on 28 July 1948, flights began the following day. Jørgen Brønlund Fjord was free of ice, and during the next few weeks 38 tons of stores were transported north to Peary Land. In addition to Knuth, the wintering party at Brønlund House consisted of Børge Fristrup (glaciologist), Johannes Troelsen (geologist), Kjeld Holmen (botanist), Palle Johnsen (zoologist), Aage Jacobsen (radio operator), Aage Sahlerz (general assistant and cook), and the Greenlander Karl Filemønsen. By 1 August, the house was built and a regular rou-
tine of meteorological observations maintained every three hours. The first sledging trips followed once the fiord had frozen over in mid-September. The sun set for the last time on 16 October, though parties remained in the field until the end of the month. Scientific work continued at the base throughout the period of darkness. By the time the sun reappeared on 26 February 1949, sledging had already begun. With the aid of depots laid now and during the fall, eleven long journeys were completed by 10 June, when the last party returned to Brønlund House. Independence Fjord had been thoroughly explored, with one party traveling west across Peary Land to reach J. P. Koch Fjord and the Lincoln Sea. Knuth's men were back only just in time. By mid-June, the fiord was again impassable as the ice began to break up. A few weeks later, strong winds swept the remaining ice out to sea, leaving behind open water.

Only Knuth was to remain for the second year. The others were flown south to Zackenberg, where Godthåb had arrived together with the chartered vessel Summøringen. Twenty-seven tons of cargo was transported to Jørgen Brønlund Fjord, together with the six men who were to join Knuth this winter. These were Knud Ellitsgaard-Rasmussen (geologist), Thorild M. Nielsen (surveyor and glaciologist), Børge I. Haagensen and Kristen Sørensen (radio operators), and the Greenlanders Jens Geisler and Tobias Samuelsen. Knuth's most ambitious journey this year took him east around the winter. These were Knud Ellitsgaard-Rasmussen (geologist), Børge I. Haagensen and Kristen Sørensen (radio operators), and the Greenlanders Jens Geisler and Tobias Samuelsen. Knuth's most ambitious journey this year took him east around the coast of Peary Land to Frederick E. Hyde Fjord, then west through that fiord and across to the north coast at Hazen Land. Ellitsgaard-Rasmussen also reached the north coast, by sledging west to J. P. Koch Fjord. Not surprisingly, considerable discrepancies were found with the best available maps, which had been compiled largely on the basis of what Lauge Koch had been able to survey in 1917 and 1921. Knuth believed that the station could be kept open indefinitely as long as sufficient funding was available to ensure its supply. By now, however, he had completed his own program, and on Knuth's departure in the summer of 1950 Brønlund House was closed.

It was on the long sledging journeys that he undertook between 1948 and 1950 that Knuth made the great archaeological discoveries for which he is famous. At Herlufsholm Beach, tent rings indicating a former village were excavated to reveal numerous hunting and household artifacts, which could be associated with the Thule culture, that is, the most recent Eskimo culture. Knuth also discovered the near-complete wooden structure of an umiak. On the raised beaches beside Jørgen Brønlund Fjord were found fragments of tools from the earlier Dorset culture. His greatest achievement, however, was to identify two much earlier waves of immigrating Paleoeskimos: the Independence I and Independence II cultures, the former being among the earliest Paleoeskimos known to have reached Greenland.

In later life, Knuth visited Peary Land whenever he could to continue his archaeological fieldwork. Major expeditions were organized in 1952, 1963, and 1964, and he continued to make use of Brønlund House until 1995.

See also: King Frederik VIII Land; Koch, Lauge; Mylius-Erichsen, Ludvig (1906–1908); Peary Land; Victor, Paul-Émile; Watkins, Gino (1930–1931)

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Koch, Lauge (1892–1964)

Between 1913 and 1959, the Danish geologist and explorer Lauge Koch led more than twenty expeditions to Greenland, spending thirty-four summers and six winters there. In the course of a polar career of unequalled duration, he was responsible for mapping the coastal regions of northwest, north, and much of East Greenland. International esteem for Koch's greatest achievements, however, was not shared in his home country, where a tactless remark was to cost him a nation's goodwill and to close off all career options but Greenland.

The nephew of Johan Peter Koch, who had been with Ludvig Mylius-Erichsen in 1906–1908 and had crossed the Greenland ice sheet in 1913, Lauge Koch's first visit to the Arctic was in 1913, when he was employed as a fieldwork assistant in the Disko region of West Greenland. Between 1916 and 1918, he served as cartographer and geologist on Knud Rasmussen's Second Thule Expedition, during which he suffered the traumatic experience of being forced to leave behind his companion, Dr. Thorild Wulff, at the latter's request. Koch himself only survived thanks to Rasmussen's timely arrival with a relief party.

Sledging around North Greenland, 1920–1923

Koch named his first expedition the “Danish Bicentenary Jubilee Expedition” in astute celebration of the arrival 200 years before of Hans Egede, inaugurating the Danish colonization of Greenland. Still puzzled by discrepancies between what Robert Peary had reported in 1892 and what had been seen by subsequent explorers, Koch planned to return to north Greenland, with the intention of traveling around the northern coast, returning through Independence Fjord and across the Inland Ice. His original intention had been for two tractors to transport a depot across the ice sheet to near St. George Fjord north of Robeson Channel, which would have involved the first extended journey by motor vehicles over an ice sheet. In the event, his mechanic was recalled, and Koch had to rely on dogs instead.
On 18 March 1921, he set out from the small Inuit settlement of Igdluluorssuit in Thule District to reach Fort Conger, Ellesmere Island, on 5 April. From there, he took two days to recross Robeson Channel. Accompanied by just three Inuit, Koch now traveled along the coastal ice off North Greenland, arriving at De Long Fjord on 5 May. This marked the limit of his mapping during the Second Thule Expedition, which he was able to extend past Cape Morris Jesup to Cape Bridgman. There he found the message deposited in 1907 by his uncle during the Danmark expedition of Mylius-Erichsen. Previous expeditions had reported good hunting in this region. Perhaps because of bad weather, or possibly because the population was already depleted, Koch was unable to obtain any muskoxen before Herlufsholm Strand on 26 May, by which time several of his dogs were dead. The weather improved in Independence Fjord, allowing some minor discoveries to be made, the most significant of which was a message left in a cairn by Mylius-Erichsen at the point where he had discovered Peary’s error in reporting Peary Land as an island, separated by a channel—“Peary Channel”—from the rest of Greenland. It was Koch’s desire to resolve the cause of Peary’s error that had stimulated this journey in the first place. Koch had hoped to revisit Navy Cliff, the viewpoint from where Peary had made his mistake, but the lack of muskoxen meant that his provisions were barely adequate for the journey back across the Inland Ice. On 18 July, Koch and the three Inuit climbed onto the ice cap, following a course that took them sufficiently far west to map the edge of the Inland Ice in the vicinity of Victoria and Sherborn Osborn Fjords. Provisions were all but exhausted by the time they reached Cape Heiberg-Jürgensen, where they expected to find a depot. Unfortunately, no depot had been laid, and they had to continue on another fourteen days, with only their dogs to eat, before they reached a depot at the northern edge of the Humboldt Glacier. By now only one dog was left. Soon afterward, they met up with an Inuit hunting party left in Washington Land to provide help if required. Koch was to remain one month before temperatures dropped sufficiently for the Humboldt Glacier to provide a practicable route south. Igdluluorssuit was reached on 2 October after a journey lasting 200 days.

This was to be the last of the great pioneering sledging journeys in North Greenland. Koch’s plan to map the coast north to St. George Fjord in 1922 came to nothing when the local Inuit were decimated by Spanish influenza. Later in the year, he did make an attempt to get far north but was forced to retreat after being laid up for a week in a severe snowstorm. In 1923, mapping activities were limited to the vicinity of Cape York. Although Koch was unable to complete all that he had hoped, it was largely upon the basis of his surveys, during this expedition and with Rasmussen in 1917, that the Danish Geodetic Institute in 1932 was able to publish an eighteen-sheet map of North Greenland at 1:300,000.

For the remainder of his career, Koch was primarily concerned with the mapping and geological exploration of East Greenland. In 1926–1927, he led a geological expedition wintering in Scoresby Sound. Accompanied by two Greenlanders, he sledged in the fall of 1926 to Myggbukta (73°29’N) and back. The following spring, he sledged to Danmarkshavn (76°77’N) and back. On his next visit, in 1929, he was able to demonstrate that the ice-free area between the Inland Ice and the coast in King Christian X Land was altogether larger than previously believed.

During the 1920s and 1930s, East Greenland, and especially the region now being investigated by Koch, was the subject of dispute between Denmark and Norway. Koch benefited from his government’s need to demonstrate effective occupation of the sector claimed by Norway as “Eirik Raude Land.”
(71°30'N–75°40'N). In 1931, he received funding from the Danish government and Carlsberg Foundation to mount the Danish Three-Year Expedition, a large-scale undertaking whose chief objective was to map the region between 72° and 76°N at 1:250,000. Between 1931 and 1934, up to 109 men were maintained in the field each summer, while stations were kept open through the winter at Ella Island in the interior of King Oscar Fjord, Eskimonæs on Clavering Island, and on Hochstetter Foreland (76°N). Two Heinkel seaplanes from the Danish navy conducted the aerial survey.

The comment that was to change Koch's life was made in December 1933, shortly after the death of Rasmussen, his former leader and sledding companion. Koch was asked for his views of a man mourned as one of the greatest of Danes. He replied carelessly that he considered Rasmussen a good driver of sledge dogs but one whose works did not always separate fiction from rigorous science. Published in a widely read journal, these remarks led to general outrage in Denmark and undoubtedly played a part in the subsequent reaction to his book _Geologie von Grönland_, which attracted a storm of criticism on publication in 1935, Koch being accused of inaccuracy and of insufficiently acknowledging the work of others. In the subsequent legal action, he was convicted of plagiarism and, to pay costs, was forced to sell his fine collection of Greenland books and maps. Koch had hoped for a career at the University of Copenhagen, but with this possibility closed off, had to make do as consultant to the minister for Greenland, on a contract subject to annual renewal.

At least he had his work in which to immerse himself, and between 1936 and 1938, Koch led the Danish Two-Year Expedition, compiling a geological map of the outer part of the east coast between 71° and 75°N, on the basis of the topographic survey he had completed between 1931 and 1934. In 1938, he made two flights between Spitsbergen and Greenland to investigate the supposed existence of the "Fata Morgana Islands," which several expeditions had reported off northeast Greenland. He was able to confirm that there was no such land. This expedition also gave him opportunity to conduct a first brief aerial survey of Peary Land. World War II brought an end to expeditionary activities but did not stop the workaholic Koch from composing his magisterial _Survey of North Greenland_ (1940).

In 1947, he returned to East Greenland with a small-scale expedition, but the fortunes of his survey were to revive the following year when commercially exploitable reserves of lead and molybdenum were discovered at Mestersvig, Scoresby Sound. Koch was now equipped with a second ship and Norseman seaplanes, the latter sufficiently large for use in transporting heavy loads, such as fossils, over relatively level terrain. His ability to appreciate the potential of new technologies and his flexibility in adapting his practices whenever opportunity presented may only be compared with the Antarctic explorer Paul Siple. Although ultimately unable to employ tractors, as early as 1920 Koch was planning to use them to ferry depots across an ice sheet. Less obviously pioneering was his use of Icelandic ponies in the 1930s and 1940s. Appreciating that they were not suitable for all tasks, Koch used them where they worked best: in transporting heavy loads, such as fossils, over relatively level terrain. As his expeditions expanded during the 1930s and into the 1950s, his organizational ability enabled him to coordinate complex work schedules and to ensure rapid publication of results. For someone so burdened with financial and administrative complexities, Koch was rare in retaining to the end his fascination with Greenland's geology. After the rift with his fellow Danish geologists, he preferred to work with British and Swiss scientists, giving them great support and the freedom to develop their own ideas, which he sought to guide only on the basis of his unrivaled experience.

Given his controversial comment, Koch's relationship with Rasmussen is naturally subject to speculation. Who, indeed, knows to what extent he was scared by Wulff's death, blame for which some sought to lay on him? He may well have considered that, if anyone was to blame, it was Rasmussen, as expedition leader. Regardless, his infamous comment was made in an unguarded moment when speaking on the telephone. It seems hard to damn a man of his achievements for uttering thoughts that in a wiser moment he would no doubt have left unsaid.

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Again, however, Petermann had his reasons. A number of
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polar sea west and east of Svalbard, yet reports from whalers
indicated that the sea off Greenland was remarkably free of ice
in occasional years. Adopting the view that in the Barents Sea
there was repelled by ice. After taking on water
and ballast at Bell Sound, Koldewey next sailed north to meet
the pack at 80°30’N, before following its edge southwest to
Greenland, his plan being to sail south along the coast in the
hope of finding somewhere a way through the ice. Although
land was sighted on 3 August, again he was unable to reach it.
Clearly, this was not a good year to investigate East Greenland,
but in order for the expedition to yield at least something
worthwhile, he decided to return once more to Svalbard to
explore the southern section of Hinlopen Strait, which had
been visited just once before—by Otto Torell in 1861—and
still remained only partially mapped. Entering this strait on 19
August, Koldewey surveyed its southern section between 21
August and 7 September, discovering Wilhelm Island and
making other minor improvements to Torell’s map before
heading back to Bremen on 29 September.

**Germania and Hansa Encounter Contrasting Fortunes
Off East Greenland, 1869–1870**

Although Koldewey had achieved less than Petermann had
hoped, the latter was in no way deterred from proceeding
with his plans for a more ambitious expedition, which would
establish its winter quarters in northeast Greenland, heading
north from there to investigate the nature of the region sur-
rounding the Pole right across to Bering Strait, should that
prove possible. To that end, he arranged to have built the 140-
ton schooner
Germania. Strengthened with additional planking
and equipped with an auxiliary engine, it was the first
vessel purpose-built for Arctic exploration. Since it would be
incapable of carrying on board coal and other provisions suf-
cient for its needs, it was to be accompanied by the 77-ton
schooner
Hansa. The latter, though ice-strengthened, had no
auxiliary engine, an omission that was to prove critical.
Sixteen men were to sail with Koldewey on
Germania, including medical officer Dr. Georg Pansch, scientists Dr. Karl N. J.
Börgen and Dr. R. Copeland, and First Lieutenant Julius Payer,
a citizen of the Austro-Hungarian Empire and a skilled
mountaineer and cartographer. The whaling captain
Friedrich Hegemann was to command
Hansa, with a crew of
thirteen, including medical officer Dr. Reinhold Buchholz and
geologist Dr. Gustav Laube.

In the presence of King Wilhelm I and cheered on by
enthusiastic crowds, 
Germania and Hansa sailed from Bre-
merhaven on 15 June 1869. After reaching the pack ice north

**Koldewey, Karl**

(1837–1908)

Although minor discoveries were made, the two voyages of the
German seaman Karl Koldewey to East Greenland and Sval-
bard are primarily important as marking the beginning of Ger-
man involvement in the polar regions.

**German Polar Exploration Begins Modestly, 1868**

Despite a long tradition of Arctic whaling, largely as a result of
Germany’s political fragmentation, there had been no attempt
to join Great Britain, Russia, and other countries in organiz-
ing exploring expeditions to this region, let alone to the
Antarctic. As the German state coalesced around Prussia, per-
spectives began to change, and in 1866 the well-known geog-
rapher August Petermann published a proclamation urging
his newly founded nation to take its place as a European
power by engaging in Arctic exploration. Petermann, further-
more, had a plan as to how this should be done.

Arguing that the warm waters of the Gulf Stream not only
moderated the climate of the British Isles and Scandinavia but
also continued north into the polar basin, Petermann sug-
gested that a “thermometric gateway” would be found in this
region through which, in a good year and in the right season,
a vessel might penetrate a ring of ice fringing the Pole to reach
open water beyond. The concept of an open polar sea is as
ancient as attempts to reach the North Pole by ship, but Peter-
mann could support his assertion with scientific reasoning,
much of it correct. Having raised sufficient money to fit out an
expedition of twelve men in the small schooner
Grønland, Petermann curiously instructed its leader, Karl Koldewey, to
explore north from East Greenland rather than from the Bar-
tents Sea, as might have been anticipated from his theory.
Again, however, Petermann had his reasons. A number of
expeditions had sought without success to reach the open
polar sea west and east of Svalbard, yet reports from whalers
indicated that the sea off Greenland was remarkably free of ice
in occasional years. Adopting the view that in the Barents Sea
the Gulf Stream might sweep the pack farther north, com-
pacting it into an impenetrable mass, Petermann considered
that the East Greenland Current, by bringing ice out of the Arct-
ic Ocean, might at the same time open up a path into this
ocean. The main difficulty would be that his expedition would
have to sail into an adverse current choked with ice.

On 24 May 1868, Koldewey sailed from Bergen, Norway,
with the intention of reaching East Greenland near 74°N. There
the coast had been attained in 1823 by a British expedi-
tion led by Douglas Clavering, and Petermann’s instructions
were to explore north from Clavering’s discoveries and make
a preliminary reconnaissance for a larger-scale expedition
planned for the following year. By 16 June, Koldewey was
within sight of the coast but unable to reach it beyond a mass
of drifting ice. For the next two weeks, he remained offshore
waiting for an opportunity to approach land. With no sign of
conditions improving, he decided on 29 June to return to
Greenland later in the year and, in the meantime, search for
“Gillis Land,” which had been reported northeast of Svalbard
(see White Island). Southern Spitsbergen was sighted on 3 July,
but again Grønland was repelled by ice. After taking on water
and ballast at Bell Sound, Koldewey next sailed north to meet
the pack at 80°30’N, before following its edge southwest to
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of Jan Mayen at ca. 75°30’N on 19 July, Koldewey signaled Hegemann to come aboard to discuss plans for navigating through the ice. To his amazement, Hansa sailed straight past him and disappeared into the distance, heading toward Greenland. Thoroughly mystified, Koldewey succeeded in forcing his way through to Sabine Island, where he had agreed to rendezvous with Hegemann if separated. Arriving on 5 August, he remained for eight days while his men explored the neighborhood in boats, confirming the general accuracy of Clavering’s earlier survey. However, when the ice opened up, offering the possibility of getting farther north, Koldewey considered the opportunity too good to be wasted, managing to attain 75°30’N before the ice closed in again. Unable to identify any suitable winter quarters, Germania was turned about; Shannon Island and its surroundings were explored on foot while Germania investigated the islands offshore. By now, Koldewey had concluded that there was no better site to winter than Sabine Island, where he anchored in Germania Harbor on 13 September. Before winter closed in, time remained for two further sledging journeys, on the first of which a useful source of coal was discovered on Pendulum Island. Given that Germania’s coal supplies were chiefly on board Hansa, this was an important find.

During the winter, the scientists maintained a regular schedule of meteorological, magnetic, and astronomical observations, though not without alarms, most notably when Börgen was attacked by a bear. He had gone out to observe the occultation of a star when a bear stole up on him, striking him down and seizing his head between its jaws. He was in the process of being carried off when his cries alerted his colleagues, who drove off the bear with a barrage of gunfire. On 8 March 1870, Koldewey led a major sledge journey north, during which he succeeded in extending his survey beyond the area previously explored by Clavering, to discover King Wilhelm Land, Dove Bay, and Germania Land before turning back at 77°01’N on 11 April. A number of shorter sledging journeys were made before Germania was freed from the ice. After one final futile attempt to get farther north on 22 July, Germania followed the coast south on 1 August, Koldewey being rewarded on 8 August with the discovery of Franz Josef Fiord. For the next eight days, amid towering mountains, the expedition explored East Greenland’s most spectacular fiord system before Germania finally left Greenland to reach Bremerhaven on 11 September.

What, however, of Hegemann and Hansa? It will be recalled that the two vessels had separated after Hegemann appeared to ignore Koldewey’s instruction on 20 July 1869 to come aboard Germania. Hegemann stated later that he had misin-
terpreted Koldewey’s signal as an order to head west into the pack in order to avoid bad weather. Once in the ice, Hansa’s lack of an engine proved crippling, though it did manage to come within sight of Sabine Island in late August. By 14 September, it was firmly beset and drifting south with the East Greenland Current. Appreciating the probability that his ship would be crushed, Hegemann on 27 September gave instructions for a house to be built on the large floe in which Hansa was trapped, using for building material the coal-dust briquettes carried on board as fuel for Germania. Patching up cracks with snow and pouring water over the structure to cement it with ice, they built a relatively comfortable habitation measuring 6 meters by 4.25 meters. It was roofed over by sailcloth and reed matting, and inside were placed provisions for two months. On 18 October, the floe became pinioned against the coastal ice, setting up enormous waves of pressure that literally twisted Hansa apart. The following day the ship was abandoned and everything salvageable brought across to the house. Hegemann and his crew were now at 70°52’N, 21°W, some 6 miles off Liverpool Land.

Although the house itself was not uncomfortable and there was sufficient food, the uncertainty of the situation proved unbearable for some, especially the medical officer, Buchholz, who went temporarily insane and had to be confined to his bed. By early January 1870, there were unmistakable signs that the floe was shrinking in size prior to breaking up. On 11 January, they awoke to find a crack dividing it close to the house. Three days later, the house itself was sliced apart. The only refuge now was to be found in the three boats, and in these they huddled until the storm passed. A smaller hut was built out of the ruins of the house, and there they survived for the next few months as Hegemann checked their continued progress south and waited for conditions permitting an attempt to reach land in the boats. At 61°12’N, having drifted 1,400 miles in 200 days, the floe was at last abandoned on 7 May. Now close to the southern tip of Greenland, the boats were alternately hauled across ice and sailed through water before Cape Farewell was rounded in early June. On 13 June, some houses were seen in a bay. This was Frederiksdal, a small settlement established by German missionaries. The first words they heard were in German, and they were made most welcome. Continuing on to Julianehaab, they were able to board a ship that brought them back to Copenhagen.

Koldewey had succeeded in extending knowledge of East Greenland as far north as Cape Bismarck. Despite several attempts, no one was to reach farther until Ludvig Mylius-Erichsen in 1906–1908. Koldewey’s limited achievements have to be set against the difficulty of the task attempted. The coast of northeast Greenland is notoriously difficult to approach, and given the impossibility of Petermann’s instructions, to have accomplished as much as he did is to his credit. The scientific results filled two large volumes.

See also: Clavering, Douglas; Germany; Greenland, East; King Christian X Land; King Frederik VIII Land; Mylius-Erichsen, Ludvig (1906–1908); North Pole; Open Polar Sea; Payer, Julius von; Svalbard; Torell, Otto; White Island

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Kolguyev Island (Russia)

Located between 68°40’ and 69°30’N and 48°15’ to 49°55’E in the Barents Sea, this island of 1,240 square miles lies 45 miles east of the Kanin Peninsula on the Russian mainland. The island is very low-lying, with much of it only a few meters above sea level. Being composed largely of sand, the coastline is subject to constant change, and the adjacent sea is exceedingly shallow, as little as 4–5 fathoms some 2 miles off the coast. For these reasons, most ships tend to give it a wide berth, especially since large sandbanks lie offshore to the south and east, and there is no convenient anchorage.

From the fact that most of the physical features have names given by the Nentsy, Aubyn Trevor-Battye (1895b) inferred that the island was occupied by these reindeer herders long prior to the seasonal visits of the Pomors. Vast flocks of Brent geese inhabit the island, which the Nentsy caught using nets, sometimes several thousand at a time. These and reindeer products were traded with the Pomors, who took them to the mainland.

Sir Hugh Willoughby was probably the first explorer to see the island, when he reported sighting low land in the correct general location for Kolguyev in 1553. It was certainly seen three years later by Stephen Borough, when sailing with the Pomor fleet to the Pechora River. On 20 August 1580, Arthur Pet and Charles Jackman grounded on the offshore shoals. Both vessels were worked clear without serious damage, but Pet advised navigators to keep their distance. Possibly unaware of this advice, Jens Munk was shipwrecked when exploring the coast in 1609 and had to take to his boat, reaching the mainland only after a difficult voyage. The Dutch whaler Willem de Vlamingh is reported as landing in 1668.

With Kolguyev presenting a significant obstacle to shipping proceeding east from the White Sea toward the Pechora River and Kara Sea, several attempts were made by the Russian navy to fix the island’s exact location. Given that its coastlines were constantly changing, this was a task that had to be repeated at intervals. In 1819, Lieutenant Andrey Lazarev fixed the posi-
tion of the northwest coast but was prevented from charting the entire coastline as intended due to bad weather. In 1823 and 1824, Lieutenant Fedor Litke determined the position of the northwestern and western points. The coastline was charted in its entirety by underpilot Il’ya Berezhnykh in 1826, who spent five days circumnavigating the island.

Scientific investigation began in 1841 with a two-man expedition organized by the Imperial Academy of Sciences consisting of botanist Frants Ivanovich Ruprekh and physicist Aleksandr Stepanovich Savel’yeyev. Landing on the south coast, Ruprekh traveled into the interior while Savel’yeyev made magnetic observations. They next attempted to sail around the island, getting no farther than the west coast when unfavorable winds forced them to return to the mainland. Arriving back on the island to complete their work, they were trapped in a cabin by violent storms for the duration of their stay and so accomplished nothing. The next visit by a naturalist was altogether more significant. In 1894, Aubyn Trevor-Battye spent several months exploring the island and studying its natural and ethnographic history. Trevor-Battye’s works remain virtually the only English-language sources for Kolguev.

Apart from a party of naturalists led by Henry Pearson in 1895 and a brief landing by Andrew Coats in 1898, Trevor-Battye’s was the last documented visit by a non-Russian until 1994, when the Swedish-Russian Tundra Ecology Expedition established a study site on the island. The first attempt at a comprehensive survey of the island was organized in 1902 by the Russian Geographical Society. Sergey Aleksandrovich Buturlin led a six-man party that spent two months on Kolguev, assembling fine natural history collections and compiling a map, the first to depict the interior with any degree of exactness. During the Soviet era, the well-known botanist Aleksandr Innokent’yevich Tolmachev spent a summer there in 1925. By 1935, two stations were operating on the island: North Kolguev (69°19’N, 48°30’E) and Bugrino (68°29’N, 49°05’E).

See also: Borough, Stephen; Munk, Jens; Pet, Arthur; Pomor Contribution to Arctic Exploration; Willoughby, Hugh

References and further reading:

Korea

South Korea's initial interest in the Antarctic stemmed from the potentially rich fisheries found close to the continent. From 1978 onward, voyages were undertaken to investigate stocks of fish and krill off the coast of East Antarctica and in the Scotia Sea. Following ratification of the Antarctic Treaty on 28 November 1986, South Korea inaugurated a national Antarctic research program coordinated and executed by the Korean Ocean Research and Development Institute (KORDI). The first land-based expedition of 1985 paved the way for this program; a mountaineering party climbed Vinson Massif in Ellsworth Land, Antarctica’s highest mountain, while a team of scientists worked on King George Island, where a second expedition was to return the following year to search for a suitable site for a station. In February 1988, King Sejong Station was established on Barton Peninsula. This station operates throughout the year, and an extensive research program is undertaken. Regular expeditions to relieve it are made each year. KORDI also operates Dasan station at Ny-Ålesund, Spitsbergen.

North Korea’s polar program is more limited. The first North Korean scientists to work in Antarctica accompanied the 35th Soviet Antarctic Expedition in 1989–1990 to conduct research at the major Soviet station Molodezhnaya in Enderby Land. In the following year, North Korea established a summer station consisting of four huts adjacent to Molodezhnaya.

See also: Enderby Land; King George Island; Spitsbergen

References and further reading:

Kotzebue, Otto von
(1787–1846)

Some apparently less significant expeditions can have major consequences. In the case of the Arctic expedition of Otto von Kotzebue—also known as Otto Yevstaf’yevich Kotsebu—only minor discoveries were made on the northwest coast of Alaska. Yet the mere fact that a Russian expedition had been mounted to search for the Northwest Passage, which Great Britain tended to regard as its own special preserve, was sufficient to provoke the British Admiralty into organizing a long series of expeditions, as a result of which the complex geography of the Canadian Arctic Archipelago was finally revealed.

A Russian Expedition Searches for the Northwest Passage, 1815–1818

At the conclusion of the Napoleonic Wars in 1815, once again exploration of the still largely unknown polar regions could be resumed. In Russia, the initiative was taken not by the government itself but privately by one of its ministers, Count Nikolai Petrovich Rumyantsev, who had previously organized Mathias von Hedenström’s survey of the New Siberian Islands and a mineral prospecting expedition to Novaya Zemlya. The Great Northern Expedition of Vitus Bering (1733–1743) had made clear the enormous problems to be overcome in any attempt to sail through the Northeast Passage. Inspired by James Cook, who had searched for an entrance to the Northwest Passage from the Pacific Ocean during his last expedition (1776–1780), Rumyantsev came to the conclusion that the
Northwest Passage would serve Russia equally well and thus organized this first Russian attempt to sail through it.

Rumyantsev’s chief adviser was Captain Adam Johann von Krusenstern (Ivan Fedorovich Kruzenshtern) (1770–1846), who in 1803–1806 had commanded the first Russian voyage around the world. One of his crew had been Otto von Kotzebue, son of the well-known author August von Kotzebue. As a cadet Otto had distinguished himself by his enthusiasm for navigation, and Krusenstern suggested that Kotzebue might do no better than appoint Lieutenant Kotzebue. Given that this was a privately sponsored expedition, resources were limited, and much thought was given to the most suitable vessel. A small vessel had advantages: comparative cheapness, being able to sail closer to shore, and being less likely to run aground on submerged rocks and shoals. But it also had at least one disadvantage, because a very small crew might invite attack by hostile natives. In the end, a compromise was reached, and a brig of 180 tons was built. It was called Ryurik and carried a crew of twenty-two, together with the surgeon-naturalist Johan Friedrich Eschscholtz and the naturalist Adalbert von Chamisso.

On 30 July 1815, Ryurik embarked from Kronstadt, the military port of St. Petersburg, heading first to England, where the finest astronomical and navigational instruments, as well as the most up-to-date maps, were obtained. Kotzebue was lucky to survive being washed overboard in a storm off Cape Horn. Fortunately, he kept firm hold of a rope and was hauled back on board. Reaching Concepción, Chile, on 11 February 1816, Ryurik was repaired and fresh provisions were loaded. In addition to searching for the Northwest Passage, the expedition was instructed to explore the Central Pacific where several new island groups were discovered before reaching Petropavlovsk on the east coast of the Kamchatka Peninsula on 19 June. There Ryurik was sheathed in copper to add extra protection against ice and tropical worms. By 15 July all was ready, and Kotzebue sailed northeast to reach Bering Strait on 30 July. Only Cook had explored the American coast to his east, and he had been unable to get past Icy Cape. Searching for a passage leading north to the Arctic Ocean some way east of this cape, Kotzebue entered first Shishmaref Inlet and then Kotzebue Sound, a large opening left unexplored by Cook. The local Inuit confirmed the presence of openings to the north of the bay, and Kotzebue systematically investigated them in a detailed survey. None led to the Arctic Ocean, but one wonder was encountered: a “mountain of ice”—actually a cliff of interspersed soil and permafrost—that stank of rotting flesh with a pile of mastodon teeth at its foot. Exiting from the bay, Kotzebue noted sea empty of ice extending far to the north off the Alaskan coast. By that time it was too late in the summer to follow up, but it promised well for the hoped-for discovery of the Northwest Passage during the next year.

Kotzebue’s plan was to winter far south in the Central Pacific, where his program of exploration could be continued. Before doing so, however, he crossed to the other side of Bering Strait to investigate the coast of Chukotka, from Cape Dezhnev at its eastern tip south to St. Lawrence Bay. A marked difference was noted between the American and Asian coasts. While the American coast was comparatively balmy and with little offshore ice, the Asian coast was much colder with ice apparently fixed to the shore. Rumyantsev’s decision to explore north of America rather than Russia seemed well-founded.

The results of Kotzebue’s first Arctic season were encouraging, but he was to be prevented from pursuing these further. Eager to reach the possible entrance to the Northwest Passage as early in the season as possible, he was on his way north when he encountered a savage storm on 13 April 1817. A great wave broke across the ship, smashing the bowsprit and throwing the commander against a beam, breaking his breastbone. Had the storm continued, Ryurik would almost certainly have sunk, but fortunately it did not, and Kotzebue was able to bring his stricken vessel to safety at Unalaska in the Aleutian Islands, anchoring there on 24 April. It took two months before Ryurik was again seaworthy and able to set out again on 29 June. Much valuable time had been lost; of still greater concern, Kotzebue found it impossible to shake off his injury. Having to take many of the watches in addition to his other duties, the burden was simply too great, and the surgeon advised him that he would not survive another season in the Arctic. Thus it was that Ryurik turned south from St. Lawrence Island on 10 July. The program of exploration was not abandoned, but all of Kotzebue’s discoveries from then on were to be much farther south in the tropical Pacific. He returned to Kronstadt on 3 August 1818.

Kotzebue’s voyage aroused great interest in Great Britain, Britain and Russia at this time were close allies, having formed the heart of the coalition defeating Napoleon, and the British Admiralty had rendered great assistance to the expedition by having a special lifeboat built for it free of charge. On Kotzebue’s return, the second secretary of the Admiralty, John Barrow, communicated personally with him to learn the details of what he had discovered. It was no coincidence that during that same year Barrow was behind the organization of two naval expeditions reviving the British search for routes across the Arctic Ocean to the Far East. These expeditions were to be led by John Ross and David Buchan, and many subsequent expeditions were to follow them. Russia too was determined to follow up Kotzebue’s discoveries, and in 1819 Mikhail Vasil’yevich was to lead a naval expedition to the same region.

See also: Barrow, John; Bering Strait; Bering, Vitus (1733–1743); Buchan, David; Cook, James (1776–1780); Hedenström, Mathias von; Northeast Passage; Northwest Passage; Ross, John (1818); Vasil’yev, Mikhail

References and further reading:
Lancaster Sound (Canada)
Roughly 40 miles wide, this channel extends some 200 miles west from Baffin Bay, between Baffin and Bylot Islands to the south and Devon Island to the north. All navigable routes through the Northwest Passage pass through it, connecting farther east with Barrow Strait, Melville Sound, and McClure Strait, as well as with waterways leading north and south. It was discovered by William Baffin and Robert Bylot in 1616 and named for Sir James Lancaster (d. 1618), a London merchant and sea captain who was one of the three main sponsors of their voyage. Baffin failed to note its potential, which was also missed by John Ross in 1818, who mistakenly believed it to be a bay barred by “Croker’s Mountains.” The latter were proved a mirage the following year by Edward Parry, who pointedly recorded their supposed location with the place-name Croker Bay on Devon Island.

Whalers extended their activities into the sound in the 1830s, the first to do so being George Simpson in Traveller in 1832 at the suggestion of his mate, the future explorer William Penny. Two years later, John Ross was rescued off Bylot Island by the whaler Isabella, after abandoning his own vessel and having spent four winters in the Arctic.

In 1924, Staff Sergeant A. H. Joy of the Royal Canadian Mounted Police followed the route taken by Inuit hunting parties from Pond Inlet across the sound to Devon Island. In very few years does the ice freeze solid, and Joy had to make his way over fast-moving ice with frequent wide leads. The ice generally breaks up in July, becoming navigable first

Chart of Lancaster Sound (Ross, J. 1819. A voyage of discovery. p. 174)
close to the northern shore, the route followed by most expedi-
tionary vessels.

See also: Baffin, William; Northwest Passage; Parry, Edward (1819–1820); Penny, William; Ross, John (1818); Whaling and Arctic Exploration

**Laptev, Dmitriy**

*(fl. 1730s–1740s)*

One of the objectives of the Great Northern Expedition of Vitus Bering (1733–1743) was to investigate the possibility of a sea passage along the coast of Arctic Russia from the Lena River to Kamchatka, such a voyage being rumored to have been made many years previously by a party of cossacks and traders headed by Semen Dezhnev. Dmitriy Laptev was to lead this expedition’s second attempt to survey the coastline extending from the Lena, around the Chukotka Peninsula, to the Anadyr’ River. The task was to take eight years, and even then the Chukotka coast was to remain unsurveyed.

**From the Lena to the Kolyma and on to the Anadyr’, 1736–1743**

The disastrous first attempt to map this coast was led by Lieutenant Peter Lassinius. Departing from Yakutsk on 30 June 1735 in *Irkutsk*, Lassinius had reached the delta of the Lena in company with a detachment led by Vasily Pronchishchev on 2 August. There he had separated from Pronchishchev, taking the main eastern outlet, which brought him to the sea three days later. He had then followed the coast south into Borkhaya Bay, where he had encountered so much ice that he was forced to seek winter quarters on the Kharaulakh River. Reaching that location on 18 August, they constructed a large hut out of driftwood, and four men were sent back to Yakutsk to report progress to Bering, the overall expedition leader. Those men, it turned out, were the lucky ones. Despite the very comfortable hut, equipped with a bath and several ovens, very few who remained were to survive the winter. Fresh food was hard to obtain, and scurry soon became rampant. Lassinius was among the first to die on 19 December, and by April 1736 only eleven of the forty-eight men remained alive.

Once Bering became aware of the situation, he immediately sent Lieutenant Dmitriy Yakovlevich Laptev, the cousin of Khariton Laptev, with forty-three men in three boats heavily loaded with supplies. He was to relieve the survivors of Lassinius’s expedition and then continue the coastal survey to the east. Laptev set out from Yakutsk in the spring of 1736, sailing down the Lena and east to Borkhaya Bay, where he found *Irkutsk* still moored. At that location the survivors were met, but before any further survey work could start *Irkutsk* had to be hauled out and refitted. On 11 August all was ready and Laptev headed due north, misled by existing maps that depicted the coast between the Lena and the Kolyma as reaching more than 76°N at Cape Svyatov Nos. In fact this cape is no farther north than 72°50'N—similar to the Lena Delta—and Laptev’s course took him straight into the main Arctic Ocean pack, meeting it just three days later. It was clear that there was no way through, and he had no option but to turn back to winter on a tributary of the Lena, the Burisova, where he arrived on 14 September.

During the winter, Laptev traveled overland to Yakutsk to report to Bering. Unfortunately, by the time of his arrival, Bering had moved on to Okhotsk, leaving behind no instructions. Ignorant of the annual convoys that had been sent from Yakutsk to the Kolyma not fifty years before, Laptev had become convinced that Cape Svyatov Nos was simply too far north to be rounded, and without Bering to advise him he felt he had no choice but to make the long journey to St. Petersburg, where he received further orders from the Admiralty College. He was instructed to continue his survey by sea or, if necessary, by land using sledges. All the while, the rest of his expedition remained on the Lena, where it made a preliminary survey of the coast on either side of Cape Svyatov Nos prior to Laptev’s return via Yakutsk. Reunited in June 1739, Laptev and the expedition now sailed east along the coast in *Irkutsk*. Although ice continued to cause difficulties, Cape Svyatov Nos was rounded on 14 August and the coast surveyed to the Indigirka River, which was reached with difficulty just before the full onset of winter in September.

Winter was a time of opportunity, since this was the season when overland transport was easiest. A seaman was sent to St. Petersburg to report on progress, and contacts were established with settlements on the Kolyma, which provided helpful information as to how the river might best be reached once *Irkutsk* was freed from the ice. Survey parties surveyed the coastline between the Indigirka and the Kolyma, and on 31 July 1740 a path was finally cut through the ice to open water, allowing *Irkutsk* to resume its voyage. Just four days later, the Kolyma was reached, and Cape Bol’shoy Baranov was rounded on 9 August. But ice prevented further progress, and Laptev returned to the Kolyma to winter. The year 1741 was largely fruitless. Setting out on 29 June in specially constructed shallow-draft vessels, and with high hopes of rounding the Chukotka Peninsula and reaching the Anadyr’, he found himself unable even to get past Cape Bol’shoy Baranov, and after several attempts he was forced to return to the Kolyma with nothing achieved.

Laptev had reached the conclusion that the only way to reach the Anadyr’ was by land. He had previously been instructed by the Admiralty College to collect whatever information he could of the warlike Chukchi, but he received new instructions warning him against inspecting Chukotka for fear of Chukchi attack. Sending most of his detachment back to St. Petersburg, he left with forty-nine dog teams down the Great Anyuy River to Anadyr’ Fort, where he arrived on 18 November 1741. The following summer, he spent two months surveying the Anadyr’ River while a second party surveyed the
route from Anadyr’ Fort to the Gulf of Penzhina on the Okhotsk Sea. His work completed, Laptev returned overland via the Kolyma and Yakutsk to reach St. Petersburg in December 1743.

Laptev’s return marked the conclusion of the Great Northern Expedition. While Bering himself had reached Alaska, and Morten Spanberg had led another detachment south toward Japan along the Kuril Islands, five detachments—of which Laptev’s was the easternmost—had succeeded in compiling excellent charts depicting the entire coast of Arctic Russia from Archangel to some way beyond the Kolyma. Only the coast of the Chukotka Peninsula had not been surveyed, and it would so remain so long as the Chukchi continued hostile and unsubdued.

See also: Bering, Vitus (1733–1743); Dezhnev, Semen; Laptev, Khariton; Northeast Passage; Pronchishchev, Vasily; Russia

References and further reading:

Laptev, Khariton (d. 1763)
Perhaps the most formidable task charged to the Great Northern Expedition of Vitus Bering was the survey and compilation of charts for the Taymyr Peninsula, the northernmost projection of continental Eurasia. Three detachments of the expedition were to make the attempt: from the west by Fedor Minin, from the east by Vasily Pronchishchev, and finally largely overland by Khariton Laptev.

How Cape Chelyuskin Was Reached, 1739–1742
Navy Lieutenant Khariton Prokov’yevich Laptev, cousin of Dmitriy Laptev, was placed in charge of the second detachment to attempt to survey and chart the coast of Arctic Russia from the Lena delta west to the Taymyr. Vasily Pronchishchev’s detachment had accomplished much of the necessary work in 1735–1737 but had fallen just short of reaching the northern tip of the Taymyr. Although Minin was unable to work his vessel out of the Yenisey Estuary to begin his survey of the peninsula’s west coast until 1740, a considerable delay in appointing Laptev as Pronchishchev’s successor had resulted from the departure of the overall expedition leader, Bering, from Yakutsk and the consequent need for all instructions to be relayed from the Admiralty College in remote St. Petersburg.

Reports from Pronchishchev and Minin had demonstrated to the St. Petersburg authorities just how daunting a challenge was posed by the Taymyr, this peninsula being altogether more vast and extending much farther north than previous reports had led them to expect. It was made clear to Laptev that how-ever long it took he was expected to complete the survey. If impossible by sea, then he must do it overland. His salary was paid in advance, and all his demands for men and equipment were met. His vessel, Yakutsk, was refitted and depots laid in support at strategic locations on the Anabar, Khatanga, and Taymyr Rivers.

On 7 June 1739, Laptev set out from Yakutsk on the long voyage down the Lena to the sea. His vessel was crewed by forty-five men and was followed by a string of barges carrying provisions, which were to be stored in warehouses at Olenek on the Arctic coast. From there his progress westward was much impeded by ice, and it was not until 27 July that Begichev Island was reached in Khatanga Bay. Next progressing up the east coast of the Taymyr, Laptev reached the estuary of the Thaddeus River on 21 August. Continuing on, Yakutsk the following day was at 76°47’N, not far short of Pronchishchev’s northernmost point. Ice now barred the way. Laptev had sent a reconnaissance party to erect lighthouses and scout for a suitable wintering site. Nowhere looked possible, and with no driftwood to build a hut he convened a council of his officers to decide the course of action; it was agreed that they should turn back to winter on the Khatanga, where suitable quarters had been prepared for them.

It was now evident from his own experiences, as well as those of Pronchishchev and Minin, that much of the work would have to be done from the land rather than the largely ice-covered sea. For overland travel winter was the best time, so from Khatanga boatswain’s mate Medvedev was sent across the Taymyr to the Pyasina River, the farthest point east reached by Minin. Leading a combined party of Russian and Evenki reindeer herders, his task was to survey the west coast of the Taymyr north from there. Initially, this strategy too failed to meet with success as Medvedev was only able to cover 25 miles of coastline before being stopped by violent winds and intense cold. In March 1740, one month before the return of Medvedev, Laptev sent out another party under Nikifor Chekin. This party was to survey the west coast from the Taymyr River south toward the Pyasina. Chekin managed to cover 60 miles before shortage of food for his men and fodder for his reindeer forced him also to return. On 13 July, Laptev began his second attempt to round the Taymyr by sea, reaching his farthest north (75°49’N) on 13 August. Again, he was stopped by impenetrable ice and, with Yakutsk leaking badly, was forced to abandon the ship and carry what provisions he could over the ice to land. Twelve men died on an increasingly desperate march back to the Khatanga, and there too provisions were sufficient only for a few weeks when the survivors struggled in during late September. Not until mid-November were further supplies obtained from the Anabar River. In December, contact was finally established with the Olenek River, where extensive supplies had been left; thereafter the period of acute shortage was over.

With Yakutsk lost, Laptev had no option but to com-
plete his survey by land; he therefore divided up his men into three parties led by himself, Chekin, and steersman Semen Chelyuskin, a veteran of Pronchishchev’s expedition.

On 17 March 1741, Chelyuskin was first to set out with three dog sledges. His destination was the mouth of the Pyasina, from where he was to follow the coast northeast to the Taymyr River. Some of this coast had already been surveyed in the previous winter; Chelyuskin’s task was to cover the land in between. Chekin’s party was of similar size, departing on 22 April to seek the northernmost point of the Taymyr Peninsula. From there he was to survey the west coast south to the Taymyr River. Laptev’s two dog teams left two days later with the Taymyr River itself as the destination. He was to survey south until he met Chelyuskin, this meeting being effected at 75°21’N on 1 June, both parties having successfully completed their work. Laptev and Chelyuskin now headed down the Pyasina to the Yenisey, where they wintered at Turukhansk. Chekin was also to winter on the Yenisey, though his party had failed to reach farther north than the Peter Islands on the east coast of the Taymyr Peninsula, at 76°35’N, when snow blindness brought his activities to a halt.

With the survey now complete except for the northernmost part of the great peninsula, Laptev on 5 December sent Chelyuskin to complete the task. First traveling east across the base of the Taymyr, Chelyuskin reached the estuary of the Khatanga at the end of February 1742. There, at the mouth of the Popigay, he established a camp. Dividing his forces in two, he sent one party across the peninsula to the Taymyr River while he himself headed up the east coast to reach its tip on 9 May. Now known in his honor as Cape Chelyuskin, it lies at 77°42’N, being the most northerly point on the Eurasian mainland. From there, Chelyuskin turned south to meet his second party traveling north up the west coast from the Taymyr River to conclude the survey.

Laptev’s survey showed the Taymyr to be a much larger peninsula than previously imagined, both broader and reaching much farther north. Its formidable nature as an obstacle to shipping attempting to follow the Northeast Passage was for the first time made fully clear.

See also: Bering, Vitus (1733–1743); Laptev, Dmitriy; Minin, Fedor; Northeast Passage; Pronchishchev, Vasily; Russia

References and further reading:

Laptev Sea (Arctic Ocean)
This sea marginal to the Arctic Ocean lies on the continental shelf north of Russia, between the archipelagos Severnaya Zemlya and the New Siberian Islands. It is connected with the Kara Sea to its west through Vil’kitskiy, Shokal’skiy, and Red Army Straits, and with the East Siberian Sea to its east by Dmitriy Laptev, Sannikov, and Eterikan Straits. It occupies an area of about 276,000 square miles. Previously known as the Siberian Sea, it was renamed in 1935 in honor of the explorers Dmitriy and Khariton Laptev.

The large influx of freshwater from the Lena, Khatanga, and other large rivers creates conditions similar in certain respects to the Kara Sea, with a layer of freshwater 1.5 meters thick forming each summer and ensuring that open water is generally found near the coast, though the shoals can make navigation difficult. Icebergs form off the east coast of Severnaya Zemlya.

The southern coast was first systematically explored by detachments of the Great Northern Expedition (see Bering, Vitus). The surveys west and east of the Lena Delta were begun respectively by Vasily Pronchishchev (1735–1737) and Peter Lassinius (1735–1736). Whereas Lassinius got no farther than Borkhaya Bay, immediately east of the delta, before dying together with most of his expedition, Pronchishchev reached high on the east coast of the Taymyr before also succumbing. The two eastern and western surveys were completed by the cousins Dmitriy and Khariton Laptev between 1736–1743 and 1739–1742, respectively.

Until the late 1930s, it was considered possible that much of the northern part of the Laptev Sea might be occupied by “Sannikov Land.” First sighted in 1810 by Mathias von Hedenström and Yakov Sannikov, numerous explorers searched afterward for this nonexistent land—probably Bennett Island in the De Long Islands “miraged up”—including Peter Anjou (1820–1824), Eduard von Toll (1900–1903), Boris Vil’kitskiy (1913, 1914–1915), and Rudolf Samoylovich (1937). It was officially declared nonexistent only in the 1940s.

Fridtjof Nansen’s Fram entered the polar pack through the northern Laptev Sea, becoming frozen into the ice at 78°50’N, 133°37’E in September 1893. Forty-four years later, Fram’s voyage was inadvertently replicated by the Soviet icebreaker Sedov. The year 1937 was particularly bad for ice. Sedov was one of three icebreakers beset near the New Siberian Islands, at the same time that three more—Krasin, Lenin, and Litke—were caught in Vil’kitskiy Strait along with several cargo ships. Although Krasin eventually worked free to winter in Khatanga Bay off eastern Taymyr, Sedov, Sadko, and Maygyn continued to drift north. They had reached 83°04’N, 138°22’E when all except Sedov were rescued by Yermak. At the same time elsewhere in the Laptev Sea, a group of ships with Lenin drifted to near 77°15’N before being freed by Krasin. Although this was undoubtedly an exceptionally difficult year for navigation, the situation was made worse by the withdrawal of all airplanes to assist in the search for the missing polar aviator Sigismund Levanevskiy. There was, therefore, no ice reconnaissance from the air. The consequent interruption of shipping along the Northern Sea Route was
to cost Otto Shmidt and Georgiy Ushakov their jobs, and Rudolf Samoylovich his life.

See also: Anjou, Peter; Badigin, Konstantin; Bering, Vitus (1733–1743); Hedenström, Mathias von; Kara Sea; Laptev, Dmitriy; Laptev, Khariiton; Nansen, Fridtjof (1893–1896); Northeast Passage; Pronchishchev, Vasily; Samoylovich, Rudolf; Shmidt, Otto; Toll, Eduard von (1900–1903); Ushakov, Georgiy; Vil'kitskiy, Boris

Larsen, Carl Anton
(1860–1924)
The founder of the Antarctic whaling industry, the Norwegian Carl Anton Larsen also made significant contributions to the exploration of Antarctica, both during the two expeditions he led in the 1890s and, most memorably, as Antarctica’s captain during the Swedish Antarctic Expedition of Otto Nordenskjöld (1901–1904).

New Discoveries in the Weddell Sea, 1892–1893
A native of Vestfold County, Norway, Larsen was already an experienced Arctic whaling captain by 1892 when chosen to lead a reconnaissance expedition sent out by the Norwegian company A/S Oceana to investigate reports by James Clark Ross of plentiful right whales in the Weddell Sea. He was to sail in the 495-ton steam-whaler Jason, a ship with a distinguished polar history, being the vessel that brought Fridtjof Nansen and his companions to the east coast of Greenland in 1888, before their epic first crossing of the Greenland ice sheet. Under the name Stella Polare, it was later to reach Franz Josef Land with the Duke of the Abruzzi’s attempt to reach the North Pole in 1899–1900, during which the then-record farthest north of 86°34’N was achieved.

Jason sailed from Norway on 3 September 1892. After paying a brief visit to the South Orkney Islands, Larsen on 4 December landed on Seymour Island off the still largely unexplored east coast of the Antarctic Peninsula, where he raised the Norwegian flag (the first but not the last time it would be raised in Antarctica’s history) and found fossils of petrified wood. At the time, these were thought to be the first fossils ever discovered in the Antarctic, but Larsen had in fact been anticipated by James Eights, who had collected fossils in the South Shetlands in 1830 (see Pendleton, Benjamin). On Larsen’s return, his fossils aroused considerable scientific interest: not only did they provide the first clear evidence that Antarctica had not always been covered by ice; they also demonstrated the presence of sedimentary rocks, thus making it more likely that Antarctica was indeed a continent rather than an archipelago of volcanic islands, as at that time still seemed quite possible.

At his farthest south, Larsen reached 64°40’S, 56°30’W, from where he reported “an appearance of land” to the west, which was undoubtedly the east coast of the Antarctic Peninsula, though he was unable to investigate it more closely. In June 1893, he returned to Norway, via the South Orkney Islands, having seen no right whales but with a cargo of seal oil and skins.

Further Explorations of the Antarctic Peninsula, 1893–1894
Although Larsen’s voyage had not been a commercial success, the expedition’s sponsors (A/S Oceana and Jason’s owner, Christen Christensen) decided that it was nevertheless worth sending another expedition, this time with three ships: Jason, again captained by Larsen; Castor (Captain Morten Pedersen); and Hertha (Captain Carl Julius Evensen).

On reaching the South Shetland Islands, the three ships separated, with Larsen again exploring to the east of the Antarctic Peninsula while the other two captains investigated to its west. In a year remarkably free of ice, Evensen in Hertha now reached as far south as 69°11’S, 76°12’W on 21 November. On the next day he saw Alexander Island, which he was able to approach much more closely than had Fabian von Bellinghausen. Pedersen accompanied Evensen at least as far as 64°23’S. Unfortunately, little was recorded from these voyages apart from the latitudes reached, but Evensen, in particular, quite possibly saw features on the Antarctic Peninsula not sighted previously and most likely was the first to see Hugo Island.

Meanwhile, Larsen too was discovering better ice conditions than during his previous voyage. After landing on Seymour Island on 18 November and exploring nearby for seals, Larsen decided on 29 November to push southward to 60°0’S, 68°50’W, which he reached on 6 December. On his previous voyage, Larsen had reported “an appearance of land.” Now he was able to prove its existence, discovering Oscar II Land at 66°S, 60°W on 1 December and naming it for the King of Sweden and Norway; and then on 9 December the Foyn Coast at 66°45’S, 61°50’W, marked by four distinctive ice-free peaks and named by Larsen for the Norwegian whaling innovator and entrepreneur Svend Foyn. Robertson Island was discovered on the same day and, two days later, Seal Nunataks, which Larsen was mistakenly convinced were two active volcanoes, which he named Christensen Volcano and Lindenberg Volcano. Landing nearby, he explored the ice shelf on skis, the first use of skis in Antarctica.

Having so far obtained seals but no whales, Larsen next set course for Tierra del Fuego, landing at Greenwich Island in the South Shetland Islands along the way. Finding no right whales here either, he went to the Falkland Islands to discharge his cargo of seals and to take on coal for another voyage south at Port Stanley. On 23 January 1894, he landed on Paulet Island, an important visit in the light of what was to happen during Nordenskjöld’s expedition (see below), and remained sealing
in Erebus and Terror Gulf and off Joinville Island until 8 March. By 15 March Jason was back in the Falkland Islands, from where he sailed to South Georgia to meet up again with Castor and Hertha at Jason Harbor, Larsen’s first visit to another island that was to feature greatly in his life.

More than 13,000 sealskins and 6,600 barrels of seal oil were brought back by the expedition on its return to Norway in July 1894. Although again no right whales were seen, Larsen was afterward to state that the sight of so many rorqual whales, and his knowledge that those whales could be hunted using the technology developed by Svend Foyn, inspired his ambition to reestablish the Southern Ocean whaling industry along modern lines.

Larsen’s discoveries during these two expeditions were widely recognized as the most significant in Antarctica since those of Ross. The Royal Geographical Society acknowledged them by award of the Back Grant, encouraging Larsen perhaps to write to the society in 1896 with his proposal to establish a whaling station on South Georgia.

Marooned on Paulet Island, 1902–1903

Larsen was the obvious choice to captain the expedition ship Antarctic during the Swedish Antarctic Expedition led by Dr. Otto Nordenskjöld. Larsen possessed unrivaled Antarctic experience, and Nordenskjöld proposed to explore regions on the east coast of the Antarctic Peninsula that Larsen had been first to see. This entry focuses on those elements of this complex expedition led by Larsen. For a full account, see entries for Otto Nordenskjöld and Gunnar Andersson.

Having successfully landed Nordenskjöld at his winter station on Snow Hill Island, Larsen set out on 14 February 1902 with the intention of sailing Antarctic as far south as the ice would allow to establish a depot to assist his leader’s planned southern journey. Unfortunately, ice prevented him from getting within 20 miles of land, and the attempt had to be abandoned. By 21 February, Antarctic was back at Snow Hill, where further supplies, including thirty much-needed sacks of coal, were deposited before Larsen sailed north for Tierra del Fuego and then the Falkland Islands, where Gunnar Andersson was picked up on 27 March. As expedition deputy leader, Andersson now took over command from Larsen (subsequent events until 29 December are described in the Andersson entry).

In a bad ice year, Larsen was unable to reach Nordenskjöld at Snow Hill via Antarctic Sound, through which no way could be found despite his considerable experience of ice navigation. On 29 December, Andersson was landed with two companions at Hope Bay, the plan being that they should attempt to reach Snow Hill by sledge while Larsen sailed north around Joinville Island to see whether ice conditions were better to the east of the Antarctic Peninsula. Unfortunately, both plans went awry,
with the Hope Bay party prevented from reaching Nordenskjöld by open water, and Larsen caught up in very heavy ice in Erebus and Terror Gulf. From 1 January 1903 to 12 February, when Antarctic was abandoned, the ship drifted helplessly southward with the ice, periodically exposed to pressure that tore away much of the keel so that once released in open water it sank. Foreseeing the ship’s fate, Larsen had sought to get as close as possible to Paulet Island, but they were still 25 miles away when Antarctic was abandoned and separated from it by the surging pack and gaping leads. Only after a hazardous, fourteen-day journey was the island reached on 28 February.

Larsen knew Paulet well, having been the first to land there in January 1894 and having landed again with Nordenskjöld the previous year. Not only should food be plentiful from seals and the large penguin colony; there was also excellent building material in the form of flat basalt slabs that littered the island’s volcanic slopes. However, on arrival he was concerned to see that many of the penguins had already left the island and that the others also were about to depart. Clearly, the first task was to kill as many as possible, in all accounting for 1,100. These were to form the mainstay of the men’s diet through the winter, with seals and an occasional fish providing minimal variety. A hut, 10 meters by 7 meters, was built close to a lake from which stagnant but drinkable water could be obtained.

With the exception of the death of the young seaman Ole Wennersgaard on 7 June from heart disease, the party survived a hard but endurable winter. In October, open water began to appear off Paulet. Larsen was exceedingly concerned about the fate of the party he had landed at Hope Bay: anticipating being picked up by Antarctic either at Snow Hill or Hope Bay, it had been left entirely unprovisioned for the winter that it had quite possibly been forced to endure at Hope Bay. At the earliest opportunity, therefore, Larsen and five others departed on 31 October in a whaleboat, reaching Hope Bay by dint of hard rowing on 4 November. There, a note was found from Andersson stating that his party had indeed spent a very difficult winter there and that they had set out for Snow Hill on 29 September. Using a tarpaulin from the hut to fashion a primitive sail, Larsen set out again three days later with Snow Hill as his destination. Finding considerably less ice than the previous year, he was able to get within 15 miles of Nordenskjöld’s winter station. Now leaving his boat behind, Larsen and his companions marched for nine hours across the ice to be reunited with a very relieved Nordenskjöld on 8 November. At this location Larsen also found Andersson and the Argentine relief ship Uruguay, which had arrived that very day. Four days later, Uruguay picked up the fourteen men left behind on Paulet and sailed back to Buenos Aires, where the expedition and its rescuers were deservedly welcomed as heroes.

At a banquet held in Buenos Aires to celebrate the expedition’s rescue, Larsen made a speech that was to inaugurate the next stage in his life. Thanking the Argentines for their help, he put a direct question to the businessmen of Buenos Aires. During his three expeditions to Antarctica he had seen many whales. These were indeed fast-swimmingrorqual whales, but he knew of technology through which they could be caught. It was with financial backing obtained in Buenos Aires that Larsen now set up the whaling concern Compañía Argentina de Pesca and established the first whaling station on South Georgia at Grytviken in November 1904.

Larsen’s final contributions to Antarctic exploration were made directly in relation to his whaling interests. In 1908, sailing in Undine, he searched the coasts of South Georgia and the South Sandwich Islands for anchorages suitable for use by whaling vessels. At the time, the South Sandwich Islands were still little known, and Larsen made only the second landing on Zavodovski Island, where he was lucky to escape asphyxiation from volcanic fumes. Finding no suitable harbors, he concluded that whaling activities could not be based in these islands. Larsen died on 8 December 1924, fittingly not in his bed but leading a pioneering whaling expedition into the Ross Sea.

See also: Abruzzi, Luigi Duke of; Andersson, Gunnar; Antarctic Peninsula, East Coast; Bull, Henrik; Dundee Antarctic Whaling Expedition; Irízar, Julian; Nansen, Fridjof (1888–1889); Nordenskjöld, Otto; Paulet Island; Pendleton, Benjamin (1829–1832); Ross, James Clark (1839–1843); Seymour Island; South Georgia; South Sandwich Islands; Weddell Sea; Whaling and Antarctic Exploration

References and further reading:

Larsen, Henry
(1899–1964)
For fifty years, the true reason why the Royal Canadian Mounted Police (RCMP) schooner St. Roch was ordered to complete the first west-east transit of the Northwest Passage in the middle of World War II remained unclear. St. Roch’s captain, Sergeant Henry Larsen, might refer in his autobiography to the need to demonstrate “sovereignty over the Arctic islands” (Larsen 1967, 141), but why this should require a crossing of the Passage—only the second ever—seemed puzzling.

When Henry Asbjorn Larsen applied in 1928 to join the RCMP and was appointed an ordinary seaman on the Arctic patrol vessel St. Roch, his Canadian citizenship was newly acquired and had been sought specifically in the hope of obtaining a posting on this ship. Born and raised in Norway, he had gone to sea at age fifteen, but since 1922 he had lived on Herschel Island in the Beaufort Sea, employed as navigator of a locally owned schooner. Appointment to the St. Roch meant that he could combine his twin loves for the Arctic and the sea. The 80-ton schooner was purpose-built to serve as a
floating police detachment to the scattered Inuit communities of Canada's Western Arctic. Its role was to maintain order, relieve and supply police and trading stations, ferry the sick to hospitals, and ensure that game laws and other laws were obeyed. Its very presence was designed to demonstrate Canadian sovereignty. As the only man on board with any experience in the Arctic, Larsen soon proved invaluable, and within two months he was made skipper.

From the Pacific to the Atlantic through the Northwest Passage, 1940–1942

After years of routine duty, during which St. Roch spent four successive winters in the Arctic at Tree River, Coronation Gulf, and three more at Cambridge Bay, Victoria Island, Larsen was summoned to Ottawa and charged by the RCMP commissioner with undertaking a voyage to Halifax, Nova Scotia, by means of the Northwest Passage. Only Roald Amundsen had previously sailed through the Passage, and his voyage had been made from the west. If successful, Larsen's would be the first crossing from west to east, though whether it could be achieved was by no means certain.

On 23 June 1940, St. Roch departed from Vancouver, British Columbia. Despite delays resulting from problems with the ship's 150-horsepower diesel engine, Larsen succeeded in rounding Point Barrow on 23 July. During what was evidently a bad ice year, progress east was tortuous, with Herschel Island not reached until 12 August. Before Larsen could attempt to cross to the Eastern Arctic, which he hoped to do between Banks and Victoria Islands through Prince of Wales Strait, he was first obliged to conduct St. Roch's routine patrol and visit the RCMP posts in the Western Arctic. Thus it was not until late September that he was able to investigate the possibility of getting through the strait, which had defeated both Robert McClure and Richard Collinson in the 1850s. High ridges of rock and gravel along the shore testified to intense ice pressure in this region, causing Larsen to make for the one known safe harbor: Walker Bay, Victoria Island, where Collinson had wintered in 1851–1852. After Larsen had caught enough fish to feed his dogs through the winter, visits were made to the Inuit communities to check on their welfare, register births and deaths, and ensure that all firearms were licensed.

St. Roch was not released until 31 July 1941, when Larsen took it south to the Hudson's Bay Company (HBC) trading station at Holman. A young Inuk boy had been shot and required hospital treatment at Aklavik on the Mackenzie River. At Tuktoyaktuk, supplies were taken on for the Coppermine and

Henry Larsen, on the left, on his last Arctic voyage (Scott Polar Research Institute)
Cambridge police detachments, which Larsen was instructed to visit on his way east, since he was now to attempt the Passage through Rae and James Ross Straits beyond King William Island. On 19 August, *St. Roch* left Cambridge Bay heading east. Strong westerly winds, rain, and fog made navigation difficult. Much of the route ahead had been navigated previously only by Amundsen in the 47-ton Gjøa. *St. Roch*’s 4-meter draught was appreciably greater, and Larsen insisted on continual soundings through the shallow, island-studded waters. After a brief stay at Gjoa Haven, *St. Roch* on 30 August passed through Rae Strait, only to be confronted in James Ross Strait by ice reaching from shore to shore. An anxious night was spent in the lee of an islet as ice streamed past, hammering against its hull. Taking advantage of a coastal lead opened up by the tide, Larsen forced *St. Roch* northward, keeping an anxious eye on conditions farther west in the knowledge that westerly winds would bring the ice upon them. The ship was still 100 miles south of Bellot Strait when a narrow inlet was seen on 11 September. Although far short of where Larsen had hoped to winter, this location at least offered the prospect of shelter, and with the ice now moving toward the shore he decided to enter Pasley Bay.

He would remain here for eleven months. Although the wintering was unplanned, it was hardly unanticipated, and Larsen intended to make use of it by visiting as many local communities as possible, Boothia being one of the most inaccessible parts of the Canadian Arctic. Accompanied by constables Bill Peters and Albert “Frenchy” Chartrand, Larsen in early January 1942 sledged to King William Island to collect more fur clothing and establish a depot for the long spring journeys. Chartrand was an experienced Mountie whom Larsen was glad to have on board, but he had shown signs of ill-health earlier on the voyage, and it was a great shock when he suddenly collapsed and died of a heart attack on 13 February. Shortly afterward, Larsen and Corporal Patrick Hunt set out on a journey of 1,140 miles, lasting seventy-one days. In addition to visiting many Inuit settlements, they managed to find the one Catholic missionary in the region, who agreed to visit Pasley Bay to bury Chartrand.

On 4 August 1942, *St. Roch* was free to continue its voyage, at first along a coastal lead and then out into the main pack, where it was beset for twenty days and several times lifted bodily out of the water in very dense ice. Taking advantage of a lead opened up by a northerly gale, Larsen finally succeeded in reaching Bellot Strait. Amundsen had accomplished the Passage through Peel Sound farther north, but Larsen preferred to pass through this strait, which led into Prince Regent Inlet. Less than a mile wide, Bellot Strait had a formidable reputation that it was to fully live up to. Once the ship was within it, the tide turned, bringing in a mass of ice from the west. Ahead of *St. Roch* lay more ice, jammed shore to shore. In the nick of time one floe collided with another, breaking it in two and opening up a narrow crack, just broad enough for *St. Roch* to enter before the massed ice behind slammed heavily against the jam. It was a narrow escape. The remainder of the voyage was hardly uneventful, but the worst was over. In another bad ice year, *St. Roch* made north through Prince Regent Inlet to reach Lancaster Sound. Pond Inlet was reached in early September, where the dogs were put ashore together with the remaining stores of food and clothes. The engine had blown a cylinder and, at a maximum speed of 5 knots, *St. Roch* navigated the icebergs and pack ice of Baffin Bay and Davis Strait, buffeted by storms, to arrive finally at Halifax on 11 October. The voyage had taken twenty-eight months.

**Pioneering a New Route through the Passage, 1944**

For the remainder of 1943, *St. Roch* was assigned to antishubmarine duties in the North Atlantic. German U-boats were known to be active off eastern Canada, but none were encountered by *St. Roch*, which was probably just as well given that it was really too slow for this type of work. With one after another of his crew leaving for more interesting duties, Larsen was thankful to receive new orders, which instructed him to take *St. Roch* back through the Passage, this time by means of the more northerly route through Prince of Wales Strait. Finding a replacement crew proved difficult, but eventually Larsen collected together nine, whose ages ranged from sixteen to seventy. They were keen but inexperienced and included a wireless operator who had never received or sent a message. Larsen had his work cut out for him.

*St. Roch* left Halifax on 22 July 1944. It had been fitted with a new, more powerful engine, but problems with the ventilation system forced Larsen to put into port not long after departure. Fortunately, the repairs did not involve much delay, and by 12 August *St. Roch* arrived at Pond Inlet, where stores were unloaded and seven members of an Inuit family and seventeen dogs were taken on board. The Inuit were to establish themselves happily in a tent on top of the deckhouse until they left the ship at Herschel Island. Through Lancaster Sound, landings were made on Devon, Beechey, Bathurst, and Melville Islands. Ice conditions were difficult, but Larsen was generally able to find open water along the northern side of Parry Channel, though he had to make his way north of Byam Island to do so. By now, the experimental gyrocompass with which *St. Roch* had been equipped was not working, and the magnetic compass remained firmly stuck straight ahead. With continuous snowstorms obscuring the sun, all Larsen had to guide him were Admiralty charts (for the most part compiled in the middle of the nineteenth century) and his sense of direction. Fortunately, the weather cleared before he had to cross McClure Strait to find the narrow entrance to Prince of Wales Strait.

It was fine, bright weather on 3 September when Larsen entered the strait after a difficult crossing through the customarily dense ice piling east from the Arctic Ocean. The strait, however, was open, and the next day *St. Roch* anchored...
off Holman, much to the surprise of the HBC manager, who had just spent all night unloading *Fort Ross*, an HBC vessel that had sailed from Halifax three months before *St. Roch* but whose route had taken it through the Panama Canal and up the west coast of North America. Together, the two vessels had circumnavigated North America. At Holman, Larsen received instructions to continue his voyage to Vancouver, if he could. Arriving at Tuktoyaktuk on 8 September, *St. Roch* rode out the worst storm ever recorded there, safe within a sheltered anchorage. Ice conditions farther west were reported as very bad, and Larsen was making preparations to winter when better weather encouraged him to make a last attempt to get through to Herschel Island. Luck again was with him, with leads conveniently pointing where he needed to go. Again, he reached port shortly before another storm struck. Much of the remaining stores were left behind there, along with the Inuit family and their dogs. The harbor was beginning to freeze over when *St. Roch* departed on 21 September. Off Alaska, it was a race against time as Larsen guided his vessel west through increasingly heavy ice. At last, Point Barrow was rounded, and the pack ice was finally left behind on 24 September off Wainwright. For the first time, a vessel had sailed through the Northwest Passage in a single season. By the time that *St. Roch* anchored off Vancouver on 16 October, its voyage had taken just eighty-six days.

If Larsen’s voyages were not simply exercises in flag-waving similar to those conducted in earlier decades by Joseph-Elzéar Bernier, what was their purpose? Papers found recently by historian Shelagh Grant reveal that *St. Roch*’s presence was required in the Eastern Arctic to support Canada’s planned wartime occupation of Greenland. There was considerable concern that Germany might occupy that island, with its excellent harbors for submarines and unique source of cryolite at Igivtut. Cryolite was essential for the manufacture of aluminum; neither Canada nor Great Britain had access to substitute materials. Police detachments were to be stationed at strategic locations, and *St. Roch*’s role would be to keep them supplied. Although it would have been easier to send the ship from Vancouver to Halifax via the Panama Canal, there was no way that such a voyage could be kept secret. In the event, the U.S. government objected strongly to any plans for Greenland’s occupation, which it viewed as a violation of the Monroe Doctrine. Great Britain and Canada could not afford to alienate an ally, and so the plans were dropped. *St. Roch*, meanwhile, was too far into the Passage to be withdrawn, and Larsen was allowed to complete his historic voyage.

See also: Amundsen, Roald (1903–1906); Bellot Strait; Bernier, Joseph-Elzéar; Boothia Peninsula; Canada; Collinson, Richard; Herschel Island; McClure, Robert; Northwest Passage; Victoria Island (Canada)

References and further reading:


Laurie Island (South Orkney Islands)

Located at 60°44’S, 44°37’W, this is the easternmost and, at 13 miles long, the second-largest member of the South Orkney Islands. It was discovered in December 1821 by the sealers George Powell and Nathaniel Palmer and is named for Richard Holmes Laurie, publisher of Powell’s chart and of many other charts for the British Admiralty. The island was also charted by James Weddell in January 1823.

The island is best known for being the site of the longest continuously occupied Antarctic station. Named Orcadas since 1951, this Argentine meteorological station was first established by the Scottish National Antarctic Expedition of William Speirs Bruce on 1 April 1903. Bruce’s expedition wintered in Scotia Bay—named for his expedition ship *Scotia*—from 21 March to 26 November 1903. There he built Omond House—named for Robert Traill Omond, first superintendent of the Ben Nevis meteorological station—and his expedition members conducted a full scientific program in addition to compiling a map of the island based on a thorough topographic survey. A party of six led by meteorologist Robert Cockburn Mossman was left behind to maintain the meteorological record when Bruce sailed for Buenos Aires to effect repairs to *Scotia* and take on additional stores. He also hoped to persuade the Argentine government to take over the running of the station, an offer he had made previously without success to the British government. On 22 February 1904, the station was formally handed over to Oficina Meteorologica Argentina, to be operated through the following winter by Mossman, expedition cook Bill Smith, and three Argentinians—Lucien Valette, Hugo Acuña, and Edgar Szmula. This party was relieved by *Uruguay* on 31 December, the first of what was to become annual Argentine supply and relief expeditions to the South Orkneys.

Largely on the basis of its occupation of this station, Argentina in 1925 claimed sovereignty over the South Orkney Islands, which since 1908 had been claimed by Great Britain as part of the Falkland Island Dependencies. World War II had led to increased tensions between the two countries over conflicting territorial claims in the region as a whole, and establishing a station in the South Orkneys became a high priority for the Falkland Island Dependencies Survey (FIDS) in the immediate postwar years. Thus it was that in January 1946 the FIDS Base C was constructed on Laurie Island at Cape Geddes. Although built as far away from the Argentine base as possible at the northern point of Ferguslie Peninsula, this site was soon found inconveniently close to the Argentines and tend-
ing, therefore, to provoke unnecessary ill feelings. On 17 March 1947, Base C was closed and all personnel transferred to Base H on Signy Island, leaving Orcadas, the Argentine meteorological station, as the sole occupied base on Laurie Island.

**See also:** Argentina; British Antarctic Survey; Bruce, William Speirs (1802–1904); Palmer, Nathaniel (1821–1822); Powell, George (1821–1822); Sealing and Antarctic Exploration; Signy Island; South Orkney Islands; Weddell, James (1822–1824)

**References and further reading:**

**Lemaire Channel (Antarctic Peninsula)**
Located at 65°04’S, 63°57’W, this spectacular channel separating Booth Island from the Danco Coast of the Antarctic Peninsula is 7 miles long and on average about a mile wide. Although first seen by Eduard Dallmann in January 1874, it was not navigated until 12 February 1898 when Adrien de Gerlache sailed through it in *Belgica* and named it for Charles Lemaire, the Belgian explorer of Central Africa.

**See also:** Antarctic Peninsula; Booth Island; Dallmann, Eduard; Danco Coast; Gerlache, Adrien de

**Leskov Island (South Sandwich Islands)**
Located at 56°40’S, 28°08’W, this small island lying 35 miles west of the main volcanic arc forming the South Sandwich Islands is one of the three Traversay Islands discovered by Fabian von Bellinghausen. Seen on 3 January 1820, it was the first of the three to be discovered and was named by Bellinghausen for Arkadiy Leskov, third lieutenant of the *Vostok*. It was independently rediscovered on 8 December 1830 by an American sealer, Captain James Brown (*Pacific*), who named it “Potter’s Island.” Roughly surveyed by Carl Anton Larsen in 1908, Leskov was recharted in 1930 by RRS *Discovery II* and in 1962 by HMS *Protector*. The first landing was made from RRS *Shackleton* on 8 January 1961. A further landing was made by helicopter from *Protector* in 1964. The most recent scientific visit occurred in 1997 from HMS *Endurance*, during a comprehensive geological and biological survey of the South Sandwich Islands.

**See also:** Bellinghausen, Fabian von; Discovery Investigations; Great Britain; Larsen, Carl Anton; Sealing and Antarctic Exploration; South Sandwich Islands; Whaling and Antarctic Exploration

**References and further reading:**

**Libraries on Polar Expeditions**
In the context of polar exploration, the term “library” refers to any collection of books available for use by expedition members aboard ship, on land or ice bases, or on sledging or other journeys. In polar circumstances, sheltered spaces suitable for reading were severely limited, and separate facilities dedicated to library use were nonexistent, at least until the development of library spaces at Antarctic bases at Little America before World War II and, later, at this and other sites during the International Geophysical Year (1957–1958). Catalogs of shipboard or base collections were also unusual, though there are some exceptional examples. Nonetheless, books were an accepted necessity on all polar expeditions from the early modern period, and it is the mélange of official books for shipboard use, together with the personal collections of participants (particularly officers) on these voyages that constitute the “libraries” discussed in this entry.

Library size varied greatly. Martin Frobisher’s first voyage had at most a dozen volumes aboard, mostly aids to navigation as well as a Bible. His third voyage, stocked to provide for its intended colony, had considerably more, including multiple copies of liturgical works. Sir John Franklin’s ships, *Erebus* and *Terror*, claimed libraries of 1,700 and 1,200 volumes, respectively; a catalog of one of the Franklin search vessels, *Assistance*, lists several hundred titles (1852); the Austrian ship *Tegetthoff* had 400 volumes; Fridtjof Nansen’s *Fram* apparently had about 3,000 books, as did Robert Falcon Scott’s *Discovery*. Jean-Baptiste Charcot’s *Pourquoi Pas?* headed to the Antarctic in 1908 with collections variously estimated between 1,500 and 3,000 volumes. Both the *Belgica* and the *Gauss* claimed considerable collections.

At the other extreme, Douglas Mawson sledging in Antarctica in 1912 claimed that his “library” during that trip consisted of *An Anthology of Australian Verse*, *Vanity Fair*, and *Hints for Travellers* in two volumes. Apsley Cherry-Garrard in his first Antarctic overland journey brought Dickens’s *Bleak House* because “the chapters were short enough to be read in a sleeping bag before hands got too cold.” Frank Wild described the “library” at Elephant Island as two books of poetry, one volume of Otto Nordenskjöld’s expedition, two odd volumes of the *Encyclopaedia Britannica*, and a small cookbook. Of more middling size were the hut and other base libraries, typically consisting in the nineteenth century of roughly eighty to 100 well-selected volumes but considerably expanded during the twentieth century. One example was Adolphus Greeley’s collection at Fort Conger in 1881, where one officer complained that the only reading available was novels and books on the Arctic. The first base at Little America on Richard Byrd’s first Antarctic expedition had in “what we call our library” about 3,000 volumes. By the end of World War II, one Arctic station in Greenland claimed to have had a library of more than 15,000 books. By 2000, the collections at the Amundsen-Scott Base at the South Pole consisted of about 7,000 volumes, augmented by equal numbers of audiocassettes.

Since none of these libraries survives intact, evidence on their nature and functions is fragmentary at best and must be deduced from various sources. These include ship provisioning records, journals, diaries, logbooks, official and personal
correspondence and reports, autobiographical accounts, explorer biographies and ships' histories, official and personal photographs, the few extant catalogs of shipboard libraries, as well as comparable reports of the library experience of non-polar expeditions, including whalers. The evidence can be drawn from printed sources as well as from unpublished manuscripts and archives. From these sources it is possible to form a reasonable picture of expeditionary book access from the early modern period of polar exploration, ranging from particular titles known to have been on early voyages, to the more complete catalogs prepared for later expeditions.

Collections
From the extant records the categories of subject matter become relatively clear: navigational guides, polar literature, reference works, scientific and technical literature, religious and inspiration works, literary classics including fiction and poetry, and recreational and other light reading. The way in which these collections were selected is unclear, though there is evidence that at least in England, America, Germany, and Norway, publishers provided large numbers of titles as contributions to the expeditions and that devotional tracts were provided by missionary societies.

Collection uses were similarly diverse, most practically to inform the expedition itself for cartographic and navigational guidance (both afloat and ashore), medical exigencies, and surveying purposes. Religious education combined with literacy training was the preoccupation of several expedition leaders during the nineteenth century; one example was Edward Parry, who expected all his seamen to be able to read the Bible by the end of their voyage. Twentieth-century Soviet voyages continued the tradition with a more secular intent: the political indoctrination of seamen into Marxist ideology. General reference works are frequently cited as important for the adjudication of arguments and the settling of wagers.

Since many early explorers used scientific experimentation as justification for their national or personal ambitions, scientific and technical books were necessary for the few scientists able to use them. Most important, psychologically, was the recreational reading required to relieve the intense monotony and boredom of polar winters.

Catalogs
The number of books in a ship's library tells us little of its specific contents, subject emphases, or intended audience. Incidental references to specific books give us the only clues
to books aboard early voyages such as those of Frobisher, Willem Barents, James Cook, and Parry. A few nineteenth-century catalogs are extant (unlike the libraries they represent), and they provide clues to the contents of expeditionary libraries. A catalog of books aboard HMS Assistance, one of the Franklin search vessels later abandoned, exists in manuscript at the National Maritime Museum, Greenwich. It appears in two parts, A List of Books supplied to the seaman’s Library, and Books Supplied from the Hydrographer’s Office for The use of the Officers. The first is an alphabetical author list, the second more randomly organized. The combined lists cover well over 300 titles. The library catalog of the Gauss, on Erich von Drygalski’s German Antarctic Expedition of 1901–1903 (Ein Bücherverzeichnis der Mannschaftsbibliothek des Südpolarschiff Gauss), is in the Institut für Länderkunde in Leipzig. Topically arranged in ten categories such as fiction, history, medicine, religion, drama and poetry, and miscellaneous, it totals approximately 200 titles and 400 volumes. From Drygalski’s report on the expedition we know a good deal about how the books were used.

Probably the best-known ship’s catalog is a small pamphlet describing the National Antarctic Expedition Library, printed for Robert Falcon Scott’s Discovery expedition of 1901–1904. This too is topically organized: biographical, essays and philosophical, historical, travel, fiction, poetical, and so on. Conspicuously absent from the printed list is devotional literature, such a prominent part of earlier expedition books, although members of the expedition often had personal copies of the Bible and other religious works. Each section is arranged alphabetically by author, and each entry provides the “pressmark,” or location, of the item in Scott’s cabin, other officers’ cabins, the wardroom, or the seamen’s messdeck.

The British Admiralty began providing books for seamen in 1812, starting a gradual shift to more reading in the forecastle, however poorly lighted. In both Great Britain and the United States in the earlier nineteenth century, seamen’s missions were developed to provide improving literature for sailors. Most prominently, the American Seamen’s Friend Society (ASFS) began providing loan libraries to both navy and merchant ships, and by the 1930s more than 13,000 miniature collections had been sent to sea, several of them to the polar regions. Robert Peary’s Roosevelt had one in 1905, its destination listed as “North Pole.” These seamen’s libraries were attractively boxed, their contents reflecting the recommendations of the ASFS that up to three-fourths of the books be religious and spiritual in character. The Roosevelt box and some of its original contents survives at the G.W.Blunt White Library of Mystic Seaport, Connecticut. No other early polar libraries survive, and very few of the books from them. The library of the Discovery was largely divided among the officers on the return voyage.

Modern times have altered the subject matter but not the importance of library provision for the polar regions, most clearly reflecting a natural shift from the sacred to the secular. Virtually all ships traveling to the Antarctic, whether naval, merchant, research, or tourist, have some small relevant collections aboard. Base libraries in Antarctica have been usefully surveyed by Claudia Hermichen (2000). Public libraries around the entire Arctic and sub-Arctic regions have expanded their cooperative alliances to provide information resources for local populations as well as occasional visitors. Only solitary adventurers such as Sir Ranulph Fiennes, Mike Stroud, Laurie Dexter, and others, reliant on global positioning systems and easy communications for their various exploits, have eschewed books altogether to relieve them of the physical weight of books, if not the burden of boredom in the unexpected blizzard.

David Stam

See also: Belcher, Edward; Byrd, Richard; Charcot, Jean-Baptiste; Drygalski, Erich von; Franklin, John; Frobisher, Martin; Gerlache, Adrien de; Greely, Adolphus; International Geophysical Year; Mawson, Douglas; Nansen, Fridtjof; Payer, Julius von; Peary, Robert; Scott, Robert Falcon; Wild, Frank

References and further reading:

Liège Island (Palmer Archipelago, Antarctic Peninsula)
Located at 64°02’S, 61°55’W, this is the northernmost of three islands in the Palmer Archipelago named by Adrien de Gerlache for Belgian provinces that had provided generous support to his expedition. On 23–25 January 1898, de Gerlache roughly charted the east coast. Here also Frederick Cook’s photographs of Mount Allo and the adjacent coastline are among the very earliest photographs taken during this expedition and thus anywhere in Antarctica.

See also: Gerlache, Adrien de; Palmer Archipelago

Lindenow, Godske
(d. 1612)
Godske Lindenow led the second Danish expedition to Greenland attempting to reestablish contact with the long-lost Norse colonies. Silver was believed to have been found by the first expedition, and he was instructed to mine it.

The Search Continues for the Missing Norse Colonies in Greenland, 1606
The Danish King Christian IV was exceedingly heartened by the results of his first expedition to Greenland, which had
been led by John Cunningham. For the first time, a Danish expedition had succeeded in reaching Greenland, and, though unable to find any sign of the Norse colonies with which contact had been lost in the early fifteenth century, they explored an extensive length of the coast of West Greenland; minerals that supposedly contained silver were also brought back. Now planning a much larger expedition, Christian persuaded the Danish parliament to grant him a special tax to fund the equipping of five ships: the three of Cunningham's expedition and two new ones. The Danish nobleman Godske Lindenow was appointed leader. Lindenow—who's name is variously spelled Lind- enow, Lindeno, and Lindenose—had only recently joined the Danish navy when the first expedition was organized and probably for this reason had not been appointed leader but instead captain of Røde Løven. All of the other senior positions had been filled by non-Danish nationals. Now that Lindenow had some familiarity with the Arctic, Christian clearly considered it preferable to appoint a Danish leader, Lindenow being the obvious candidate. Two of his colleagues from the 1605 expedition were to assist him: the Englishman James Hall, again as pilot, and the former leader Cunningham—a Scot—as captain of Røde Løven. Lindenow and Hall were to sail in Trost.

On 27 May, the fleet set out from Copenhagen. Among those on board were three Inuit who had been captured the previous year. While in Denmark they had been quizzed about the whereabouts of the Norse colonies, and although communication had proved difficult, it was clear that they knew nothing. The Inuit had been treated well, and in returning them to Greenland it was hoped that they would serve as intermediaries, encouraging good relations between the Danes and the Inuit. Unfortunately, none ever reached home.

On the previous expedition, Lindenow had disagreed with Hall over the latter's chosen course, which he believed to be too far out from the coast of southwest Greenland, where the colonies were most likely located. He was now in a position to insist on sailing much closer in. This was not to have the consequences he had hoped for, as his ships were caught up in the East Greenland Current, which swept them remorselessly westward until landfall was made with Labrador on 13 July. From there, Lindenow worked his way north off Labrador and Baffin Island until 19 July, when at last an opening in the ice at 64°N allowed him to make for Greenland. At this location, however, his vessels lost contact with each other as they picked their way through the ice in the fog. Only two ships—Trost and Ørnen—reached Greenland, where they finally anchored in a fiord near Holsteinborg on 27 July. Two of the Inuit had died early on during the voyage, and the one survivor was on a ship already heading back to Denmark.

Mindful that his truncated expedition would not be able to fulfill all of Christian's plans, Lindenow decided to give priority to mining silver. Much ore was brought back from this fiord and farther south, from Ikertôq Fjord, which was reached on 6 August. All was to prove worthless. On the day before sailing, one member of the crew was landed with a view to spending a year in Greenland as punishment for some unknown misconduct. He is reported to have been torn to pieces by the Inuit, not apparently to the surprise or great concern of the Danes, who remained on good terms with the Inuit, sufficiently so for several of the latter to later come on board. This was a mistake. Lindenow had instructions to bring captives back to Denmark for the same purpose as those taken in 1605. Five Inuit were captured, four of whom reached Copenhagen on 4 October, the fifth having jumped overboard.

The failure of Lindenow's expedition did not dissuade Christian from further Arctic exploration. His missing colonies had still not been found, and the next year he organized another expedition, this time to search the coast of East rather than West Greenland. It was to be led by Carsten Richardson. As for Lindenow, he was appointed chief of the dockyard.

See also: Cunningham, John; Denmark; Greenland; Hall, James; Richardson, Carsten

References and further reading:

Lindsay, Martin (1905–1981)
The longest unsupported dog journey in history was made by three British explorers in 1934 to survey a little-known mountain range in eastern Greenland. They were led by Martin Lindsay, an army lieutenant.

Martin Lindsay liked to spic his military service in the Royal Scots Fusiliers with adventure. In 1929, he crossed Central Africa, and he was a member of the Gino Watkins’s British Arctic Air Route Expedition to Greenland in 1930–1931. During this, a range of high mountains had been discovered from the air, far inland to the southwest of Scoresby Sound. At first sighting, Watkins had estimated the mountains as rising to between 3,650 meters and 4,500 meters. If so, this was the highest range not only in Greenland but in the entire Arctic. Subsequent surveys from the east had proved incapable of establishing the western margin of the mountains, and to do this, and to provide the ground control necessary for accurate mapping, Lindsay recognized that the mountains must instead be approached from the west. This would involve crossing the ice sheet from West Greenland.

Across Greenland's Inland Ice to the Watkins Mountains, 1934
The initial response to Lindsay’s ideas was not encouraging. For fund-raising purposes, and to obtain an invitation from the Danish government, Lindsay needed the support of the Royal Geographical Society. The society’s committee, however, considered the venture too risky. Crossing the Inland Ice was
not to be undertaken lightly, and although Lindsay had the experience of crossing previously—between Ammassalik and Ivigtut in 1931—his proposal involved a much greater distance than the survey could even begin. If anything went wrong, the chances of rescue were slim. Eventually, however, the scheme was approved. Lindsay's next problem was to obtain the necessary financial backing. In the midst of worldwide economic depression, this was exceptionally difficult, and he had to scale back his plans, limit his party to three, and forgo the support party before he was in a position to proceed.

Andrew Croft, a young man with some expertise in climbing and skiing who was to act as expedition photographer, was now sent ahead to Greenland. During the coming winter, Croft was to acquire dogs, learn how to drive them, find a way up onto the ice sheet, and lay a large depot of dog pemmican there. All of these tasks he managed to accomplish, as well as learning Danish and a few words of Greenlandic. For dog-driving, he had the best tutor imaginable, the veteran polar explorer Tobias Gabrielsen, who had participated in many expeditions dating back to 1906 with Ludvig Mylius-Erichsen.

On 10 April 1934, Lindsay boarded Gertrud Rask in Copenhagen, accompanied by the third member of the party, Lieutenant Arthur S.T. Godfrey of the Royal Engineers, who was to serve as navigator and surveyor. Bad weather and ice conditions meant that the voyage took three weeks longer than usual, and they were not able to disembark at Jakobshavn until 20 May. Croft had established his depot at “Halibut Camp” at 69°45'N, 600 meters up on the edge of the ice sheet close to Alfred Wegener's West Station of 1930–1931. To reach that location, they headed north in five rowing boats with forty-three dogs and their equipment. The three-week delay meant that the spring thaw had already begun and conditions were far from ideal for hauling the remainder of their supplies onto the ice sheet, a task finally achieved on 3 June. After resting a week, they set off toward Ammassalik, 200 miles away. Recent rain meant that they had to make their way through valleys of deep slush, alternating with bare ice ridges cut through by crevasses. The dogs were reluctant to wade through the numerous streams, and five were lost down crevasses. To extend their rations, which were intended for eleven weeks, they experimented by making each week’s rations last eight days. When this was found inadequate, dog pemmican was added, which gave them indigestion and made them smell, but the extra nutrition was appreciated. At last, on 18 June, they were high enough to be above the effects of the thaw and able to progress across much harder surfaces. By now, the last of the Greenlanders had turned back, and the three remaining sledges carried loads of a half-ton each. Initially traveling at night when conditions were best underfoot, once at 3,000 meters they swapped over to day travel as the nights became too cold. On 11 July, they reached 2,957 meters, after which the ice sloped down toward the east coast. Blizzards slowed their progress, but on 20 July they were heartened to see the first land for twenty-nine days, as peaks appeared above the horizon to their right and left. None of these had ever been seen before. On the following day, Lindsay gave the order to establish their first survey station. From there, they would head southwest, mapping the western margins of any land seen, including the mountains discovered by Watkins. Soon afterward, they had a lucky escape when a sleeping bag caught fire, threatening to burn down the tent. Fortunately the flames were doused before serious damage was done. At the time, they were 450 miles from Ammassalik.

Except when laid up in bad weather, each day they traveled between 10 and 25 miles, Godfrey surveying and Croft taking photographs as they went. When the views could be seen, they were magnificent. One particularly high massif was named the “Monarch,” though they were never able to get within 50 miles of it. The mountain was generally shrouded in heavy clouds, and they waited impatiently with camera and survey instruments in hand when it seemed that they might at last have an opportunity to fix the summit’s position. The clouds lightened and then, for a few moments, broke completely before closing in again. It was sufficient for their purpose. Known today as Gunnbjørns Fjeld, at 3,693 meters this is the highest mountain north of the Arctic Circle.

As they made their way toward Mount Forel, they noted a general increase in the altitude of the ice sheet. At the highest point, Godfrey’s measurements indicated 3,350 meters, considerably higher than any figure obtained previously for either Greenland or Antarctica, making this region the highest known ice plateau in the world. Today, we know that some parts of the Antarctic ice sheet are higher. Having reached Mount Forel on 26 August, from then on they were traveling across areas included within Alfred Stephenson’s survey in 1931. With no further discoveries to be made, they hurried as rapidly as conditions would allow toward Ammassalik, 200 miles away. At this point, twelve dogs remained, and their food could be eked out for thirteen more days. It was late in the year to be still out on the Inland Ice: temperatures were falling and the weather was predominantly overcast, making navigation difficult. Watkins’s former base could only be reached down a steep glacier, guarded inland by crevasses. Reaching it required absolute accuracy in route-finding. Food remained for just two days when they finally awoke to a fine day. In the distance, the sea could be seen, and their route down to it was clear.

During 103 days, Lindsay’s team had sledged 1,180 miles, 1,080 miles of which they had been entirely self-supporting. It was a journey of heroic proportions. Despite unfavorable weather for much of the time, the survey had accomplished its purpose. In addition to mapping the western margin of Watkins Mountains, they had fixed the position of Greenland’s highest peak and had proved its ice sheet to reach much greater altitudes than previously believed. Three men and their dogs could hardly do more.
See also: Greenland, Inland Ice; King Christian IX Land; Mylius-Erichsen, Ludvig (1906–1908); Unsupported Expeditions; Watkins, Gino (1930–1931); Wegener, Alfred (1930–1931)

References and further reading:

Little America
See Ross Ice Shelf

Livingston Island (South Shetland Islands)
Located at 62°36’S, 60°30’W, this is the second-largest of the South Shetland Islands, 38 miles long and varying in width from 2 to 20 miles. On 19 February 1819, William Smith’s sighting of the north coast of this island at or near Williams Point represents the first recorded discovery of any land immediately adjacent to the Antarctic Continent. Indeed, on clear days it is possible to see the Antarctic Peninsula from the south coast of Livingston. Start Point on the western side of the island is so named because it was the first land sighted on 16 January 1820 when Smith returned with Edward Bransfield, and it was from there that they headed east-north-east along the northern coast of the South Shetlands, compiling a rough chart as they went. At least two sealing vessels—Espírito Santo and Hersilia—were active at Rugged Island off the western tip of the island by late January 1820, the first of these possibly from 25 December 1819, when it first reached the South Shetland Islands. The first landings took place at this time. Also in 1820, the British sealer James Weddell discovered an anchor-stock and spars near Shirreff Cove. These came from the Spanish vessel San Telmo, lost in 1819 with 644 men aboard after encountering a severe storm in the Drake Passage. Fabian von Bellinghausen charted the south coast in February 1821, naming the island “Smolensk” for the Russian victory over the French in 1812. The island’s current name possibly derives from Captain Andrew Livingston of Glasgow, though initially it was widely known among the sealers as Freezeland or Friesland Island, a name preserved by Mount Friesland (about 1,650 meters), the highest peak.

New Plymouth, the roadstead opposite Rugged Island, was an anchorage much used by sealers. It was there that Espírito Santo and Hersilia anchored the previous year, and it was to this location also that the Fanning-Pendleton fleet from Stonington, Connecticut, first came in November 1820. However, New Plymouth is open to gales from the northwest, and Benjamin Pendleton’s desire to find a better harbor was a major factor in his sending out Nathaniel Palmer soon after reaching Livingston. Palmer circumnavigated Livingston several times during the 1820–1821 season, almost certainly being the first to do so. John Biscoe chose New Plymouth as his anchor-

age in 1833 when he spent several weeks in the South Shetlands searching largely without success for elephant seals to supplement the meager return of his Antarctic circumnavigation. While there he was hit by a severe storm, which forced him temporarily to abandon his larger ship Tula as it repeatedly struck bottom. Fortunately Tula was not too badly damaged, and Biscoe was able to set sail for the Falklands on 15 April, having been at Livingston since 5 March 1833.

With the interior covered by ice, or else mountainous, and with relatively few landing places, Livingston has attracted less attention than it would appear to merit, at least on grounds of its size. British survey parties were landed from HMS Protector in a general triangulation of the South Shetland Islands in 1957–1958. Poland’s original intention was to build its station Henryk Arktowski here, but in the event Admiralty Bay, King George Island, was selected as a more convenient site. Until the opening of summer stations by Poland and Spain (Rey Juan Carlos I) at South Bay, and by Bulgaria (Sofia University, now St. Kliment Ohridski) at Johnsons Dock in May 1988, the Chilean Antarctic Program has been the most active, carrying out botanical, zoological, and paleontological surveys among other studies from Capitán Arturo Prat, the Chilean station on Greenwich Island.

References and further reading:

Lougheed Island (Canada)
Located at 77°30’N, 105°00’W, this northern member of the Parry Islands was probably the same as “Findlay Island,” first seen from a distance on 27 April 1853 by Sherard Osborn during Sir Edward Belcher’s expedition. Mapped as part of an extended “King Christian Land” by Otto Sverdrup, it was shown in August 1916 to be one of several islands making up the Findlay Group by Vilhjalmur Stefansson, who named it for Sir James Alexander Lougheed (1854–1925), minister without portfolio in the administration of Sir Robert Borden. Stefansson based himself on the southwest tip of the island from 9 August to 3 September, surveying it as well as the other members of the group: Edmund Walker, Stupart, Grosvenor, and Paterson Islands. Stefansson visited the island again the following year. Lougheed is 45 miles long and 12–15 miles wide, with an area of 410 square miles.

It was next visited in 1929 by a patrol of the Royal Canadian Mounted Police led by Inspector A. H. Joy. It also was one of the islands systematically surveyed by the Geological Sur-
vey of Canada in 1955 during Operation Franklin. Lougheed Island is inaccessible by sea throughout the year to all but powerful icebreakers.

See also: Belcher, Edward; Parry Islands; Stefansson, Vilhjalmur (1913–1918); Sverdrup, Otto (1898–1902)

References and further reading:

Low, Albert (1861–1952)
The 1903–1904 voyage of the Canadian Albert Low was essentially an exercise in flag-waving. Although his expedition made a significant contribution to knowledge of the Canadian Arctic, his chief objective was to ensure that this region remained part of Canada in the face of potentially competing claims from Norway and the United States.

*Canada's Claims Are Asserted in the High Arctic, 1903–1904*
Soon after the Dominion of Canada was established in 1867, the British government transferred to Canada all parts of the mainland and offshore islands discovered in Arctic North America by British expeditions. Discovery alone provides but a weak basis for sovereignty unless subsequently backed by effective occupation. Apart, however, from several expeditions in the 1880s to the Hudson Strait region to establish a number of temporary stations to study sea ice and meteorological conditions, Canada did little to support its claims until stirred into action by Otto Sverdrup's Norwegian expedition of 1898–1902, which discovered several large islands west of Ellesmere Island and claimed them for Norway. For Canada, the unfettered activities of American whalers were another cause for concern. By the beginning of the twentieth century, their activities ranged across much of the eastern Arctic. Permanent shore stations had been established in Hudson Bay and on Baffin Island, and, if no action was taken, it was quite possible that their presence might provide the basis for a future U.S. claim; the stations constituted "effective occupation," and much of the High Arctic had been discovered and first explored by American expeditions.

Between 1892 and 1897, the geologist Albert Peter Low had traveled more than 4,700 miles while investigating the mineral potential of Labrador and discovering enormous reserves of iron ore. In 1903, he was charged with leading a Canadian government expedition to assert sovereignty over Hudson Bay.
and the Arctic Islands in the 465-ton Neptune, “the largest and most powerful ship in the Newfoundland sealing fleet” (Low 1906, 3). He would be accompanied by a detachment of six Northwest Mounted Police led by Major John Douglas Moodie, acting commissioner of the unorganized Northeastern Territories. Moodie’s role was to inform the whalers of Canadian regulations, which obliged them to obtain a license and to refrain from hunting muskoxen, whose numbers were now seriously depleted. The expedition was also to conduct wide-ranging scientific studies, in which Low as geologist would be assisted by Dr. L. E. Borden (surgeon and botanist), Andrew Halkett (naturalist), Dr. G. B. Faribault (assistant surgeon), C. F. King (topographer and meteorologist), and George E. Caldwell (photographer).

On 23 August 1903, Neptune departed from Halifax, Nova Scotia. After the ship took on board an interpreter at Port Burwell, Cumberland Sound was entered on 4 September. Moodie was landed at several Baffin whaling stations to break the unwelcome news that the whalers were operating on Canadian territory and would from now on be subject to Canadian law. Low next turned south to enter Hudson Bay, where more whalers were visited before winter quarters were established northeast of Chesterfield Inlet at Fullerton Harbour. This anchorage was much frequented by the Americans, and Low found himself wintering alongside the veteran whaling captain George Comer in Era, near a community of Inuit. While the surgeons studied health conditions among the natives, a police headquarters—“Government House”—was erected on the mainland. Although Comer considered the introduction of Canadian law unwarranted, generally amicable relations were maintained between the two vessels.

Several police were left behind at the new station when Neptune left Fullerton Harbour on 18 July 1904. Moodie himself transferred soon afterward to the supply ship Erik, which was met at the entrance to Hudson Strait off Point Burwell. Low’s task now was to assert Canada’s claims to the High Arctic. Heading north through Smith Sound, he landed at Cape Sabine and Cape Isabella to take possession of Ellesmere Island. The formal ceremony consisted of reading a proclamation asserting Canada’s claim, raising the flag, and giving three cheers for the king, then lodging the proclamation in a cairn within a metal box. The next destination was Beechey Island, which was reached on 14 August through Lancaster Sound. At that location a record left by Roald Amundsen in 1903 was removed for return to Norway. A Danish flag was seen flying over Port Leopold. This too was removed, and Canada’s sovereignty over Somerset Island was formally proclaimed. More whalers were encountered off Baffin Island on the voyage south. Low’s final task was to take coal and supplies to Cape Fullerton and to check that all was well there. He returned to Halifax on 12 October.

Low’s expedition set the pattern for Canadian Arctic policy in the early twentieth century. Cape Fullerton was the first of a network of police stations, which was gradually extended across much of northern Canada. Although Low himself undertook no further voyages, being appointed director of the Geological Survey of Canada in 1906, a program of regular patrols continued, many of them led by Joseph-Elzéar Bernier.

**References and further reading:**

### Low Island (South Shetland Islands)

Located at 63°17’S, 62°06’W, this island—9 miles long and 5 miles wide—is the southwesternmost member of the South Shetland Islands. Although apparently well-named, being of low elevation and without distinguishing features, it is possible that it may actually have been named for Edward Low, master of the American sealing ship Esther. Not shown on the earliest charts, it was well-known to sealers by early 1820, with the first recorded landing being made by John Davis and Christopher Burdick on 2 February 1821.

**See also:** Davis, John (fl. 1820); Sealing and Antarctic Exploration; South Shetland Islands

### Lyakhovskiy Islands (Russia)

The two Lyakhovskiy Islands—Great and Small—are the most southerly members of the New Siberian Islands, from which they are separated by Sannikov Strait. Dmitriy Laptev Strait lies between them and the mainland. Possibly discovered in 1690 by Maksim Mukhoplev, the first landing was made in 1711 by Merkuroy Vagin on Great Lyakhovskiy Island. Vagin planned to return the following year to continue his explorations but was prevented from doing so when murdered by cossacks under his command (what he had found was learned at the resulting trial in Yakutsk). The next documented sighting of a large island, most probably Great Lyakhovskiy, was made in 1761 by Nikita Shalaurov during his extended investigations of the Arctic coast.

Thus, by the early 1760s, the presence of islands north of Cape Syratov Nos was known. Despite this Ivan Lyakhov claimed to have made a new discovery in 1770. Lyakhov had been hunting arctic foxes on the mainland when he noted reindeer offshore on the ice. Since the herd was heading south, he inferred that undiscovered land must lie farther north. About 40 miles out, he found two islands. Since the reindeer tracks continued farther north, he concluded correctly that yet more land lay in that direction but was prevented from reaching it by the highly uneven surface of the sea ice. The islands were rich in arctic foxes and mammoth ivory, leading Lyakhov to apply for exclusive rights for their exploitation. These were granted, and the islands were officially named for him by gov-
Ritchie in his attempt to reach the region of Lake Chad across Parry, had learned Arabic and had accompanied Joseph Lyon was a gifted linguist who, previous to serving with discover open water on the far side of Fury and Hecla Strait.

Vive. Lyon’s quickness to learn the Inuit language, interest in Foxe Basin, Lyon had spent two winters in the company of the 1821–1823. In the course of this survey of the west coast of

ond-in-command during Edward Parry’s expedition of

It was to be his misfortune, however, not to be able to put into practice the many lessons learned when his expedition of 1824 was brought to a premature end in the far-from-welcoming Roes Welcome Sound.

Lyon, George (1795–1832)

George Lyon might have done more than anyone to refute the accusation that British naval officers of the nineteenth century were incapable of learning from the Inuit. Lyon’s attractively illustrated accounts of his two expeditions to Arctic Canada record his fascination with these people and his enthusiastic participation in their culture whenever opportunity presented. It was to be his misfortune, however, not to be able to put into practice the many lessons learned when his expedition of 1824 was brought to a premature end in the far-from-welcoming Roes Welcome Sound.

Repelled from Repulse Bay, 1824

As captain of HMS Hecla, George Francis Lyon had been second-in-command during Edward Parry’s expedition of 1821–1823. In the course of this survey of the west coast of Foxe Basin, Lyon had spent two winters in the company of the Inuit, also traveling with them across Melville Peninsula to discover open water on the far side of Fury and Hecla Strait.

Lyon was a gifted linguist who, previous to serving with Parry, had learned Arabic and had accompanied Joseph Ritchie in his attempt to reach the region of Lake Chad across the eastern Sahara Desert, an exploit that he was lucky to survive. Lyon’s quickness to learn the Inuit language, interest in their culture, and easy conviviality ensured that he of all the members of Parry’s expedition established closest relations with the Inuit and learned most from them, not least kayaking and dog-driving.

On returning to Great Britain, Lyon was promoted to commander and given command of the 180-ton gun-brig HMS Griper. Parry had been charged with reaching the open water seen beyond Fury and Hecla Strait by means of Prince Regent Inlet. John Franklin was to lead an overland expedition along the Arctic coast from the mouth of the Mackenzie River. Lyon’s task was to cross Melville Peninsula from Repulse Bay and travel west to Turnagain Point on the Kent Peninsula, the farthest east reached by Franklin during his previous expedition. Together these three were to unravel the last secrets of the “defective geography” of Arctic Canada, or at least that was the plan of John Barrow, the second secretary of the Admiralty.

Griper had little to commend it beyond the fact that it was ice-strengthened. During Parry’s first expedition (1819–1820), it had proved to be a slow and unhandy vessel for which lee shores presented an ever-present danger since it could by no means be worked off them. Sailing from London on 10 June 1824, Lyon found Griper so slow that he had to suffer the ignominy of being towed across the Atlantic by his accompanying transport Snap. Once Snap had departed off Hudson Strait, Griper was far too small to accommodate provisions for thirty months together with the two ponies taken on board in the Shetlands, along with the many bales of hay necessary to feed them. Not only was the deck piled high with supplies; every available space was filled, including Lyon’s cabin. On all previous expeditions of such planned duration, the Admiralty had sent at least two vessels; its economy now seriously compromised Lyon’s chances of success, especially when the one vessel was Griper.

On 12 August, a large group of Inuit was encountered off the Savage Islands in Hudson Strait. Lyon was pleased to discover that they spoke the same dialect as the Inuit of Igloolik and was able to communicate with them sufficiently to acquire four pups for later use in a dog team. Inuit were met again on 27 August off Coats Island, but they were Sadlermiut, natives of this island and Southampton Island, speaking a different dialect and possessing other customs. Lyon took a particular interest in their use of sails made from walrus intestines to power their skin-hulled boats, as well as air-filled hides to cross narrow leads.

Having noted much more ice in northern Hudson Bay than during his previous voyage, Lyon chose not to follow Parry’s course north of Southampton Island to Repulse Bay, instead rounding that island to the south and sailing north through Roes Welcome Sound, the route taken by earlier expeditions. By 1 September, he had entered Roes Welcome Sound to find treacherous shoals extending far from the coast. In thick fog and with his compass useless so near the magnetic pole, Lyon was unable to prevent Griper from being driven onto a sub-
merged reef. As the tide dropped and the winds rose, the ship was battered repeatedly against the seafloor. With destruction seemingly inevitable, and after first ordering his crew to dress in their warmest clothes and draw lots for places in the longboat (the only one of the boats with any chance of making land in such a sea), Lyon gathered his men together, thanked them for their services, and asked them to make preparations to meet their Maker. Just in time, the tide turned, the wind moderated, and Griper was floated off the reef. Miraculously it took in very little water, though the rudder had been damaged and one anchor was lost. Worse was to follow eleven days later.

He was now past Wager Bay and close to his destination Repulse Bay when another storm arose. With the bowsprit of the overloaded vessel plunging underwater with every wave, streams of ice swept down upon the ship, threatening to carry away the masts. To prevent being driven onto a lee shore, Lyon ordered both anchors dropped and could only hope that they held as the winds rose to hurricane force. By morning both anchors were lost and Griper was being driven toward the shoals of Southampton Island. Again, Lyon summoned his men to prayer, and again the winds changed direction, offering only temporary respite as Griper was moved some way offshore, still borne helplessly south before the gale. When the storm eventually ended, it was evident that the expedition must be abandoned, and on 15 September Lyon turned for home. Leaving Hudson Strait behind on 2 October, Portsmouth was reached on 10 November following a mercifully easy Atlantic crossing.

Lyon was never again given command of a ship and soon afterward left the navy. For an officer to lose all his anchors was a disgrace, and the Admiralty took that blame for the expedition’s failure was laid on him rather than itself for equipping him with just one ship and that so poor. The fact that Lyon was unable to land to make an overland journey across Melville Peninsula and beyond is one of the great might-have-beens of polar exploration. Of all British nineteenth-century explorers, he had been in the position to learn most from the Inuit. Although by no means expert himself in the handling of dogs, he knew their value and had already acquired four pups as an “incipient” dog team. Clearly he intended to acquire more and, having traveled previously with the Inuit, planned to do so again. Only in the late 1840s and 1850s did man-hauling become established as the naval method of choice when sledging. The example of a successful dog-powered expedition led by Lyon might have encouraged others to take dog teams as well as, perhaps, Inuit dog handlers. Although Lyon was to some degree exceptional in his linguistic gifts and the extent of his interest in native cultures, he was not altogether unique among naval officers. With his successful example, it is by no means improbable that the lessons to be learned from the Inuit would have been assimilated far earlier into European methods of Arctic travel.

See also: Barrow, John; Dogs; Franklin, John; Hudson Bay; Inuit Contribution to Polar Exploration; Man-hauling; Northwest Passage; Parry, Edward

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**Mac. Robertson Land (Antarctica)**

Mac. Robertson Land forms that part of East Antarctica lying between 60° and 73°E, with Kemp Land to the west and Princess Elizabeth Land to the east. It was discovered from the air on 31 December 1929 by Flight Lieutenant S. Campbell and Air Pilot E. Douglas during the British, Australian, and New Zealand Antarctic Research Expedition (BANZARE) (see Mawson, Douglas) and was named for the Melbourne chocolate manufacturer Sir MacPherson Robertson, the expedition's major private sponsor. Mawson visited again the following year to survey the region in greater detail. Douglas Mawson's discoveries were extended by flights made by the Western Group in February 1947 during Operation Highjump.

In February 1954, the Australian station Mawson (67°36’S, 62°52’E) was opened at the head of Horseshoe Harbor, one of very few good anchorages in East Antarctica. This was Australia's first station on the Antarctic continent and is the oldest permanent station in East Antarctica. A comprehensive research program has since been conducted at the station together with extensive studies of the adjacent region, particularly of the Prince Charles Mountains inland and the Amery Ice Shelf to the east.

Forming an arc about 260 miles long, the Prince Charles Mountains were first seen and photographed at a distance during Operation Highjump. Geological surveys began almost immediately after the establishment of Mawson Station, with dog and tractor teams setting out as early as the first winter. The highest peak, Mount Menzies (3,355 meters), was climbed on 20 December 1961 by a three-man party reaching the mountains by dog sledge. A comprehensive survey of the mountains together with the adjacent Lambert Glacier—the world's longest—began in 1968–1969 under the leadership of Graeme William McKinnon based at a summer field station at Moore Pyramid. This survey continued into the early 1970s, when a similar major survey was begun of Enderby Land—again led by McKinnon. In 1982–1983, the 28th Soviet Antarctic Expedition established the summer station Soyuz in the mountains at 78°48’S, 68°20’E, carrying out geological and glaciological surveys over the next few field seasons from that location.

Fed principally by the massive Lambert Glacier, the Amery Ice Shelf is one of Antarctica's largest. Scientists from the Australian National Antarctic Research Expeditions began their first major survey in 1962–1963, and glaciological and other studies have continued more or less ever since, with a field station at 69°43’S, 73°44’E established in February 1974, when that facility was closed, and since 1987–1988 from the summer station Druzhnaya IV.

See also: Australian Antarctic Territory; Mawson, Douglas (1929–1931); Operation Highjump; Russia

References and further reading:

**Mackenzie, Alexander**

(1764–1820)

The majestic Mackenzie River flowing from Great Slave Lake north to the Arctic Ocean takes its name from the first European to travel down it, the British-born explorer Alexander Mackenzie. Generations of Indians had lived by this river before it was reached by any European, and Mackenzie's journey was made in an Indian-built canoe with Indian guides.

**Down the Mackenzie River to the Arctic Coast of North America, 1789**

Mackenzie's two great journeys north to the Arctic coast of North America and across the continent to the Pacific Ocean were part of a process beginning in the 1760s when traders from Montreal extended their search for furs first farther west and then north following the cession of French Canada to Great Britain pursuant to the Treaty of Paris, which concluded the Seven Years' War (1756–1763). Whereas the trading posts of the Hudson's Bay Company (HBC) were largely restricted to the coast of Hudson Bay, the Montreal traders adopted the strategy of locating trading posts far inland. Faced with the choice of making an extended journey to the HBC posts or trading more locally, the Indians naturally preferred the latter. In 1778, the American-born trader Peter Pond (ca. 1739–1807) reached the region of Lake Athabasca, where he found large numbers of Cree and Chipewyan Indians engaged in making the long and arduous journey to the HBC post at Churchill. Pond had brought with him a large stock of trade goods and in return obtained more than 80,000 beaver pelts. From the Indians he learned of Portage la Loche, a steep, 12-mile pass over the watershed between the Hudson Bay and Arctic Ocean drainage basins. For years afterward this portage was to be followed by generations of traders and explorers into the Northwest Territories. In 1785, Pond compiled a map of northern Canada based on his own extensive travels in the late 1770s and 1780s and on information derived from the Indians. Although by this time he probably had not personally traveled beyond Lake Athabasca, he was
able to mark the approximate positions of Great Bear and Great Slave Lakes. Indian informants suggested a large river flowed north from the latter, but in his later maps Pond optimistically showed it flowing west. It was on the basis of information supplied by Pond that Mackenzie was to make his first attempt to reach the Pacific Ocean in 1789.

Alexander Mackenzie was one of many Scots working as independent (i.e., non-HBC) fur traders. With eight years’ trading experience behind him, he had wintered on the Athabasca River in 1787 with Pond, whose trading activities he was to take over, in the process learning much about the lay of the land farther north. Pond had now come to the conclusion that the river flowing west from Great Slave Lake entered the Pacific through Cook Inlet, which had been discovered in 1778 by James Cook. If so, it offered a magnificent opportunity to extend fur-trading operations to that ocean.

On 3 June 1789, Mackenzie set out from Fort Chipewyan, a trading post on Lake Athabasca, in three birch-bark canoes accompanied by a Chipewyan guide named English Chief, a young German, four French Canadian voyageurs, and six other Indians, including four women. Initial progress was slow down the many rapids of the upper Slave River, and when Great Slave Lake was reached on 9 June, Mackenzie was forced to wait for five days until the ice broke up. Paddling across to the far side of the lake, where he landed on 23 June, he met Indians from whom he obtained a new canoe and a guide who offered to lead him to the river, which was located with some difficulty on 29 June. Once on this river, progress was much faster, and it would take Mackenzie just fourteen days to travel more than 1,000 miles to its mouth. On the way, Indian hunting and fishing parties were frequently encountered—Slave, Dogrib, and Hare—many of whom spoke of the river’s enormous length and of the extreme difficulty of finding food farther north. It was clear that this region occupied by the hostile Inuit was the talisman region where wildlife and fish abounded. He dismissed the tales of the Indians as hearsay—reports from people who had never visited the area.

For nearly 300 miles, the great river flowed west but then turned north, continuing in this direction for day after day. Mackenzie now became less sanguine as it became increasingly apparent to him that the river would outfall in the Arctic rather than the Pacific Ocean. Nevertheless, he decided to pursue his discovery to its end and on 14 July set up camp on “Whale Island” (present-day Garry Island) some distance off the river’s mouth.

The return voyage against the current of what Mackenzie now called the “River of Disappointment” was considerably more extended, the party setting out from “Whale Island” on 16 July to reach Fort Chipewyan on 12 September. On the way back, Mackenzie learned from the Indians of another great river, this time flowing west. This was the Yukon, which he was never to see but that did indeed lead to the Pacific.

From Mackenzie’s perspective, his journey of 102 days and more than 3,000 miles was a failure. True, a great river had been discovered and followed to its outlet in the Arctic Ocean, but he had seen enough to appreciate that it was unlikely to prove a major conduit for the fur trade. He did not, however, abandon his ambition of reaching the Pacific and in July 1793 finally succeeded in achieving that goal after completing his second great journey, this time across the Rocky Mountains. But that epic of Canadian travel was undertaken far south of polar latitudes and cannot be told here.

The significance of Mackenzie’s first journey as a contribution to Arctic exploration was this: in addition to opening up large areas of northern Canada to the fur trade, the discovery of the Mackenzie River provided a much more accessible route to the Arctic coast of North America than that previously found by Samuel Hearne in 1771. This was the route that would be followed by John Franklin in 1825–1827 when much of the Arctic coast of Alaska and Canada was mapped for the first time.

See also: Cook, James (1776–1780); Franklin, John (1825–1827); Hearne, Samuel; Hudson’s Bay Company; Indigenous Peoples

References and further reading:

**Mackenzie King Island (Canada)**

Located at 77°50’N, 112°00’W, this member of the Parry Islands lies just east of Brock Island, with Borden Island to its north and Melville Island some way farther south beyond Hazen Strait. It was discovered in June 1915 by Vilhjalmur Stefansson, who landed briefly at Cape Beuchat. He returned the following year to survey his discovery, which he believed formed part of Borden Island. It was later established that there were in fact two islands divided by Wilkins Channel, this island being given its present name in 1949 for William Lyon Mackenzie King (1874–1950), former prime minister of Canada. It has an area of 1,949 square miles and reaches its greatest elevation at nearly 500 meters at Leffingwell Crags. Together with Borden and Brock Islands, Mackenzie King is one of the most inaccessible islands in the Canadian Arctic, being surrounded throughout the year by heavy ice.

See also: Borden Island; Parry Islands; Stefansson, Vilhjalmur (1913–1918)

References and further reading:
Mackintosh, Aeneas (1879–1916)

For sheer unrelenting slog without hope of new discovery, the Ross Sea party of Sir Ernest Shackleton's Imperial Trans-Antarctic Expedition cannot be equaled. Overshadowed by the epic adventure of the Weddell Sea party (see Shackleton, Ernest), the story of its Ross Sea counterpart deserves to be better known, particularly for the long southern journey that so nearly replicated the tragic fate of Scott's Polar Party. The British Merchant Naval officer Aeneas Mackintosh was Shackleton’s choice to lead the expedition.

Shackleton’s Forgotten Expedition: The Ross Sea Party, 1914–1917

Shackleton’s plan to cross Antarctica from the Weddell Sea to the Ross Sea was feasible only as long as his crossing party was not required to subsist on just those supplies it could itself carry. In the days before air supply, the one way this could be done was by laying depots from the far side of the continent. This, then, was the task of the Ross Sea party, which, from a base in McMurdo Sound, was to set up depots of food and fuel at regular intervals south across the Ross Ice Shelf to Mount Hope at the foot of the Beardmore Glacier, the route to the South Pole discovered by Shackleton himself in 1908.

Captain Aeneas Lionel Acton Mackintosh, second officer of Nimrod during Shackleton’s first expedition, was appointed to command the 386-ton Aurora, which had been purchased by Shackleton from the Australian explorer Douglas Mawson.

On 15 December 1914, Aurora headed south from Hobart for Macquarie Island and Antarctica. It reached Hut Point on 24 January 1915, but ice prevented the ship from approaching within 9 miles of the base established by Robert Falcon Scott in 1902. Handing over command of Aurora to his first officer, Lieutenant Joseph Stenhouse, Mackintosh now set out with three sledging parties, his task being to establish depots on the Ross Ice Shelf at 79°S and 80°S.

Accompanied by the Antarctic veterans Ernest Joyce and Ernest Wild (brother of Frank), by 20 February Mackintosh had succeeded in establishing the depot at 80°S, having previously sent back the Reverend Arnold Patrick Spencer-Smith, A. Keith Jack, and Irvine O. Gaze with the poorer dogs. A blizzard now held up the start of the return journey for four days, and when at last they were able to depart, they could manage just 4 miles before again being forced to wait up in the tent due to deteriorating visibility. When the weather finally cleared on 27 February, one week’s provisions remained with 160 miles to go. Mackintosh had no choice but to return to the depot and remove one-third of the food intended for Shackleton. By 6 March all nine dogs were dead. Repeated whiteouts continued to slow progress, and by 24 March they were again out of food. Fortunately, they were now within range of the well-supplied Safety Camp, where at last they could eat their fill and, thus fortified, reach Hut Point the following day. It had not been an auspicious beginning.

Believing that the shore party would be unable to accomplish its depot-laying duties without help from Aurora’s crew, Shackleton had given instructions that Aurora should winter with the expedition rather than return to New Zealand. Unfortunately, Stenhouse was unable to find any suitably sheltered anchorage, eventually selecting as his least worst option a relatively exposed situation 40 meters offshore Cape Evans, Scott’s base during his second expedition. On 6 May strong winds broke the ship’s moorings and drove it far out into McMurdo Sound. Those left onshore were not to see the ship again until January 1917. (For an account of the Aurora’s drift in the Ross Sea, see Stenhouse, Joseph.)

The loss of Aurora with most of the expedition’s supplies and stores, including sledding gear for the next season, left four men marooned at Cape Evans—Alexander O. Stevens, John Lachlan Cope, Victor G. Hayward, and Richard W. Richards—with Mackintosh and five others at Hut Point, the two groups 13 miles apart with no route between them other than the fickle sea ice, liable at this time of year to be blown out to sea during any blizzard.

On 2 June, Mackintosh decided to risk the ice and led his party across to join the others at Cape Evans, this hut being much more suitable for wintering than the one at Hut Point. With most of the food and equipment still on board Aurora, seals were killed to provide food and fuel, and sledding gear had to be fashioned out of whatever Scott’s expedition had left behind. On 13 August, the meager supplies were considerably augmented when Mackintosh and Stevens found a store of food and used clothing at Shackleton’s former hut at Cape Royds. Despite the difficulties, never for one moment was it forgotten that the lives of Shackleton’s crossing party depended upon the depots that they had to set up the following season, even if the ship was unable to return and all of the work had to be done by just ten men. Mackintosh drew up plans on the assumption that no help would be forthcoming. Depots were to be established at every degree south to Mount Hope at 83°40’S. To do this, four trips were to be made from Hut Point to a depot at Minna Bluff, then three trips from Bluff Depot to 80°S. From that location one further journey would be made to lay the depots south to Mount Hope. Mackintosh decided that one man would have to be left behind at Cape Evans to continue the meteorological log; the others he divided into three sledding teams of three each. With the motor tractor no more successful than similar vehicles during previous expeditions, they had only four dogs—Oscar, Gunner, Towser, and Con—to help them. Eighteen hundred kilograms of supplies had to be taken south.

With so much to do, an early start was essential, with the first party going out on 1 September, soon after the return of the sun in late August. By 1 October, all the supplies had been moved to Hut Point and Safety Camp. On 9 October, they began
to move provisions to Bluff Depot 70 miles south. The nine men were reduced to six on 6 January 1916 when Cope, Gaze, and Jack were sent back to Cape Evans with their essential primus stove no longer functional. Without the stove they could not eat.

The six remaining men, now south of Minna Bluff, were Mackintosh, Hayward, Joyce, Richards, Spencer-Smith, and Wild. At 83°S, Spencer-Smith broke down with scurvy and was unable to go on. At his suggestion, he was left alone in a tent while the others carried on to lay the final depot at Mount Hope, 40 miles away. The depot laid, they turned back on 27 January, reaching Spencer-Smith two days later and finding him in a very bad way, unable to walk and with his “limbs black, extending from ankle to hip” (Joyce 1929, 140). For the next forty days, the five men dragged Spencer-Smith more than 300 miles north in his sleeping bag. By now Mackintosh too was suffering from scurvy, eventually becoming unable to pull. From 18 February, they were held up for five days by a blizzard 12 miles south of Bluff Depot. It seemed as if the fate of Scott’s Polar Party was about to be repeated. They too were almost out of food, while the blizzard showed no signs of abating.

With Scott’s fate very much in mind, they decided that they had no choice but to move on. After just one hour, they realized that with two invalids this was impossible. A tent was erected, with Ernest Wild remaining to look after Mackintosh and Spencer-Smith while Hayward, Joyce, and Richards went on to try to reach Bluff Depot. In howling snow and zero visibility, a bearing was taken, and Joyce was placed ahead on a long rope. Every half-hour they checked their direction with a prismatic compass. Without a sledgrometer, distances could only be estimated. It took them three days to reach the depot. Men as well as dogs had been on short rations for a considerable time, and scurvy was beginning to affect them all. Allowing themselves a little time to eat and rest, the next day they headed back south into the blizzard, continuing for three days until they reckoned they were close to the tent, which they were exceedingly fortunate to spot during a brief clearing in the atrocious weather. Spencer-Smith was now placed back on the sledge, where he was joined by Mackintosh before the party finally reached Bluff Depot on 1 March. Soon afterward Hayward too had to be carried on the sledge, but fortunately they were blown forward by a strong following wind. In this way they continued until 8 March, when sheer exhaustion forced a halt. Leaving Mackintosh behind in a tent, the others went on in a desperate attempt to get Spencer-Smith to safety at Hut Point, still more than 30 miles away. Early on 9 March, the long-
suffering parson died. He was buried in his sleeping bag under a snow cairn mounted by a cross. The four men reached Hut Point on 11 March. After first eating as much fresh seal meat as they could to fend off scurvy, Joyce, Richards, and Wild went back for Mackintosh three days later and brought him back to safety on 18 March.

Their duty carried out and the depots in place, they now awaited Shackleton’s imminent arrival. As the days passed, it became increasingly clear that Shackleton would not be coming. Although they had escaped Scott’s fate, it appeared probable that Shackleton’s party might not have been so lucky.

Mackintosh and his four colleagues remained at Hut Point for the next few months in conditions of some discomfort and with only seal to eat. Mackintosh was impatient to get back to Cape Evans. On 8 May, he set out across the sea ice with Hayward, ignoring the arguments of Joyce, Richards, and Wild, who pointed out that the ice was still going out with every blizzard. Some time after their departure, another blizzard set in. Two days later, the tracks of Mackintosh and Hayward were followed 2 miles to the edge of newly formed ice. Only on 15 July, when Joyce, Richards, and Wild finally managed to reach Cape Evans, did they learn for certain that Mackintosh and Hayward had indeed been swept out to sea.

For almost six months, the seven surviving members of the Ross Sea party remained at Cape Evans, preoccupied with bare survival and depressed by the loss of their three colleagues, believing too that Aurora was probably lost and Shackleton also. On 10 January 1917 a ship was sighted some 8 miles out across the sea ice. It was Aurora. Three figures approached and, as they came closer, Sir Ernest Shackleton was seen to be among them. Seven days later, Aurora headed north after first erecting a cross to Mackintosh, Hayward, and Spencer-Smith at Cape Evans. The ship reached Wellington on 9 February.

See also: Mawson, Douglas; Ross Ice Shelf; Ross Island; Scott, Robert Falcon; Shackleton, Ernest; Stenhouse, Joseph

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MacMillan, Donald (1874–1970)

A telegram from Robert Peary summoned the American Donald MacMillan from his teaching career to a lifetime of exploration. Ironically, he is best known for proving Peary’s “Crocker Land” not to exist. Generations of students have him to thank for their introduction to the Arctic.

Like Peary a graduate of Bowdoin College, Maine, Donald Baxter MacMillan came originally from a New England fish-
dred and sixty-five dogs left Borup Lodge for Ellesmere Island. They got as far as Alexandra Fiord, when a contagious disease broke out. Several dogs died and two of the Inuit became seriously ill. MacMillan had no option but to cache his supplies and return as rapidly as possible. On 10 March, he set out again, now accompanied by Green, Ekblaw, and eight Inuit, including Etukishook, who had been with Cook on his claimed journey to the Pole. Rather than heading inland from Flagler Bay, they crossed the ice cap between Beistad and Bay Fiords, before following Eureka and Nansen Sounds north to reach Cape Thomas Hubbard on 14 April. It was from here that Peary had seen “Crocker Land” in 1906. With Ekblaw having been sent back earlier with a frozen foot, MacMillan and Green continued on across the sea ice accompanied by Etukishook and Peewahtoq. According to Peary’s estimate, “Crocker Land” was some 120 miles out. Ten days later and having traveled 150 miles to reach 82°30’N, 108°22’W, MacMillan decided to turn back. Despite conditions of perfect clarity, no land could be seen. Peary had been mistaken. Returning to Cape Thomas Hubbard, MacMillan collected the record left by Peary in a cairn before crossing Nansen Sound to hunt caribou and collect a similar record left at Lands Lokk by Otto Sverdrup in 1902. Meanwhile, Green and Peewahtoq were charged with completing Sverdrup’s survey of northwest Axel Heiberg Island. When Green came back, he was alone. The full story is told only in MacMillan’s private journal, but it appeared that the Inuk had insisted on rejoining MacMillan after Green’s dogs were buried by drifting snow. Green was determined to complete the survey and, when he saw Peewahtoq repeatedly deviating from his set course, shot him through the head with his rifle. Peewahtoq had been one of Peary’s most valued assistants, and MacMillan held him in high regard. The three men arrived back at Borup Lodge on 20 May after a journey of 1,300 miles.

With “Crocker Land” a mirage, MacMillan’s plans had to be revised. Despite Allen’s considerable ingenuity, the wireless could not be made to work, meaning that he must sledge several hundred miles to Upernavik to arrange a relief voyage for the following year. Everyone apart from MacMillan would go home. Meanwhile, scientific studies continued in the vicinity of Etah. Before the ship arrived, there was time for Ekblaw to conduct a thorough survey of the Greely Fiord region between 24 March and 16 June 1915, during the course of which he discovered and named Borup and Tanquary Fiords and the Osborn Mountains on a 1,000-mile journey that added considerably to the knowledge of northern Ellesmere Island.
relief vessel *George B. Cluett* finally arrived at North Star Bay in mid-September. Hunt and Small decided to remain behind with MacMillan, who was later joined also by Cluett’s ice pilot, George Comer, and Dr. Edmund Hovey, a scientist representing the American Museum of Natural History, when the relief ship was forced to winter in Parker Snow Bay.

On 22 March 1916, MacMillan began his second major sledging journey, this time to explore the region named by Otto Sverdrup “King Christian Land,” between Bathurst and Ellef Ringnes Islands. Accompanied by seven Inuit, he crossed Ellesmere Island by the Flagler Bay–Bay Fiord route, then headed west off the southern coasts of Axel Heiberg and Ellef Ringnes Islands to land on King Christian Island on 19 April. The island was completely unexplored, but MacMillan’s hopes of completing a proper survey were cut short when bad weather forced a three-day layup in camp. Short of food, he set out for home on 23 April. On the way back he landed on Cornwall Island at McLeod Head on 26 April, before arriving back at Etah on 16 May. MacMillan had expected to return on the Danish trading vessel *Danmark*. When it failed to arrive, he was not altogether reluctantly committed to spending another winter at Etah.

Unexpectedly granted a fourth year for exploration, MacMillan was contemplating a journey north to Peary Land when he learned of Knud Rasmussen’s intention to explore the same region. Instead, he decided to improve the mapping of southwest Ellesmere Island between Cape Sabine and Clarence Head, which somewhat surprisingly had been charted previously only from the sea. Where earlier expeditions had reported nine glaciers, he was to find forty-two. MacMillan finally departed for the south in early August 1917 in SS *Neptune*, captained by Bob Bartlett, a friend and colleague from Peary’s North Pole expedition.

**Bowdoin Explores Foxe Basin, 1921–1922**

MacMillan served as a naval test pilot during the remainder of World War I. By 1920, he was ready to go north again. Having come to the conclusion that the key to success lay in choice of a suitable vessel, he raised enough money to have the 60-ton *Bowdoin* built to his own design. Sufficiently small to hug the shoreline, its draft of 3 meters matched the typical rise and fall of Arctic tides. This meant that it could be run ashore at high water for repairs and floated off at the next high tide. It was equipped with a 40-horsepower engine and was sheathed with ironwood up to the waterline.

*Bowdoin’s* first voyage was to Foxe Basin. This extensive inland sea to the north of Hudson Bay was discovered in 1631 by Luke Foxe. Although subsequent explorers—notably Edward Parry in 1821–1823—had explored the western shore, the eastern shore was little known. The expedition was sponsored by the Carnegie Institution, Washington, D.C., to erect a magnetic station on the west coast of Baffin Island.

Departing from *Bowdoin’s* home port of Wiscasset, Maine, MacMillan had ambitious plans to winter near Fury and Hecla Strait and make the first circumnavigation of Baffin Island, but this soon proved impracticable as *Bowdoin* failed to penetrate dense ice near the Spicer Islands. Instead, an excellent anchorage—Schooner Harbour—was discovered at the southwest tip of Foxe Peninsula, where the scientific station was erected. Contact was made soon afterward with the Cape Dorset Inuit, some of whom joined the expedition as hunters and dog drivers while their wives provided warm skin clothing by sewing.

A keen ornithologist himself, MacMillan had hoped to solve the mystery of the breeding ground of the blue goose (*Chen caerulescens*). It wintered in the Mississippi Delta, and no one had yet succeeded in discovering where this familiar species nested. MacMillan was somewhat sure that he would find them around the large lakes known to lie farther inland. Unfortunately, want of snow prevented him from sledging there himself, but he was able to give directions to the Hudson’s Bay Company factor at Cape Dorset. The eggs found the following winter were the first ever collected.

**Airplanes Assist the Search for Land in the Arctic Ocean, 1925**

MacMillan had not abandoned hope of discovering land northwest of Axel Heiberg Island. “Crocker Land” might not exist, and—as a Peary loyalist—he did not believe in Frederick Cook’s “Bradley Land,” but nevertheless there remained a large area between this island, Alaska, and the North Pole that remained unvisited and might contain land. Clearly, the best means to explore it was by airplane, assisted by short-wave radio, which MacMillan had successfully tested for the first time in the Arctic in 1923–1924 when wintering at Refuge Harbor, northwest Greenland.

This was to be a large-scale expedition, sponsored by the National Geographic Society with considerable support from the U.S. Navy, which provided three Loening biplane amphibians under the command of Lieutenant Richard Byrd, on his first expedition. *Bowdoin* was to be accompanied by the former steam yacht *Peary* to transport the naval unit and airplanes.

The two ships sailed from Wiscasset on 20 June 1925 with thirty-nine men on board. They arrived at Etah on 1 August, and just three days later the airplanes had been assembled, with a crude runway fashioned out of the rocky beach, and Byrd was ready to set out on his first flight. MacMillan’s aim was to establish a base on Axel Heiberg Island, which would be occupied the following year if conditions appeared favorable. With Etah as far north as could reliably be reached by sea, supplies would have to be airlifted out from there. Byrd concluded from his first flight that neither sea nor land ice were safe to land on. Instead, he and his pilots would have to seek out open water. This imposed severe restrictions on what the airplanes could achieve. Patches of open water were scarce, and while a small area might suffice for landing, takeoff required...
a significant expanse. The second flight was cut short by deteriorating weather. The third flight was made by all three airplanes, which were sent by MacMillan to Bay Fiord, the most likely location to find open water close to Axel Heiberg. Unfortunately, when it was reached the fiord was found to be clogged with ice. Byrd next investigated the potential of several fiords on the east coast of Ellesmere Island, finally identifying Flager Fiord as the most promising. There, he succeeded in laying a depot on 14 August but was unable to add to it the next day, when he was forced to land instead in Sawyer Bay. For MacMillan, this was the last straw. It was quite clear that the naval unit could not be relied upon to establish depots where he needed them. Only one of the three planes remained airworthy, and Byrd was ordered to cease flying and prepare for home. The expedition departed from Etah on 19 August, having spent less than three weeks in Greenland.

Arriving back at Wiscasset on 12 October, MacMillan was deeply disappointed by his expedition’s failure. He had found Byrd personally difficult and the airplanes inadequate for his needs. Understandably, he was to advise the National Geographic Society that the future of Arctic aviation lay not with airplanes but with airships because of the difficulty of finding places where airplanes could land.

MacMillan chose to ignore the furor aroused in Canada by his plans to search for land in the sector claimed by that country as its own. When his intentions first became known, he had been sent several requests to apply for a permit to explore Canadian territory, but he chose not to reply. His expedition led directly to the establishment in 1926 of the northernmost Royal Canadian Mounted Police (RMCP) post at Bache Peninsula, Ellesmere Island, as well as to a series of long-distance RCMP patrols designed to assert Canadian sovereignty over the High Arctic.

Later Voyages of the Bowdoin, 1926–1957

MacMillan’s later life followed a pattern similar to that of his friend Bob Bartlett. Crewing Bowdoin with college students and young scientists, he visited Labrador and Baffin Island most years, and Greenland occasionally. His expeditions were often sponsored by museums, for which he brought back fine natural history and ethnographic collections. During World War II, Bowdoin was purchased by the U.S. Navy, and MacMillan was recalled to active duty to assist in the construction of airfields in West Greenland. He later compiled a dictionary for use by the armed forces: Eskimo place names and aid to conversation. Other duties included selecting sites for six radar stations and participating in reconnaissance flights to East and West Greenland, during which some 12,000 photographs were taken from 6,000 meters for use in the preparation of nautical charts. When the war ended, MacMillan repurchased Bowdoin and refurbished it for more Arctic voyages. For eight years, between 1946 and 1954, he continued to take annual student and scientific parties to his favorite places in Labrador, Baffin, Greenland, and Ellesmere Island. At the age of seventy-three, he retired from polar exploration and placed Bowdoin for safekeeping at Mystic Seaport, where it may still be seen.

See also: Axel Heiberg Island; Baffin Island; Bartlett, Bob; Byrd, Richard; Cook, Frederick (1907–1909); Cornwall Island; Ellesmere Island; Foxe Basin; Foxe, Luke; Greely, Adolphus; Greenland, North; Inuit Contribution to Polar Exploration; King Christian Island; Parry, Edward (1821–1823); Peary, Robert (1905–1906, 1908–1909); Rasmussen, Knud (1916–1918)

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Macquarie Island (Sub-Antarctic)

Located at 54°37’S, 158°58’E, 600 miles southwest of New Zealand, Macquarie Island is a rare example of an island formed by ocean crust elevated above the sea by folding. It is 20 miles long and 5 miles wide. Macquarie was discovered on 11 July 1810 by the sealer Frederick Hasselburg and named by him for the governor of New South Wales. He was more fortunate than those who may have been first to see the island, since on landing he found signs of a recent shipwreck but no survivors. Leaving eight men behind to hunt the plentiful fur seals, he returned to Sydney to take on extra men before sailing back in early October, when further shore parties were landed. Despite all of Hasselburg’s efforts to maintain secrecy, several other sealing vessels found Macquarie before the end of the year.

Once the location was discovered, and like every other sub-Antarctic island, the fur seal population was systematically decimated, and by November 1820, when Fabian von Bellinghausen stopped to take on fresh water, only elephant seals remained to be hunted. Bellingshausen remained several days to survey the coast but was forced by thick weather and a rising westerly squall to leave with this task only partially completed.

Through the remainder of the nineteenth century, visits continued to be made by sealers to hunt elephant seals and by occasional exploring expeditions. Among the former was Samuel Harvey, who landed here in 1831 before sailing south to 72°S in the Ross Sea. Charles Wilkes arranged for his ships to rendezvous at Macquarie. In the event, only two of his surviving four ships were to visit, Peacock on 10 January 1840, and Flying Fish the next day. Both found landing difficult, and on the basis of their unfavorable reports, Wilkes was later to
report that there was little reason for future expeditions to come here.

Although formally under the jurisdiction of the governor of Tasmania, Macquarie was included in annual visits made from 1882 onward by vessels chartered by the New Zealand government to search for castaways. These landings also provided opportunity to enforce restrictions on sealing. Following attempts by Henrik Bull’s expedition to seal here and at Campbell and the Auckland Islands, the governor of New Zealand suggested that Macquarie be transferred to New Zealand, a proposal that was found unacceptable by his Tasmanian counterpart.

Robert Falcon Scott made a brief landing on 22 November 1901 on his way to New Zealand, when preliminary natural history studies were made by Thomas Hodgson and Edward Wilson. An almost equally short visit was made on 30–31 December 1914, by Aeneas Mackintosh during the Imperial Trans-Antarctic Expedition, on Aurora’s voyage south from Sydney to Ross Island.

Aurora’s previous stays at Macquarie had been rather more extended since this island had figured prominently in the Australasian Antarctic Expedition of Douglas Mawson (1911–1914). Planning the first use of radio in the Antarctic at a time when only long-wave transmission was possible, and for which a large power plant was necessary for relatively short-distance communication, Mawson needed a station on Macquarie to relay his communications from Main Base in Antarctica to Australia. These plans were combined with those of the Commonwealth Meteorological Service to establish a joint radio and meteorological station. Aurora reached Macquarie on 11 December 1911. After first inspecting the possibilities of Caroline Cove at the southern end of the island, Aurora then sailed north to anchor in Hasselborough Bay, where it was soon afterward joined by Tøraa with further provisions and expedition members. With the station well on its way to establishment, Mawson left for Antarctica in Aurora on 23 December, leaving G. F. Ainsworth of the Commonwealth Meteorological Service in charge of a five-man party, which also included H. Hamilton (biologist), L. R. Blake (surveyor and geologist), and wireless operators C. A. Sandell and A. J. Sawyer. Their first task was to erect the wireless station and get it working. This was achieved by 13 February 1912. Initially, they were only able to send messages to Australia, but by February 1913 two-way communication had been established. Daily weather reports were sent from 12 May 1912. While duties kept Ainsworth, Sandell, and Sawyer permanently at the station, Blake and Hamilton traveled systematically across the island, visiting all parts to conduct topographic and natural history surveys. On the basis of this work, Blake was to compile the first accurate map of the island. The Ainsworth party volunteered to stay on an extra year to help with the search for Mawson when it learned of his failure to return to Main Base, and it was not until 28 November 1913 that the party was relieved by Aurora. The meteorological station was then handed over to the Commonwealth Meteorological Service, which continued to operate it until 30 November 1915. Longer service had been planned, but it was abandoned after the loss of the relief vessel Endeavour in 1914 on its return voyage from Macquarie. Mawson himself visited the island once more in December 1930, when he stayed for several days to conduct magnetic and natural history studies.

Throughout much of the period of these visits by various exploring expeditions, a station had been maintained for commercial rather than scientific purposes. It was established at “Nuggetts” toward the northern end of the island in 1892, and facilities had been set up for rendering not only elephant seals but also penguins into oil. By 1910, nearly 150,000 penguins were being killed each year, by which time the king penguin population had been substantially reduced and royal penguins were the main species utilized. Although exploring expeditions found the contractors generally welcoming and helpful, the mass slaughter of penguins aroused considerable feelings of revulsion among some of their members, and Mawson in Australia and Edward Wilson in Great Britain campaigned vigorously for the practice to be ended. In 1918, the operator’s lease was terminated by the governor of Tasmania, with all activities ceasing the following year. The penguin-oil industry was not unique to Macquarie, but this was its largest application on any of the sub-Antarctic islands.

Plans to establish a permanent station on Macquarie had been put forward periodically since the 1880s. These were finally fulfilled in March 1948 when a station was constructed by Australian National Antarctic Research Expeditions on the site of Mawson’s former base. This has been manned ever since.

See also: Australia; Bellingshausen, Fabian von; Bull, Henrik; Hasselburg, Frederick; Mackintosh, Aeneas; Mawson, Douglas; New Zealand; Scott, Robert Falcon (1901–1904); Sealing and Antarctic Exploration; Sub-Antarctic Islands; Wilkes, Charles

References and further reading:

Magnetic Poles

Although lodestones were known for their magnetic properties by the Greeks as early as 600 B.C., their use for navigational purposes was not discovered until probably the first century A.D. in China, where the compass was invented. By the twelfth century, the compass had reached Europe. Compasses were originally believed to point north because the Pole Star imparted its “virtue” to the needle. Later, it was thought that the compass needle was attracted by a lodestone mountain near the North Pole (see Nicholas of Lynn).

Noting that compass needles did not point true north but at a changing angle east or west depending on where the observation was made, the Flemish cartographer Gerard Mercator...
attempted to locate this mountain by plotting the angles of declination and noting the point at which they all intersected. Finding that they did not meet, he sought to resolve this by hypothesizing two lodestone mountains, and thus his Arctic map of 1569 shows two Magnetic Poles, 300 miles apart. In 1600 William Gilbert, physician to Queen Elizabeth I of England, dismissed the concept of an iron mountain at the Pole as mythical and suggested instead that the Earth itself was a huge magnet.

The Earth’s magnetic field is now understood to be generated by the interaction between electric currents flowing within the highly conducting molten iron-nickel material comprising the outer core and the fluid motion of that material. The processes take place 1,900 miles beneath the surface. Another factor affecting the movement of the magnetic poles is variation in the Earth’s magnetic field resulting from bombardment by charged particles from the Sun. On days of major activity, the magnetic poles can move by as much as 50 miles in twenty-four hours.

**North Magnetic Pole**

The North Magnetic Pole was first located by James Clark Ross on 1 June 1831 at 70°05′20″N, 96°46′W on the west coast of Boothia Peninsula, northern Canada. He named the location Cape Adelaide and built a cairn marking the spot where his magnetic needle suspended horizontally on a silk thread dipped at an angle of 89°59′. The vicinity of the Pole was next reached in 1904 by Roald Amundsen, who noted its movement north. P. H. Serson and J. F. Clark in 1947 and 1948 located the Pole on Prince of Wales Island, 250 miles northwest of Boothia. Subsequent surveys have been conducted roughly every ten years by the Canadian National Magnetic Survey Program, which placed it in 1994 at 78°30′N, 104°W, on the southwest coast of Ellef Ringnes Island in the Queen Elizabeth Islands. In 1996, David Hempleman-Adams obtained a highest dip reading of 89°99′ at 78.5°N, 104.167°W, on the Noice Peninsula of this island, while the latest position given by the official survey in 2001 is 81°20′N, 110°48′W, some way northwest of Ellef Ringnes in the Arctic Ocean. At current rates of movement, it will make its closest approach to the North Geographic Pole in 2024 (88°48′N, 180°E) and will reach the Russian archipelago of Severnaya Zemlya by 2050. The North Magnetic Pole is currently the easiest of all of the Poles to reach and is so regularly by parties and individuals, who usually set out from Resolute, Cornwallis Island.
South Magnetic Pole

According to calculations made by the German physicist Carl Gauss in 1838, the South Magnetic Pole lay at 66°S, 146°E. The first expedition sent out specifically to identify its location was led by James Clark Ross, discoverer of the North Magnetic Pole, though both Charles Wilkes and Jules Dumont d’Urville attempted to anticipate him in 1840 by visiting the area predicted by Gauss. Although unable to reach the Pole itself, Ross placed it on the Antarctic Continent, estimating its position in 1841 at 75°30’S, 154°E. It was first reached by members of Ernest Shackleton’s Nimrod expedition on 16 January 1909, who located it at 72°24’S, 155°18’E (see David, Edgeworth). On 21 December 1912, Robert Bage, Eric N. Webb, and Frank Hurley got to within 50 miles of the Pole during Douglas Mawson’s expedition of 1911–1914. Next to the Pole itself was a French party led by Pierre-Noël Mayaud, who placed it at 68°07’S, 148°E. The South Magnetic Pole shows less dramatic movement than its northern counterpart, perhaps 2 miles each year, and is currently to be found off the coast of northern Victoria Land, where it has been reached several times by yachting expeditions, for example, by David Lewis on 6 January 1986, when it was at 65°18’S, 140°02’E. Its location in January 2002 was given as 64°36’S, 138°12’E (R. K. Headland, personal communication). See also: Adventurers; Amundsen, Roald (1903–1906); Borchgrevink, Carsten; David, Edgeworth; Dumont d’Urville, Jules; Elieff Ringnes Island; Geomagnetic Poles; Hempleman-Adams, David; Mawson, Douglas (1911–1914); Nicholas of Lynn; Prince of Wales Island; Ross, James Clark (1839–1843); Ross, John (1829–1833); Severnaya Zemlya; Victoria Land; Wilkes, Charles

References and further reading:

Malygin, Stepan
(d. 1764)

Compiling accurate charts of the entire coast of Arctic Russia east of Archangel was just one of the objectives set for the Great Northern Expedition of Vitus Bering (1733–1743). This was a highly formidable task, apparent even in the comparatively well-known western section, with much remaining to be done when Lieutenant Stepan Gavrilovich Malygin was appointed to take charge of completing the survey on which his predecessors, Lieutenants Stepan Murav’yev and Mikhail Pavlov, had already labored for two years.

From the Pechora to the Ob’ along the Arctic Coast, 1736–1739

Murav’yev and Pavlov were replaced following a series of complaints against them by the inhabitants of Pustozersk, a small trading settlement on the Pechora River. Probably of greater significance to the Admiralty College was that ill-feel-

ing had reached such a pitch that it was unlikely that they could any longer work effectively together. On 25 May 1736, Malygin arrived in Pustozersk to investigate the complaints and take over command. He was to be assisted by Lieutenant Aleksey Skuratov, who was sent out from Archangel on 22 June with two new vessels. This was just as well, since of the two vessels inherited by Malygin from his predecessors, one—Ekspedition—was crushed by ice before he had even reached the sea, while the other—Ob’—leaked badly. On his way to join Malygin, Skuratov was able to conduct further survey work along the coast between Archangel and the Pechora River, before meeting up with his leader at Dolgoy Island, west of Vyagach Island, on 8 August. With the survey of this western coast still not complete, Malygin now placed Lieutenant Sukhotkin in command of Ob’, himself transferring to one of the new vessels, which were unimaginatively named First and Second.

The task now facing Malygin and Skuratov was to find a way of doing what possibly no more than one expedition had previously achieved: to find a sea route to the Gulf of Ob’ by sailing north of the Yamal Peninsula. Entering the Kara Sea through Yugor Strait, the frequently ice-clogged navigable channel south of Vyagach Island, they were able to reach no farther north than 70°10’N on the western coast of the Yamal, much less than Murav’yev and Pavlov had attained in the more favorable years of 1734 and 1735. Rather than head west to the Pechora to winter, Malygin decided instead to establish his quarters on the Kara River, sufficiently close to the Yamal for the survey of the peninsula to be continued overland by Vasily Selifontov during the fall and following spring, giving the first good charts of the western and northern coasts of the Yamal.

By 31 June 1737, the expedition was again ready to depart. Comparatively little ice was encountered this year, and by 23 July Malygin had reached the northern tip of the peninsula. There, he was delayed by contrary winds before finally entering the Gulf of Ob’ in August, then anchoring at Berezovo on 5 October. Malygin himself returned overland that winter to report the successful completion of his survey to St. Petersburg. His crew’s return journey was more extended, however, as they wintered first on the Ob’, then the following year on the Kara River, before finally arriving back at Archangel on 4 July 1739.

See also: Bering, Vitus (1733–1743); Kara Sea; Murav’yev, Stepan; Northeast Passage; Russia

References and further reading:

Man-hauling

Draught animals have been employed by native peoples in the Arctic for many centuries. It therefore requires some explana-
tion why European exploring expeditions—especially those of the British—abandoned animal for human power in the nineteenth and early twentieth centuries.

Early voyages of exploration were essentially that. They involved sailing in one's vessel as far as ice and other factors would allow, possibly wintering, and then returning. Little land travel was attempted even by wintering expeditions, other than for hunting and fishing, which generally occurred close to the ship. The first expeditions to involve lengthy overland journeys were those of the Great Northern Expedition, whose detachments surveyed the Arctic coast of Russia from Archangel to Kamchatka (see Bering, Vitus). Even that survey was conducted by boats wherever possible, but long overland journeys also took place. For these, the Russians enlisted the help of the local people and therefore generally adopted their means of transport: reindeer in Taymyr and dogs in Chukotka. The British also began by experimenting with dogs and reindeer. When Edward Parry found himself in 1821 to 1823 wintering in a region inhabited by Inuit, he and several of his colleagues learned to handle dog teams and used them for longer journeys, traveling in company with the Inuit. For his North Pole expedition of 1827, he decided to use reindeer rather than dogs to haul the boat-sledges across the ice to the presumed open waters beyond. Unfortunately, since he brought only eight, they proved quite inadequate to move the very heavy sledges, forcing him to revert to manpower.

Man-hauling as a conscious strategy for long-distance sledging is generally regarded as having been introduced by Sir James Clark Ross in 1848–1849. This appears initially surprising given that Ross had been with Parry in 1821–1823 and 1827, in addition to undertaking extended journeys with dog teams during his uncle John Ross's expedition of 1829–1833. James Clark Ross was charged in 1848 with searching for Sir John Franklin, contact with whom had been lost for several years. The ice-choked straits of the Canadian Arctic Archipelago were generally navigable for no more than two months each year. During the Franklin search, ships effectively functioned as semimobile bases, with the bulk of exploratory journeys undertaken by boat in summer and, through the rest of the year, by sledge. Efficient sledging was therefore of critical importance. We do not know precisely why Ross chose not to employ dogs. He is likely to have taken into account the availability of considerable and otherwise largely unemployed manpower, the fact that the regions to be searched were for the most part uninhabited, and the difficulty of obtaining dogs in sufficient numbers. Also, his task was to establish sledding methods for his own expedition only. Had he the foresight to anticipate the large numbers of future search expeditions, he might have begun the process of training up a cadre of dog
Some remarkable journeys have been accomplished. During Austin’s expedition, sledge parties traveled 5,000 miles in total, the longest journey being McClintock’s 891 statute miles in eighty—one days. These distances were greatly exceeded on Belcher’s expedition, particularly by members of Henry Kellett’s Melville Island division, who traveled a total of 15,400 miles. The longest journeys were those of McClintock and Frederick Mecham in 1853 (1,408 miles in 105 days, and 1,173 miles in ninety—one days, respectively); with the longest journey of all being made by Mecham the following year, when the unexpected abandonment of Kellett’s ships extended his journey to 1,544 miles in seventy—one days. These distances were achieved with sledges weighing some 900 kilograms when they first started out.

There is no question that these great journeys involved brutal effort and that the health of some of those participating never recovered. George H. Richards, himself a 1,000—mile sledger in 1853, privately recommended that anyone proposing to make use of the technique in the future should be locked up in a lunatic asylum (McKinnon 1985, 135). Others, however, considered man—hauling the highest form of polar travel. The prime exponent of this view was Sir Clements Markham, and it was largely because of Markham’s influence that man—hauling—

invented by McClintock to serve a very specific need—was relied upon by the North Pole expedition of George Nares (1875–1876), then introduced to Antarctica by Robert Falcon Scott and Ernest Shackleton. McClintock himself showed rather greater flexibility when he came to lead his own expedition in 1857–1859, making use of canine as well as human power and recommending to Nares and Scott that they take dogs, which for certain types of journeys—in intense cold and where speed was important—he viewed as clearly preferable to man—hauling.

Scott’s first expedition showed several improvements on practices adopted by McClintock and Nares. In particular, Scott learned from Fridtjof Nansen (who had man—hauled across Greenland), adopting the Norwegian’s lighter sledges, improved stove, and other equipment. Considerable attention was also paid to diet. Prior to undertaking a major journey, several depots were established along the line of march. Whereas for the Franklin search expeditions man—hauling was generally the only means of travel—though Kellett had a dog team, which was kept constantly in use, as had William Penny before him—for Scott and Shackleton, man—hauling was essentially a method of last resort, both also taking motor vehicles, ponies, and dogs. Once it was established that the South Pole lay on the polar plateau, reached up a crevasse—ridden glacier, it was initially believed that it could be reached only by man—hauling, a theory convincingly disproved by Roald Amundsen in 1911.

It might have been thought that this would have been the end of man—hauling. In recent years, however, this has become viewed as the only method compatible with unsupported expeditionary achievement, whereby the modern school of adventurers (see the entry Adventurers) seeks to reach the Poles and other objectives without any form of outside aid. Some remarkable journeys have been accomplished.

References and further reading:

Manning, Thomas
(1911–1998)
In 1938, Ella Wallace Jackson—“Jack”—received a message that led her to give up a comfortable life in Montreal to join
Thomas Henry Manning at Cape Dorset, Baffin Island: “If you wish to join me at Cape Dorset this summer for two years I shall be pleased think well fools rush in charge expenses to me with Hudsons Bay Company extra clothes etc. unnecessary I shall not be able to receive a reply Tom Manning.” (E.W. Manning 1946, 11). Together they were to explore the last remaining section of unexplored coastline in Arctic Canada.

The Canadian explorer Thomas Manning never had a “proper” job. For him, the call of the Arctic was so strong that once having spent time there he never returned to complete his studies at Cambridge University; neither did he ever seek any other form of employment. While still at Cambridge, Manning had walked 1,000 miles along the Norwegian coast and across the mountains into Lapland. After a short period of imprisonment when he was arrested by villagers armed with pitchforks after straying across the border into the Soviet Union, he had begun his first Arctic expedition, choosing Southampton Island in northern Hudson Bay as his destination. There, he remained through two winters, making a topographic survey and conducting ornithological and archaeological research. By April 1935, when he set out with four dogs on his 500-mile return journey to Churchill, he had surveyed almost the entire island and brought with him fine collections of rocks and bird specimens for presentation to the British and Canadian National museums. During his stay, he had learned the essential art of igloo-building and had acquired a mastery in polar travel rivaled by few Inuit.

The British Canadian Arctic Expedition, 1936–1941
For his next expedition, Manning recruited his schoolmate Reynold Bray, who had been with him when they were arrested in the Soviet Union. Bray would serve as ornithologist and surveyor. The other four members of the party were all from Cambridge: Patrick D. Baird (geologist), Peter M. Bennett (surveyor), Dr. Richard G.M. Keeling (medical officer), and Graham W. Rowley (archaeologist). Manning had arranged for a 10-meter whaleboat to be built at Churchill. In Polecat, they would complete the survey of Southampton Island before conducting a range of studies around Foxe Basin, first along the Melville Peninsula between Repulse Bay and Igloolik, then north from Cape Dorset up the unexplored west coast of Baffin Island.

By 1938, when Jack received her invitation to join the expedition, all of Foxe Basin had been mapped apart from the inaccessible west coast of Baffin Island. All but Manning had returned to England to write up results and complete academic studies or find other employment. Although the west coast itself was predominantly low-lying, precipitous mountains along the east coast made it almost impossible to reach from there. Since hunting was poor, it was only rarely visited by the Inuit of Cape Dorset. In 1910, Bernhard Hantzsch succeeded in crossing the island for the first time, following a route from Cumberland Sound to Koukdjuak River via Nettilling Lake. After wintering on the west coast 100 miles farther north, he explored as far as 68°45’N before dying on the return journey after eating uncooked polar bear meat.

Jack arrived at Cape Dorset on board SS Nascopie on 24 July 1938. The first matter to be arranged was her marriage to Thomas. A fur trapper served as best man, with the bishop of the Arctic on hand to perform the ceremony. Finding rings was more difficult, but eventually two were fashioned out of a brass engine fitting. Jack was kitted out with furs from the local Hudson’s Bay Company (HBC) store, and six days later they were ready to depart. For the first part of the journey they were accompanied by the Inuk Sandi, his wife Ipichout (“The Woman”), and Lizzie, an eight-year-old girl brought along by Sandy as company for his wife. Since they would be away at least a year and there would be no Inuit settlements nearer than 250 miles, they had to take a considerable volume of
stores aboard *Polecat* and the two canoes towed behind. In addition to 900 liters of petrol and 230 liters of paraffin, they had flour, butter, jam, milk, and tobacco. There was also plenty of bovril pemmican for themselves, as well as dog pemmican for the nine dogs and four puppies.

*Polecat* had a draft of just 1 meter even when fully loaded, but nevertheless it sometimes grounded on shoals reaching far out from shore. Mapping the coast was the chief objective, but Thomas was also interested in excavating ancient house ruins in the hope that some would be from the Dorset Culture. This culture predating the current Inuit Thule culture had been identified by Dr. Diamond Jenness of the Canadian National Museum on the basis of artifacts held by his museum. At this date, no one had yet succeeded in proving his conjecture by discovering a Dorset site not occupied subsequently by the Thule Inuit. While the Mannings found only mixed sites, farther west Rowley was more successful that year when he excavated the first Dorset site near Igloolik.

Thomas had hoped to winter at the mouth of the Koukdjuak River. When this proved unsuitable, the Hantzsch River was chosen instead some way farther north. This meant a long journey for Sandy to pick up supplies from a depot made earlier. Jack found “The Woman” uncongenial company and was not sorry when the Inuit were sent back to Cape Dorset on 19 December. Preparations now began for the sledging journeys, which were to be undertaken through the winter and early spring before the snow softened. Thomas reckoned that the major trip to Piling Bay would take five weeks. Piling was the farthest point reached by Bray, Rowley, and Baird in their surveys from Igloolik. Only Hantzsch had explored this coast before the Mannings, and it was not known exactly how far he had been. Thomas first suggested that Jack should remain behind, but she preferred to go with him. Staying alone in an igloo, not knowing whether anything had happened to her husband, was not how she planned to spend her honeymoon. Since there was unlikely to be much game, they had to take with them most of the food required in addition to the heavy equipment essential for surveying purposes, such as the theodolite and radio. (The latter was needed to calculate longitudes from the time signal.) Thomas had made prior arrangements to meet up at Piling with Bray and Baird, but neither was there when the Mannings arrived on 9 February 1939. Unknown to them, Bray had been drowned earlier that year off the west coast of Hudson Bay; Baird arrived from Igloolik two weeks after the Mannings left on 16 February.

Much of the summer was spent in a futile attempt to take *Polecat* up the Hantzsch River past alternating shoals and rapids. The aim was to winter on Nettilling Lake to observe the blue geese (*Chen caerulescens*) believed to breed there each spring. This proved impossible, but they were able to obtain a fine collection of birds. Their only contact with the outside world was when Sandy visited briefly with the mail.

The early part of the second winter was spent in Taverner Bay, where Jack was kept busy making two new sets of clothing out of caribou skin and other furs. In the darkness of mid-December they then set out for Cumberland Sound, heading for Pangnirtung to visit the dentist and collect additional supplies. This involved a long journey across the island following the route taken by Joseph Soper in 1928–1929, and Soper’s map was all they had to guide them. They got lost and ran out of dog pemmican, forcing a detour to Cape Dorset. Arriving there on 1 January 1940, they heard for the first time about the outbreak of war between the British Empire and Germany. From Cape Dorset they crossed overland to Cape Dorchester at the northwest tip of the Foxe Peninsula and then headed east, first along the coast and then inland to Lake Nettilling, before sledging across the sea ice to Pangnirtung.

By 10 March, they were back at Taverner Bay and able to begin preparations for the long voyage home, during which *Polecat* would complete the first circumnavigation of Foxe Basin. Before leaving on 5 August, there was time to hunt seals in Hantzsch Bay and to study birds, though they never did discover where the blue geese nested. Back at Piling, they found the note left by Baird two weeks after their previous visit, together with a useful map of the north coast of Foxe Basin. Their chief concern now was that they might run out of petrol and be forced to make their way back with only six dogs. With luck they should have enough to reach Igloolik. If not, they would have to wait for favorable winds. For once Fury and Hecla Strait was clear of ice, and it was all Jack could do to persuade Thomas against sailing through it to make the first transit. She was eager to return south, and passing through the strait to explore the west coast of the Melville Peninsula would mean at least another year away from home. *Polecat* reached Igloolik on 4 September with the last petrol in its tank. From there, they had hoped to sail south aboard the HBC vessel *Fort Severn*, but when no room could be found for *Polecat*, the decision was made to prolong their voyage to Churchill 1,200 miles away. In the event, they could reach no farther than Fullerton Harbour on the west coast of Hudson Bay, where they remained in an abandoned Royal Canadian Mounted Police post until late December before continuing the journey by sledge to Churchill, where they finally arrived on 19 January 1941.

**Canada’s Last Undiscovered Islands, 1949**

On his return from the Arctic, Thomas immediately joined the Royal Canadian Navy, which had the good sense to employ him on a series of northern duties. In 1944, he was loaned to the Geodetic Service to establish ground control for the aerial survey conducted by the Royal Canadian Air Force (RCAF). Jack was appointed as his assistant the following year when the survey was extended to Keewatin, and in 1946 the two traveled together again to map the coast of Ungava. This was Jack’s last Arctic expedition.

As the RCAF survey continued farther north in Foxe Basin,
they photographed previously unknown land in July 1948 off the west coast of Baffin Island. This unexpected discovery aroused considerable interest, and Thomas was the obvious choice to lead the seven-man expedition organized by the Department of Mines and Resources. Traveling in the specially built 15-meter motor vessel *Nauja*, Thomas conducted the first soundings of eastern Foxe Basin before reaching the new land, which was found to consist of three low-lying islands—Prince Charles, Air Force, and Foley—with a total area of 3,000 square miles. Foley was named for Flight Lieutenant John Hilliard Foley, the navigator who had first spotted the islands and who died not long afterward in an air accident. In addition to conducting a ground survey, the expedition also studied the fauna, flora, geology, and major geographical features. It is unlikely that anyone, not even the Inuit, had visited these islands before.

**Coastal Survey of Banks Island, 1952–1953**

Thomas's annual expeditions to the Arctic continued with explorations of James Bay in 1950, and of the Beaufort Sea and Amundsen Gulf in 1951, on both occasions accompanied by Andrew Macpherson, one of those with him in 1949. The second expedition was undertaken to investigate conditions close inshore with a view to possible operations by nuclear submarines. Thomas was expert in all aspects of Arctic work and particularly in coastal survey using small boats. In 1952, he and Macpherson were commissioned by the Defence Research Board to conduct a detailed survey of the coastline of Banks Island, continuing the work begun in 1951. Flown out to De Salis Bay on the south coast by an RCAF Dakota, Thomas planned a clockwise circumnavigation of the island in a 7-meter canoe equipped with an outboard motor. By mid-August, they had surveyed the south and west coasts but farther north were unable to get beyond Castel Bay before becoming beset. Making their way to Mercy Bay, they rediscovered the wreck of HMS *Investigator* (see McClure, Robert) and cached the canoe when the river proved too shallow. They had no choice now but to walk 200 miles across the island to Sachs Harbour. To supplement what they could carry in their backpacks, Thomas fashioned a small hand-sledge out of barrel staves, which had been left at the wreck, before setting out on 2 September. Even for two such experienced Arctic travelers, it proved a grueling journey. Bogs were frequent and unfrozen, as were the rivers. Snowfall was heavy, and Thomas had to delegate route-finding to Macpherson when he became snow-blind in one eye. The crossing took twelve days. The next year, Thomas returned to complete the survey.

Of course, this was not his last expedition—far from it. Through the 1950s, 1960s, and into the 1970s, he traveled north each year on zoological expeditions collecting specimens—chiefly birds—for the Canadian National Museum and Canadian Wildlife Service. In 1955, he became executive director of the Arctic Institute of North America, but Thomas was no desk manager and, having been appointed on the basis of his unrivaled field expertise, continued to make use of it. Little zoological research had been conducted prior to his visit to King William Island in 1957 and none at all on Prince of Wales Island before he went there in 1958. Of him it was justifiably written that "probably no one has contributed so much . . . to the development of the technique of Arctic exploration by small and well-planned expeditions" (*Polar Record* 1951, 6(42), 178). The Arctic has seldom been more delightfully described than in Jack’s two books about her travels with her husband.

**See also:** Baffin Island; Banks Island; Beaufort Sea; Foxe Basin; Inuit contribution to polar exploration; King William Island; McClure, Robert; Prince of Wales Island; Women Explorers

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**Marguerite Bay (Antarctic Peninsula)**

Located at 68°30’S, 69°00’W, this large bay on the west coast of the Antarctic Peninsula, bordered to the north by Adelaide Island and to the south by Alexander Island, was discovered by Jean-Baptiste Charcot on 15 January 1909; he named it for his wife. Charcot conducted an initial survey of this region, where he had hoped to winter but was unable to find a suitable site.

This region was not visited again, apart from the occasional whaler, until February 1936, when John Rymill’s British Graham Land Expedition (BGLE) selected Barry Island in the Debenham Islands as its base for the second winter. Located at 68°08’S, 67°07’W, this group of six small islands was named by Rymill for Professor Frank Debenham, a geologist on the second Antarctic expedition of Robert Falcon Scott and founder of the Scott Polar Research Institute in Cambridge, England. The name was thought particularly suitable because there were six islands and Debenham had six children, one island being named for each. BGLE occupied this station from 29 February 1936 through 12 March 1937, during which much pioneering survey work was carried out in Marguerite Bay itself, along the adjacent Antarctic Peninsula, and in regions farther south. The base no longer survives, having been destroyed in 1951, possibly by a freak wave but more likely by the Argentines, who opened the station General San Martín on
Barry Island that year. This station was partly burned down on 2 February 1959 and then closed on 28 February 1960. While open, its members were particularly active in the establishment of refuge huts, erecting one on Northeast Glacier in 1954–1955, two near Bills Gulch glacier on the Bowman Coast on the east side of the peninsula in the winter of 1956, and three more in 1956–1957 on Avian Island (Paso de los Andes), Millerand Island (Diesisiete de Agosto), and Terra Firma Island (Granaderos). Nogal de Saldán was constructed southeast of Cape Jeremy the following year. General San Martín was reopened in the late 1970s and continued to operate as an all-year station until 2003.

Stonington Island (68°11’S, 67°00’W) is named for the home port of the American sealer Nathaniel Palmer. It was identified by Richard Byrd’s U.S. Antarctic Service Expedition as a suitable location for East Base. Commanded by Richard Black, East Base was occupied from 11 March 1940 to 22 March 1941 (see Black’s entry for a detailed account of its activities). Stonington possessed great advantages as a site from which to explore the southern regions of the Antarctic Peninsula to Alexander Island and beyond; not only was it then linked to the mainland by an ice ramp but the quiescent adjacent Northeast Glacier provided an excellent landing strip for aircraft at times when the sea ice could not be trusted. Thus it was not surprising that when the Falkland Islands Dependencies Survey (FIDS) sought to establish a base in the region, Stonington was chosen for Base E, which was opened in February 1946. In March 1947, an American expedition led by Finn Ronne returned to East Base to discover the station intact but in a state of considerable disarray. Stonington had been visited in 1943 by the Argentine vessel Primero de Mayo, which had left a cylinder stating Argentina’s claim to the sector in which Stonington lay. Shortly before the Americans arrived, East Base had also been visited by a Chilean expedition. Both expeditions apparently made use of East Base stores as common property and were none too particular about the mess left behind. Ronne initially but unjustifiably blamed the British, with whom he was later to work on good terms. East Base was reoccupied from 12 March 1947 to 20 February 1948, two of its members being women—Edith Ronne and Jennie Darlington—who were the first to winter in Antarctica. Great as were Stonington’s advantages, it suffered from one critical disadvantage: its far southerly location meant that in many summers the sea ice prevented access by relieving ships. Thus, in 1941 Black’s party had to be flown out when Bear could not reach Stonington, and in 1947 Ronne’s ship Port of Beaumont remained trapped in the ice until a path could be cut for it by two icebreakers. The presence of the icebreakers on this occasion also allowed in the British vessel RRS John Biscoe to relieve Base E. No such help was forthcoming the next
year, when Base E could not be relieved and a party soon to be known in the British press as “the lost eleven” had to man the station through another winter, until they too could be flown out. As a result of these difficulties, Base E was closed between 1950 and 1960, after which it was reopened until 1975 when replaced by Rothera, a large new base on Adelaide Island.

The Debenham Islands and Stonington have been the major centers from which Marguerite Bay and its adjacent region have been explored. During the 1950s FIDS also maintained Base Y on Horseshoe Island (67°51'S, 67°12'W). This station was manned throughout the year from March 1955 through to August 1960, its personnel recording meteorological observations and conducting a topographic and geological survey of the Bourgeois Fiord and Fallières Coast region to the north of Marguerite Bay. In March 1957, FIDS erected a refuge hut on Blaiklock Island (67°33'S, 67°04'W), which has since been much used by British field parties.

**See also:** Adelaide Island; Alexander Island; Antarctic Peninsula; Argentina; Black, Richard (1940–1941); British Antarctic Survey; Charcot, Jean-Baptiste (1908–1910); Chile; Palmer, Nathaniel; Ronne, Finn (1947–1948); Rymill, John (1934–1937); Scott, Robert Falcon (1910–1912)

**References and further reading:**

### Marie Byrd Land (Antarctica)

Marie Byrd Land is the large region of West Antarctica lying east of the Ross Ice Shelf and Ross Sea and south of the Pacific Ocean. Much of its coastline and interior was first explored by expeditions led by Richard Byrd. As soon as land was discovered in February 1929 east of 150°W, the eastern limit of the British-claimed Ross Dependency, Byrd named it Marie Byrd Land for his wife. As further discoveries followed, this land increased in size until finally occupying a considerable proportion of the region between the Ross Sea and the base of the Antarctic Peninsula, all of which Byrd claimed for the United States.

Much of the coast eventually discovered by Byrd was among the least accessible in Antarctica. Byrd’s great advantage was the availability of airplanes, he being the first to appreciate their full potential for Antarctic exploration. Although the chief objective of his first expedition was a flight to the South Pole, a well-organized program of air operations resulted in significant discoveries being made to the east of his base Little America on the Ross Ice Shelf. On 18 February 1929, land was seen for the first time east of 150°W, when a sharp pointed peak—Mount Grace McKinley—was spotted in the far distance. Once the South Pole flight was accomplished in November, Byrd devoted his attention to this essentially unknown region. One question that concerned him was just why this coast was so inaccessible. Did it form a peninsula reaching far to the north, or was there some other explanation? On 5 December, he followed the coast east across Edward VII Land to discover the Ford Ranges. Although land certainly extended some way north, it did not appear to do so sufficiently to account for the volume of ice found in the eastern Ross Sea.

In January 1934, Byrd returned to Little America, this time with the exploration of Marie Byrd Land as his chief priority. He began by effectively disproving the possibility of a northern promontory by sailing as close as possible to the coast, first in the steel-hulled *Jacob Ruppert*, then in the more suitable wooden-hulled *Bear of Oakland*. On the latter voyage in February, Byrd reached 75°6’S, 148°8’W, just 100 miles from the Ford Ranges, but without sighting land. On this expedition, Marie Byrd Land was explored both by air and on the ground. The most significant flights were made by Harold June, who on 18 November flew over the Ford Ranges, demonstrating for the first time how far this range extended. Four days later, he undertook a long flight southeast over the largely featureless interior of Marie Byrd Land to examine the possibility of a strait linking the Ross and Weddell Seas. The Ruppert Coast was discovered on 15 December. With the aid of tractors a depot was established on Mount Grace McKinley, from whose summit June was first to see the extent of the Rockefeller Plateau, an area of elevated land constituting much of interior Marie Byrd Land. Further explorations were undertaken by a four-man party led by Paul Siple, which conducted a geological and biological survey near Mount Grace McKinley, and by a party carrying out seismic studies of the ice forming the Rockefeller Plateau.

Byrd’s attempts to delineate the coast of Marie Byrd Land from the sea proved largely unsuccessful until the United States Antarctic Service Expedition (1939–1941), when he made a series of flights from *Bear* to discover first the Hobbs Coast, east of the Ruppert Coast, and then the Walgreen and Eights Coasts still farther east. During the same expedition, knowledge of the interior was significantly extended by flights and survey parties operating out of Little America III under the leadership of Paul Siple. The coasts discovered by Byrd were photographed from the air during Operation Highjump by Eastern Group in December 1946 and January 1947.

The only all-year station established to date in this region was Byrd, an American base opened in 1957 for the International Geophysical Year. Located far inland at 79°59’S, 120°01’W, Byrd was kept supplied by tractor parties from Little America V, 600 miles away, and by air from the Williams Air Operating Facility (now McMurdo) on Ross Island. Although very difficult to supply, this station was well placed for the exploration of interior Marie Byrd Land, one of the most significant traverses being made by John Pirritt in 1959 from Byrd to the Executive Committee Range. This range of recently
extinct volcanoes rising to 4,285 meters at Mount Sidley had been discovered from the air in November 1934 by Byrd. Further north, Siple had reported seeing two very high mountains in 1947, one apparently rising to 6,000 meters and thus considerably higher than any other known Antarctic peak. What exactly was seen remains a mystery, for Pirritt’s party hunted in vain for Mounts “Vinson” and “Nimitz.” Most probably Siple was misled by an optical illusion or possibly by a sudden bank of the plane. After three years, Old Byrd Station was abandoned for New Byrd, 6 miles distant at 80°37’S, 119°30’W. Since January 1972, it has been occupied through the summer only and is currently known as Byrd Surface Camp, providing a meteorological station and fuel depot for planes flying out of McMurdo. Problems of relief and supply meant that the Soviet summer station Russkaya (74°46’S, 136°57’W.), on the Hobbs Coast, was also relatively short-lived, operating from 1972–1973 to 1979.

See also: Byrd, Richard; Edward VII Land; Ellsworth Land; International Geophysical Year; Operation Highjump; Ross Ice Shelf; Russia; Siple, Paul (1940–1941); United States

References and further reading:
Since this region was discovered and largely explored by Byrd, useful information will be found in many of the works listed in the entry under his name. Doumani provides an interesting account of life at Byrd Station.


Marion Dufresne, Marc-Joseph (1724–1772)
There are echoes of the last voyage of James Cook in the last voyage of the French explorer Marc-Joseph Marion Dufresne. Like Cook sent to the South Pacific to return a Tahitian native, Marion Dufresne was also to die in the Pacific—in his case, murdered in New Zealand by Maoris. In polar exploration, this voyage is remembered for the discovery of two groups of sub-Antarctic islands.

New Discoveries in the Southern Ocean, 1771–1773
The Tahitian Aotourou had been brought to France in 1768 at his own request by Louis-Antoine de Bougainville. Unfortunately, he failed to learn French, despite every attempt to teach him, and whiled away his time at the opera and in the company of women, drawing much criticism upon Bougainville, who eventually provided 36,000 livres—close to one-third of his fortune—to fund an expedition to send Aotourou home. Marc-Joseph Marion Dufresne had enjoyed a distinguished naval career, capped by his appointment at twenty-two to sail to Scotland to rescue “Bonnie Prince Charlie” after the failure of the 1745 Jacobite Rebellion. With French defeat in the Seven Years’ War, followed soon after by the dissolution of the French India Company, Marion sought new opportunities by moving to the French Indian Ocean colony of Mauritius, where he owned land and engaged in trading expeditions. The possibility of commanding the voyage returning Aotourou to Tahiti attracted him for its exploring and trading opportunities, and he was prepared to risk his own fortune on the venture on condition that the government placed two ships at his disposal. This was agreed to, and Marion was provided with the 16-gun, 450-ton, former East India Company vessel Mascarin and the Marquis de Castries, the latter commanded by the youthful but well-connected Ambroise-Bernard-Marie le Jar du Clesmeur. Before he made passage for Van Diemen’s Land (Tasmania) and the Pacific, Marion was instructed to search for the great continent to be found to the south, whether temperate as reported by de Gonneville in 1504, or frigid as indicated by Jean Bouvet de Lozier in 1739.

The expedition set sail on 18 October 1771, its departure speeded by a severe smallpox epidemic in Mauritius, with Aotourou being one of those afflicted. The Tahitian’s death on 6 November removed the official motive for the expedition, but Marion continued on regardless, sailing first to the Cape of Good Hope to load additional supplies, which his hurried departure had prevented him from putting on board before. Although this detour resulted in the southern voyage beginning very late in the season—28 December—it placed him on a course propitious for discovery.

On 13 January 1772, land was sighted crowned by mountains hidden by fog. This Marion named “Terre d’Esperance” for the hope it gave of finding the southern continent. Soon afterward a second island was seen, named “Ile de la Caverne” for a prominent cave. These islands now bear the name given them by James Cook, the “Prince Edward Islands,” with the first called “Marion Island” in honor of its discoverer. While Marion was seeking to ascertain whether he had discovered islands or a promontory of the southern continent, the two ships collided violently, probably due to a mistake by the inexperienced du Clesmeur. The serious damage inflicted on both vessels brought a premature end to exploration, with course being set for the east once they had been patched up as best they could.

As the ships sailed through fog so thick that the bow could not be seen from the quarterdeck, penguins and seals were seen on 19 January, a clear indication of nearby land. On 22 January this land was in view, several islands forming two groups, which Marion named the Cold and the Arid Islands. A large iceberg was noted in their vicinity, which, following contemporary belief that ice could only form from freshwater, was interpreted as a sure sign of very extensive land, since such an iceberg could only have formed in a very large river. Fog prevented clear inspection of his discovery, leaving Marion again uncertain as to the presumed close relation between these islands and the nearby southern continent. On this occasion, however, he was able to effect a landing, sending ashore his second-in-command, Jules Marie Crozet in Mascarin, to claim the “Crozet Islands” for France on the island henceforth named “Possession Island.”
In sound vessels Marion would have sailed south from here, but the season was late, and he had a long voyage to complete. With every prospect of continental discovery farther south, he reluctantly left the Crozets and set course for Van Diemen’s Land, where his instructions were to investigate the possibility of a route to the Pacific avoiding the Dutch-held East Indies. Here Marion’s voyage ceases to concern polar exploration, and its story cannot be told in detail. In brief, after an unhappy encounter with Tasmanian aborigines in which some crew, including Marion, were slightly wounded and an aborigine killed—the first but by no means the last to be killed by Europeans—Marion sailed on to New Zealand, where he made an extended stay at the Bay of Islands on North Island. After developing apparently amicable relations with the large Maori population, Marion was murdered on 12 June, the full reasons for his death remaining unclear. Du Clesmeur took over command and, after some desultory voyaging between Pacific islands, headed back first to the Philippines and then to Mauritius, which Marquis de Castries reached on 8 April 1773 and Mascarin on 7 May.

See also: Bouvet de Lozier, Jean; Cook, James (1776–1780); Crozet Islands; Prince Edward Islands; Terra Australis Incognita

References and further reading:

Markham, Clements (1830–1916)

Clements Robert Markham was the prime instigator of two major British expeditions: those led by George Nares to the Arctic in 1875–1876 and by Robert Falcon Scott to the Antarctic in 1901–1904. Although his role as patron of polar exploration in some ways resembles that of Sir John Barrow in the early part of the nineteenth century, a critical difference is that whereas Barrow had real power in the assignation of ships and men, Markham, as secretary and then president of the Royal Geographical Society (RGS), had influence but no power. What he did achieve came partly through his ability as a popularizer and partly through his mastery of committees.

On both occasions, Markham’s intervention was to follow a prolonged period during which the British Royal Navy occupied itself with activities other than polar exploration. Following the last Franklin search expedition in the 1850s, the only British ships to visit the Arctic before Nares were whalers. Together with Sherard Osborn, Markham was to mount a nine-year campaign before the incoming government of Benjamin Disraeli was prepared to authorize another major expedition. A succession of naval expeditions had been mounted from 1818 onward, culminating in 1845 with the dispatch of Sir John Franklin to the Canadian Arctic with orders to discover the Northwest Passage. Franklin and his men were never to return, and the loss of life on that expedition, and the cost of the con-
sequent search expeditions, were given as the chief reasons against the resumption of polar exploration. This hiatus also affected Antarctica, where RGS librarian Hugh Robert Mill (1861–1950) described the period between 1845 and the 1890s as “the era of averted interest,” during which virtually no scientific or exploring expeditions entered Antarctic waters.

Markham had been a midshipman aboard HMS Assistance during the Franklin search expedition led by Horatio Austin in 1850–1851. Soon afterward, he had left the navy to visit Peru, later collecting cinchona plants there for introduction to India to provide quinine, an antidote to malaria. By the time he was appointed secretary of the RGS in 1863, Markham had written a number of books on geographical discovery. One of his chief contributions to the campaign for a new Arctic expedition was to publish The threshold of the unknown region, a popular retelling of Arctic exploration originally issued as a nine-part series in the Geographical Magazine and later reprinted as a book, which went through four editions within two years (1873). The Arctic campaign was initially bedeviled by division of opinion between those who favored an approach to the Pole via Smith Sound west of Greenland and those who believed that prospects were better north of Spitsbergen. As the experts continued to argue at the RGS, the Admiralty was content to leave exploration to other countries. By the early 1870s, the Spitsbergen route had been investigated without success by several expeditions, and opinion at the RGS united around the Smith Sound route. The election of Disraeli in 1874 brought in a new government acutely sensitive to matters of national prestige. While Great Britain had been inactive, the Americans had organized several expeditions to Smith Sound, and an Austrian expedition had discovered a possible new continent in the northern Barents Sea (see Payer, Julius von). Within a few months of taking office, Disraeli was persuaded to authorize an expedition.

The perceived failure of this expedition, cut short by a severe outbreak of scurvy (see Nares, George), was to discourage the Royal Navy from undertaking any further polar voyages for twenty-five years. This lack was keenly felt by Markham, RGS president since 1890. No British naval expedition had visited Antarctica since James Clark Ross in 1839–1845. Markham’s next campaign was to organize a British expedition to Antarctica. In this, he was greatly assisted by the adoption of a motion—drafted by Mill—at the Sixth International Geographical Congress of 1895 declaring Antarctic exploration to be “the greatest piece of geographical exploration still to be undertaken” and that “this work should be undertaken before the close of the century.” Several countries now made preparations to dispatch expeditions to Antarctica, the first away being Belgium, followed shortly afterward by Carsten Borchgrevink, whose so-called British expedition was certainly funded by British money but staffed largely by Norwegians. Whereas Markham regarded Borchgrevink as an interloper siphoning off funds that might otherwise have been
available for his planned British National Antarctic Expedition, he welcomed the activity of other countries since they gave him greater leverage in persuading his own government that Britain should not be left behind by others, particularly Germany, Britain's growing rival on continental Europe. In the event, although national rivalries certainly played a role in enabling funds to be found for these expensive undertakings, international collaboration was also significant. Britain, Germany, and Sweden reached agreement as to which areas each was to explore—each adopting a separate quadrant—and making arrangements for their scientists to carry out simultaneous meteorological and magnetic observations.

Markham's dream was to send out an expedition fully in the grand nineteenth-century naval tradition. Thus he wanted an expedition staffed largely by naval officers; some science would be conducted, but the primary concern was exploration. His ideas clashed with representatives of the Royal Society, joint sponsors with the RGS of the planned expedition. For the Royal Society, science had to come first, and a scientist should lead, if not the entire expedition, at least the landing party, naval officers not being noted for their expertise ashore. Although Markham was ultimately to have his way—leading to the resignation of Professor John Walter Gregory as chief scientist—he did so at the cost of alienating many in the Royal Society and arousing increasing suspicion within government circles.

Markham's choice as leader was Lieutenant Robert Falcon Scott, who on hearing of the expedition had applied for the post on 5 June 1899, being previously known to Markham as a midshipman. Although without polar experience, Scott appeared to Markham the most likely of available candidates. From Scott's perspective, polar exploration offered a proven route to promotion in the highly competitive Royal Navy.

It was Markham's decision to build a new ship rather than purchase an existing whaler. National pride played a part here, since the Germans were building an expedition vessel and Norway had already done so, Fridtjof Nansen's Fram demonstrating what such a vessel could achieve. Whereas the German Gauss was closely modeled on Fram, the British Discovery was not. In particular, although similarly strongly built, it did not retain Fram's rounded hull, a feature thought more suitable to the largely ice-covered Arctic Ocean than to the Southern Ocean, where good sailing qualities were also essential. The first British purpose-built expedition vessel, the Discovery was constructed at Dundee and launched on 21 March 1901.

Markham's involvement did not end with the departure of Discovery on 6 August 1901. Scott's instructions made it likely that he would winter his ship in Antarctica. This raised the prospect that he might find himself trapped by ice just as Franklin had been in the Arctic, when all on board had died. To ensure that no similar fate befell Scott, Markham made arrangements for a relief expedition to be sent out the next year, raising the necessary money with difficulty to purchase the whaler Morning and appointing William Colbeck to command (see Colbeck, William). Colbeck found that Discovery was indeed beset, but he was unable to extricate it. Scott, however, was not overly concerned, since he was well supplied with provisions and had ambitious sledging plans for the coming field season.

Having experienced great difficulties in raising sufficient money for the first relief expedition, Markham now faced even greater problems in seeking funds for a second. To Scott's subsequent embarrassment, Markham decided that his only chance was to play up the dangers faced by the expedition, stating in particular that its provisions were sufficient only until January 1904. This was not true, but it was Markham's last bid to ease money out of a very unwilling government. Markham's role ended at this point; rather than simply making a grant, the government took over control of the relief expedition, purchasing the powerful Dundee whaler Terra Nova and sending it out at considerable expense to assist Morning. The two vessels successfully effected Scott's release from the ice in February 1904.
Markham retired as RGS president in 1905 but maintained his interest in polar exploration, keeping close contact with Scott in particular, but also with Ernest Shackleton until relations cooled, when the latter insisted on going ahead with his proposed Antarctic expedition despite—in Markham's view—cutting across Scott's plans. The last years of his life were saddened by the loss of Scott's Polar Party.

See also: Austin, Horatio; Barrow, John; Borchgrevink, Carsten; Colbeck, William; Drygalski, Erich von; Franklin, John (1845–1848); Franklin Search Expeditions; Gerlache, Adrien de; Nansen, Fridtjof (1893–1896); Nares, George (1875–1876); Nordenskjöld, Otto; Ross, James Clark (1939–1843); Scott, Robert Falcon; Shackleton, Ernest

References and further reading:

Mawson, Douglas (1882–1958)
The story of Douglas Mawson's incredible struggle for survival following the death of his two sledding companions ranks as one of the great epics of polar exploration. A scientist carrying out significant geophysical studies in Antarctica, Mawson was also an Australian patriot, and his two expeditions laid the foundations for what was to become the Australian Antarctic Territory.

Dr. Douglas Mawson first went to Antarctica as a member of Shackleton's first expedition in 1907–1909. He distinguished himself, being one of six making the first ascent of the volcano Mount Erebus (see Adams, Jameson), and one of three to reach the South Magnetic Pole (see David, Edgeworth). In the process he proved himself to be a tough and capable polar traveler. These capabilities were to be tested to the limit on his next expedition to Antarctica.

An Extraordinary Survival Story from the “Home of the Blizzard,” 1911–1914
It was natural that Mawson, a lecturer in mineralogy at the University of Adelaide in South Australia, should take a special interest in the long, virtually unexplored Antarctic coast lying south of Australia. In 1840, the American explorer Charles Wilkes had charted 1,500 miles of that coastline, but controversy surrounded Wilkes's reported discoveries, with several expeditions sailing across areas he had marked as land. Clearly some of Wilkes's charts were inaccurate, which raised the question as to what extent any of his “discoveries” could be relied upon. In 1910, now actively planning his own expedition to investigate the area between Cape Adare in the east and the Gaussberg Nunatak in the west, Mawson approached Robert Falcon Scott about the possibility of his being landed from Scott's ship. Scott felt unable to help, though he was extremely keen to have Mawson with him as a member of his expedition, even going so far as to promise him a place in his South Pole party. Yielding priority to Scott, Mawson waited until Scott had obtained sufficient funds for his expedition before beginning his own fund-raising.

As second-in-command, he appointed Captain John King Davis, former chief officer of Shackleton's Nimrod. Davis was also to command the 386-ton sealer Aurora, which set out from Hobart, Tasmania, on 2 December 1911 for Macquarie Island. There Mawson planned to set up a wireless relay station, being the first to appreciate the potential of radio for Antarctic exploration. Aurora sailed for Antarctica on 24 December, leaving behind a five-man party led by G. F. Ainsworth at HasSELborough Bay.

Mawson’s aim was to explore Antarctica’s coast, working west from 158°E, the farthest point surveyed by Terra Nova during Scott’s second expedition. His original intention was to set up three bases, his Main Base being as close as possible to the South Magnetic Pole in order to fulfill the extensive program of magnetic studies.

The region he had chosen to investigate is one of the most inaccessible and forbidding in Antarctica. Difficult to approach through the masses of ice congregating offshore, the coast itself consists largely of ice cliffs, with very few rock exposures and even fewer possible landing places. Abandoning his plans for a base in Adélie Land, Mawson now searched for a site for Main Base. On 8 January 1912 at 67°00’S, 142°40’E, he entered a promising bay where he found a rocky outcrop about a mile long and a half-mile wide, above which a gentle ice slope rose, affording apparently easy access to the ice cap beyond. At Cape Denison in Commonwealth Bay, Mawson decided to establish his station. Once unloaded, Aurora sailed on 19 January to search for a suitable site for West Base, where an eight-man party led by Frank Wild would winter (see Wild, Frank).

At Cape Denison, Mawson's party made rapid progress in constructing two huts, which were sufficiently complete by 30 January for the men to sleep inside. This was a considerable relief, since it was already clear that the area chosen for Main Base was subject to exceptionally strong winds. It was soon to be known as the “Home of the Blizzard.” Cold katabatic winds swept down from the ice sheet all along this coast, bringing heavy accumulation of snow and hence the vast quantities of ice offshore. At Cape Denison in particular, the topography funneled the down-pouring wind into a constricted channel, through which the air rushed almost continuously, frequently in excess of 60 miles per hour. This was literally the windiest place on Earth, the maximum wind speed recorded being a 200-mph gust on 24 May. Clearly, this had considerable implications for the conduct of the expedition. Anything not tied
down would be blown away, even very heavy objects like the 140-kilogram lid to the air-tractor case. It took five months before the two radio masts could be erected, and, once up, they were almost immediately smashed down again in a storm. The men kept themselves confined to the huts whenever they could, digging tunnels in order to reach stores and equipment necessarily sited outside. Once outside, they leaned into the wind at angles in excess of 45 degrees, and crampons were essential to prevent them being blown off their feet.

Mawson, however, had not come to Antarctica to be confined in a hut. He made his first exploratory journey in late February, though he was able to go only a few miles before being forced to return. With winter approaching its end, Mawson, Cecil T. Madigan, and Lieutenant Belgrave E.S. Ninnis set out on 9 August to dig an ice cave—“Aladdin’s Cave”—at the top of the slope leading onto the ice plateau, 5.5 miles from the huts. There, at the point of departure for all planned sledging journeys, a supply depot was established. During a temporary lull in the strong winds, three parties departed in September, one reaching 50 miles from Cape Denison, where another depot was laid. Atrocious weather persisted through October, with no significant sledging possible.

The four main sledging journeys set out in November, one west along the coast, one south toward the South Magnetic Pole, and two east, one along the coast and one inland with the intention of traveling as far eastward as possible. Mawson gave clear instructions that all parties must be back at base by 15 January in order to be picked up by Aurora.

The western party of Francis H. Bickerton, A. J. Hodgeman, and Dr. L. A. Whetter had the dubious assistance of the air-tractor. A 10-meter Vickers I aircraft, it had crashed during a trial flight at Adelaide and was brought to Antarctica without its wings for haulage purposes only. Indeed, it did prove useful in pulling heavy loads up the icy slope to Aladdin’s Cave, but during the western journey it had to be abandoned the first day out. Despite the air-tractor’s failure and the generally atrocious weather, the three men had succeeded by 26 December in reaching Cape Robert, 158 miles from the base, along the way making the first discovery of an Antarctic meteorite. By 17 January they were back at Aladdin’s Cave.

The southern party of Lieutenant Robert Bage, Frank Hurley, and Eric N. Webb set out on 10 November, aided for 60 miles by a support party of Herbert D. Murphy, Dr. John G. Hunter, and Charles F. Lasseron. Farthest south was reached on 21 December (at 70°37’S, 148°10‘E), just 50 miles short of the South Magnetic Pole according to the 89°43.5° dip measured by the magnatician Webb. With food and time running short, they turned back, making excellent speed on the return journey with the wind now at their backs and filling their sledge’s sail. They reached base on 11 January, having traveled more than 600 miles.

The eastern coastal party of Madigan, Percy E. Correll, and Dr. Archibald L. McLean departed on 8 November. Successfully crossing two large glacier tongues extending far from land, which were later to be named for their colleagues Mertz and Ninnis, they reached a farthest east of 68°18’S, 150°12‘E, soon afterward approaching the magnificent basalt outcrop Horn Bluff, 270 miles from Cape Denison on 18 December. With food stocks running very low, disaster was narrowly averted when Madigan made a solo journey to a depot to return with much-needed provisions. By 17 January they were back at base.

Thus two days after Mawson’s deadline of 15 January, and with Aurora at Cape Denison since the 13 January, all except Mawson’s own far eastern party were now ready to sail for West Base, where Wild’s party too must be collected from its insecure location on the Shackleton Ice Shelf.

Mawson had left Aladdin’s Cave on 10 November, accompanied by the Swiss mountaineer and champion ski-runner Dr. Xavier Mertz and the British army officer Ninnis with three sledges pulled by seventeen dogs. Having crossed the major glacier soon to be named for Mertz, they reached another where they were held up for three days by a blizzard. On 14 December, Ninnis was lost down crevasse. For three
hours they called for him, but there was no reply. Lost with Ninnis were the six best dogs, the tent, and most of the food and spare clothing. The one remaining sledge carried food for the men for ten days, but nothing for the dogs. Far inland, there were no seals or penguins to replenish their supplies, and no depots had been laid since they had planned to return home by an easier route farther inland. They were 315 miles from Cape Denison.

First fashioning a crude tent out of a spare tent cover draped over a sledge runner and skis, and feeding the dogs on scraps of worn-out boots and clothing, Mawson and Mertz set out for home. The next day, the weakest of the six remaining dogs was killed and fed to the others, the liver being saved for themselves. By 29 December, there were no dogs left to kill, and they were still 160 miles from the base. Two days later, Mertz requested that he be fed no more dog meat, stating that it did not agree with him. Mertz was no longer the even-tempered, resourceful man whose qualities had singled him out for selection by Mawson for this most difficult journey. He was morose and showed disturbing signs of giving up. Visibly weakening over the following days, he insisted on resting on 5 January, and the next day Mawson had to haul him on the sledge, making only 2.5 miles. Again Mertz insisted on rest, soon afterward becoming delirious before dying on 8 January. Mawson was now alone and still 100 miles from Cape Denison.

After burying Mertz in a sleeping bag, Mawson lightened his sledge by sawing it in half, then fashioning a sail out of Mertz’s Burberry jacket to help pull it. He too was in a bad way. His toes were frostbitten and showing signs of gangrene. More mysteriously, the skin was pealing off his body. When he removed his boots, he was horrified to discover that his soles had become completely separated from his feet and had to be tied on to cover his raw and bleeding flesh. Unknown to Mawson, he was suffering from hypervitaminosis. Whereas scurvy is caused by lack of vitamin C, Mawson’s condition was due to an excess of vitamin A, which he and Mertz had innocently consumed by eating dog liver.

For three days, Mawson was trapped in his tent by wind and blowing snow, as he fought with himself for the resolve to continue his struggle to survive. The blizzard abating, he could barely manage 1 mile on 15 January, the same day that he had given as Aurora’s deadline for departure from Commonwealth Bay. Two days later he fell into a crevasse, climbed out with great difficulty, and then immediately toppled back into it. Hanging in his harness, he contemplated whether it might not be preferable simply to end his struggle right there. Thoughts of his fiancée and family inspired him to make one final attempt, and he inched himself up, finally emerging at the surface feet first.

Twelve days later, he was still making painful and slow progress. Salvation came in the form of a snow cairn built only five hours before by a search party. Unable to find Mawson, they had left a note for him together with life-giving food. Aurora was still in Commonwealth Bay, and he was just 23 miles from Aladdin’s Cave. On 1 February, he reached the cave but now was unable to descend the steep ice slope to the hut without his long-abandoned crampons. For one week, he was trapped before being able to descend, finally reaching the hut on 8 February, just in time to see Aurora disappearing into the distance as it steamed away to relieve West Base. Mawson was not, however, to be abandoned; six men had been left behind to wait for him. Discovering his emaciated figure, they immediately radioed Aurora to return. This it was unable to do. Mawson would have to spend another winter in Antarctica.

It was not until 12 December that Aurora returned to collect Mawson and his companions. Even now, rather than making directly for home, they spent more than a month investigating the coast from Mertz Glacier Tongue west to the Gaussberg until Aurora finally headed north on 6 February 1914. Reaching Adelaide on 26 February, Mawson returned to knighthood and marriage to Francesca Adriana “Paquita” Delprat, thoughts of whom had inspired him with the will to live in his darkest moments.

The Race to Enderby Land, 1929–1931

The expansion of the Southern Ocean whaling industry to new areas beyond the South Atlantic precipitated a scramble for Antarctic territory. Money was to be made from the sale of whaling licenses, and with the prospect also of future mineral discoveries, claims to sovereignty in Antarctica became a matter of national interest. Now professor of geology at the University of Adelaide, Mawson expressed concern when France laid claim to Adélie Land, whose coast had been discovered in 1840 by the French explorer Jules Dumont d’Urville, before being subsequently explored by Mawson in 1911–1914. Adélie Land lay directly south of Australia and might be considered to fall most appropriately within its zone of influence. Mawson, however, was to become much more concerned when the whaling entrepreneur Consul Lars Christensen initiated a program in which new—and sometimes old—discoveries were claimed on behalf of Norway. It now appeared that Christensen was set to annex Enderby Land, claimed for Great Britain by the sealer John Biscoe in 1831 but not seen since. Christensen seemed intent on annexing for Norway all lands between 20°W to 60°W, whereas Australia wished to exercise claims as far west as 40°W. The question became who would reach those areas first.

With the British, Australian, and New Zealand governments convinced that some action must be taken, a joint expedition was hurriedly assembled. Known in full as the British, Australian, and New Zealand Antarctic Research Expedition (BANZARE), the expedition was to be led by Mawson with Aurora’s former captain, Davis, as second-in-command and captain of Discovery, the expedition ship built for Scott’s first expedition. The expedition’s primary aim was to reassert sovereignty claims made on behalf of Great Britain by a num-
ber of sealers and explorers since the 1830s. Mawson was to chart the coastline of Antarctica between George V Land and Enderby Land, landings were to be made to raise the Union Jack, and reconnaissance flights were to be made inland. In addition, scientific work would be carried out, with particular attention being paid to the numbers, species, and distribution of whales.

Members of the expedition included ship’s officers K. N. MacKenzie, W. R. Colbeck, and J. B. Child, W. J. Griggs (chief engineer), B. F. Welch (second engineer), and A. J. Williams (wireless operator); together with a strong scientific staff consisting of Professor T. Harvey Johnston (chief biologist), Dr. R. A. Falla (ornithologist), Harold O. Fletcher (assistant biologist), A. Howard (hydrologist), Dr. W. W. Ingram (medical officer and biologist), James W. S. Marr (marine biologist), Commander M. H. Moyes (meteorologist). Flight Lieutenant S. Campbell and Air Pilot E. Douglas were to fly the Gipsy Moth biplane, with Frank Hurley as photographer. The party included several veterans of Mawson’s first expedition, and marine biologist Marr had accrued substantial Antarctic experience with Sir Ernest Shackleton (1921–1922) and subsequently with the Discovery Investigations, from which his services had been co-opted.

Discovery sailed from Cardiff on 10 August 1929, reaching Cape Town on 7 October, then sailing from there on 19 October. Alarming rumors circulated at Cape Town concerning supposed plans by Christensen for his ship Norvegia to race Discovery to Antarctica, where spiked flags were to be dropped from aircraft. Mawson was all too aware that in Hjalmar Riiser-Larsen, Norvegia’s expedition leader, and Finn Lützow-Holm, he was up against two of the foremost aviators of the age, with Riiser-Larsen having piloted Roald Amundsen’s pioneering flight toward the North Pole in 1925 and navigated the airship Norge in its 1926 crossing of the Arctic Ocean. Mawson restricted himself to a telegram stating that his was a scientific expedition, that the “British sphere . . . extends from south of South Africa to south of New Zealand,” and that scientific expeditions should cooperate rather than compete with each other (Price 1962, 26). Discovery was a fine ship in the ice, but it was slow. In any race against Norvegia there would only be one winner.

En route to Antarctica, Discovery first visited the Crozets, Kerguelen, to take on coal and then Heard Island before finally heading due south on 3 December. Mawson’s plan was to take advantage of the prevailing easterly winds close to the continent and to sail from east to west, realizing, however, that this would delay his arrival at Enderby Land, where sovereignty was most likely to be contested with Norway. He was in sight of possible land on 26 December; the first definite discovery was made five days later when Campbell and Douglas overflew ice-covered land at 66°11’S, 65°10’E. Their sighting was confirmed by Mawson and Campbell on 5 January 1930 and named Mac. Robertson Land for the Melbourne businessman MacPherson Robertson, who had contributed handsomely to the expedition. On 8 January, Mawson received a cable forcing him to abandon his planned scientific exploration of his new discovery and proceed west as fast as possible. A press report had been received announcing discovery of new land by Norvegia east of Enderby Land, well within the area over which Mawson was seeking to assert the British claim.

By 13 January, Discovery was at 65°50’S, 53°30’E, anchored off the coast of Enderby Land at Proclamation Island. There, Mawson landed to raise the Union Jack and read a text proclaiming the British Empire’s claim to sovereignty over all territories south of 65°S and between 47°E and 73°E, including Enderby and Kemp Lands, as well as the newly discovered Mac. Robertson Land. The next day another ship came into view. It could only be Norvegia. After an exchange of polite messages, Riiser-Larsen asked to come on board. With so much written in the newspapers about his voyage, he wanted to tell Mawson where he had been. Neither side was totally frank in this meeting. Riiser-Larsen did speak of raising the Norwegian flag off Enderby Land, but not of his government’s immediate repudiation of this act. Mawson on his behalf presented his explorations of Mac. Robertson as more complete than they actually were. He knew that there was still unexplored land farther east, and he did not want Norvegia to go looking for it. Despite the leaders’ understandable lack of total frankness, the meeting was cordial, and an agreement was reached that Riiser-Larsen would not explore east of 45°E, though Mawson would have preferred 40°E. Both ships now turned about to explore their respective areas, Mawson with instructions to land on Enderby Land wherever possible—to date he had managed to land only on an island—and to raise the flag at each sight of land. The latter proved considerably easier than the former, though flights were made over land and a flag dropped. Davis and Mawson were increasingly at loggerheads, as Mawson sought to get in closer to the coast where a landing might be possible, whereas Davis, as Discovery’s captain, was increasingly concerned for the safety of his ship. Davis was also worried by the dwindling supply of coal, which he now considered just sufficient to reach Kerguelen, where more coal could be taken on. On 26 January, he insisted that Discovery turn north, much to Mawson’s disappointment, with the weather perfect for air survey and a continental landing possible. By 8 February, Discovery was at Kerguelen. Its stay was prolonged by bad weather, and on 2 March Mawson abandoned his hopes of steaming south again and instead headed for Australia, where Adelaide was reached on 31 March.

Discovery’s second season was less eventful but still achieved significant results. With Davis declaring himself unavailable, Chief Officer MacKenzie took over as captain, the only other significant changes in staff being the replacement of Moyes by A. L. Kennedy, the return of Marr to Discovery Investigations, and the appointment of Lieutenant K. Oom as cartographer.
On 22 November, *Discovery* sailed from Hobart, heading first to Macquarie Island, then searching in vain for Royal Company and Emerald Islands, two reported islands now known not to exist. Mawson's plan for this season was to take on coal from a Norwegian whaling ship near the Balleny Islands, then revisit his old base at Commonwealth Bay in George V Land before heading westward along the coast of Antarctica. If possible he would go as far as Enderby Land, in the process connecting together previous discoveries considered as definite, as well as reexamining those reported by Wilkes in 1840, of which Mawson was more skeptical.

By 4 January 1931, *Discovery* was at Commonwealth Bay, where Mawson landed to claim possession of George V Land. Magnetic measurements taken indicated substantial movement in the South Magnetic Pole since 1914, which was estimated as being not more than 250 miles away. From Commonwealth Bay, *Discovery* made its way east along the coasts successively of Adelie Land, Wilkes Land, Banzare Land, Queen Mary Land, Princess Elizabeth Land, and finally Mac. Robertson Land. Of these, Banzare Land and Princess Elizabeth Land were new discoveries, made from the air respectively on 15 January and 9 February. Wilkes Land was Mawson's preferred name for Dumont d'Urville's "Clarie Land." No land was found where reported by the British sealer John Balleny in 1839, but land was found farther to the south, and so Mawson attached Balleny's name, "Sabrina Coast." Further explorations ended on 19 February, when *Discovery* headed north in response to MacKenzie's concern about lack of coal. As in the previous year, Mawson was very reluctant to leave Antarctica and later criticized his captain for not being entirely frank with him about the amount of coal remaining.

*Discovery's* return to Hobart on 19 March led in time to the British Order in Council of 7 February 1933, which affirmed British sovereignty over all lands south of 60°S between the longitudes of 160°E and 45°E, with the exception of Adelie Land, where French sovereignty was recognized. These territories were to be placed under the control of the Commonwealth of Australia as soon as appropriate legislation was passed by the commonwealth's parliament. Thus it was that on 24 August 1936 the Australian Antarctic Territory was officially established.

The expedition's extensive scientific results were published in a series of reports, on which Mawson spent much of the remainder of his life. Funding exigencies made this a protracted business, and some reports remain unpublished today. Exactly who saw what first is still a matter for debate between Australian and Norwegian scholars, each side insisting on the priority of its own place-names. This is one of the lesser-known Antarctic conflicts, but fortunately it has always been a peaceful one. Mawson's Antarctic heritage is thus complex. Mawson is universally admired as a scientist and explorer, but his political inheritance is not without controversy, at least for Norwegians.

**McClintock, Leopold**

(1819–1907)

The British naval officer Leopold McClintock is best known for discovering the only written records to survive from Sir John Franklin's disastrous expedition to find the Northwest Passage. He had previously established a reputation as the expert on man-hauled sledging, a subject on which he was consulted later in the century during preparations for the expeditions of George Nares and Robert Falcon Scott.

Francis Leopold McClintock was one of many Irish officers participating in the Franklin search. As second lieutenant of HMS *Enterprise*, he accompanied Sir James Clark Ross in 1848 on the longest sledging journey to date by a British naval expedition—500 miles in thirty-seven days. Struck by the enormous effort and the comparatively short distance achieved, McClintock devoted much thought to how techniques and equipment could be improved. He was able to put his ideas into practice on the next Franklin search expedition, when Horatio Austin placed him in charge of sledging arrangements. (McClintock's many innovations are described in the entry Man-hauling.) Further improvements were introduced on Sir Edward Belcher's expedition, enabling him in 1853 to complete a journey of 1,408 miles in 105 days and, in the process, chart 768 miles of previously unknown coastline.

**Relics of Franklin's Expedition Are Found on King William Island, 1857–1859**

Lady Franklin, Sir John's wife, had long considered that the mystery of his disappearance might be discovered west of Boothia Peninsula. This suspicion was confirmed in October
1854 when John Rae reached London with artifacts obtained among the Inuit of that region that were unmistakably from Sir John's expedition. At this time the Royal Navy was fully preoccupied with the Crimean War, and not until its conclusion in 1856 could Lady Franklin appeal for a new search to be mounted. Receiving no reply, she was forced to equip a fifth expedition from her own limited resources, obtaining some additional funding through public subscription. McClintock was invited to command the 177-ton steam yacht Fox, a former pleasure craft that was now refitted for ice work. His voyage was to have three objectives: the rescue of possible survivors, the recovery of written records, and the confirmation of Franklin's claim to have discovered the Northwest Passage. As with Lady Franklin's other expeditions, all the officers were volunteers since she could not afford to pay salaries. McClintock and second-in-command Lieutenant William Hobson were granted leave of absence by the Admiralty. Other officers included the sailing master Allen Young, who had also contributed £500, and Dr. David Walker, who was to serve as surgeon, naturalist, and photographer. Seventeen of the twenty-five men on board had participated in previous Franklin search expeditions. Among them was Carl Petersen, interpreter and dog handler, who had sailed with William Penny in 1850–1851 and Elisha Kent Kane in 1853–1855. Fox was provisioned for twenty-eight months, though McClintock hoped to be out for no more than one winter.

They departed from Aberdeen on 2 July 1857; twenty-four dogs were acquired in West Greenland, where the Inuk Christian was recruited to assist Petersen. Very heavy ice was encountered in northern Baffin Bay, and Fox became beset in Melville Bay. For eighteen months, it drifted south 1,395 miles before being finally released on 25 April 1858. It was a most dispiriting start to the expedition, but McClintock remained determined to fulfill Lady Franklin's instructions. After being refitted at Godhavn, Fox was ready to head north again by mid-June; Lancaster Sound was entered, and through it Beechey Island was reached on 11 August. There, a memorial tablet was erected to Sir John and his companions, commemorating their wintering in 1845–1846. South of Beechey Island lay Peel Sound, the most likely route through which Franklin could have reached the vicinity of King William Island, where the Inuit reported seeing his abandoned ships. McClintock, however, found ice stretching from shore to shore, and although there were signs that this would soon break up, he could not afford to wait. Instead, he made for Prince Regent Inlet—first checking the state of the depot at Port Leopold—before heading south to Brentford Bay. William Kennedy had reported the possible existence of a channel leading west, through which McClintock hoped to reach King William Island. Again, he was to be disappointed. Bellot Strait indeed lies between Somerset Island and Boothia Peninsula, but a surging tidal current prevented McClintock's first attempt to get through, and when he did reach the other side it was to see ice blocking his way farther west.

Winter quarters were established at Port Kennedy in Brentford Bay, and preparations were made for the coming spring, when several long slogging journeys would be undertaken. In the two previous expeditions organized by Lady Franklin to Prince Regent Inlet, a primary objective had been to make contact with the Inuit of Boothia Peninsula, since she considered it likely that if anyone knew of Franklin's whereabouts, it would be them. This had been a prescient strategy, but unfortunately it was not carried through by either Charles Forsyth in 1850 or Kennedy in 1851–1852. Very early in the year, on 17 February 1859, McClintock set out with two dog teams driven by Petersen and quartermaster Alexander Thompson. Crossing over to the west coast, they sledged south to Cape Victoria. There, several relics from Franklin's expedition were obtained from the local Inuit—spoons and forks, a medal, part of a gold chain, among other items. None of them had seen the white men alive, but they knew of a ship being crushed by ice west of King William Island whose crew had succeeded in reaching land.

The main journey began on 2 April. At Cape Victoria, Hobson separated to follow the northern and western coasts of King William Island. McClintock crossed Simpson Strait to visit islands off the Back River estuary before returning to sledge west along the southern coast of King William Island. Along its desolate shores, he found an unburied body and other objects testifying that he was tracing in reverse the last desperate march of Franklin's men. These told him much—too much—though what he was seeking was some form of written record. The large cairn built by Thomas Simpson at Cape Herschel seemed the likeliest place to find this, but the cairn had been partially dismantled by the Inuit, and whether it had once contained a message was unknown; nothing was found. Continuing along the west coast, McClintock came upon a freshly built cairn. In it was a note from Hobson. He had discovered the remains of a campsite, many artifacts, and, most important, two records, one providing a succinct summary of Franklin's course up to the entrapment of Erebus and Terror off Point Victory in 1846. Notes appended later added that Sir John had died on 11 June 1847, the vessels had been abandoned on 22 April 1848, and 105 survivors had set out for the Great Fish River (Back River). Fifty miles farther south, in Erebus Bay, Hobson's party had also found an 8-meter boat-sledge laden with apparently useless possessions—cutlery and books, among other items—and, within it, two bodies. McClintock continued on to complete a circuit of the island but found nothing more. The failure to find a journal or further written documentation was particularly disappointing. It seemed likely that whatever records had existed had been scattered by the winds, after possibly first being rifled by the Inuit, for whom such objects held no interest.
By the end of June, all were back at the ship, including Young, who had explored the previously unvisited coasts of southern Prince of Wales Island and southwest Somerset Island. The ice clings late to the western shore of Prince Regent Inlet, and not until 10 August did it open sufficiently to allow Fox to leave its winter quarters. It arrived back at London on 23 September.

Since McClintock’s expedition, many have searched King William Island for clues to throw light on the end of Franklin’s expedition, which remains mysterious in several respects. Despite continuing efforts, most of what we know today is based on what McClintock found. He had no survivors to bring back to Lady Franklin and the other families, but he could at least confirm that Franklin’s men, in making the journey from Point Victory to the Great Fish River, had completed the first crossing of the Northwest Passage. In addition to discovering the Franklin relics, his expedition succeeded in charting 800 miles of new coastline, including the last section of the North American mainland between Bellot Strait and Cape Victory.

McClintock was to visit the Arctic once more, when he commanded Bulldog in 1860, conducting soundings preparatory to the laying of a telegraph cable between Europe and North America. One route being considered would lay the cable across the Greenland ice sheet, but nothing came of that. As a member of the Admiralty’s Arctic Committee and on the council of the Royal Geographical Society, McClintock had a prominent role in plans for the next major British naval expedition to the Arctic in 1875, to be led by George Nares. Not surprisingly, his advice was sought with regard to sledging arrangements; he described his own experiences with man-hauling but also suggested that dogs be taken. He gave similar advice when preparations were made for Robert Falcon Scott’s Antarctic expedition twenty-five years later.

**See also:** Austin, Horatio; Belcher, Edward; Franklin, Jane; Franklin, John (1845–1848); Franklin Search Expeditions; Kane, Elisha Kent; Kennedy, William; King William Island; Man-hauling; Nares, George (1875–1876); Northwest Passage; Peel Sound; Penny, William (1850–1851); Prince of Wales Island; Rae, John (1853–1854); Scott, Robert Falcon (1901–1904); Somerset Island

**References and further reading:**
McClure, Robert (1807–1873)

One of the most arresting of all polar images is Lieutenant Samuel Cresswell’s painting of HMS Investigator, apparently being crushed between giant ice floes. How could any vessel survive such a situation? And yet Investigator did—not once but several times—before its crew and captain, Robert McClure, completed the first crossing of the Northwest Passage.

The Discovery of the Northwest Passage, 1850–1854

Robert John LeMesurier McClure’s introduction to the Arctic was as mate of HMS Terror during George Back’s unlucky expedition of 1836–1837. He next visited the region in 1848–1849 as first lieutenant aboard HMS Enterprise under Sir James Clark Ross. When Ross returned to Great Britain, having discovered nothing concerning the fate of Sir John Franklin’s missing Northwest Passage expedition, an impasioned public outcry ensured that the Admiralty organized further expeditions to search for him overland, as well as from east and west through the North American Arctic. McClure was promoted to commander and placed in charge of HMS Investigator, assigned to accompany Enterprise to the Pacific under the overall command of Richard Collinson. Proceeding north to Bering Strait, the two ships were to head east through the Beaufort Sea, where it was hoped that they would meet Franklin on his way west. At forty-three, McClure was old to be receiving his first command. He was determined to make the most of what might be the only opportunity to make his name.

The two ships sailed from London on 10 January 1850. Investigator was a slow sailer, and McClure had difficulty keeping up with Collinson, who therefore decided that the two ships should sail separately, arranging for them to meet up at Honolulu or, failing that, off Cape Lisburne, Alaska. McClure missed Collinson by one day at Honolulu and hurried after him through the North Pacific, aware that if he did not catch him before the next rendezvous, Collinson might decide to enter the Beaufort Sea with HMS Plover. In this circumstance, Investigator would take over Plover’s decidedly unglamorous role of waiting for Franklin, a task holding little appeal for the ambitious McClure. Learning from an American trader of a shortcut through the Aleutian Islands into the Bering Sea, he took that rather than the much longer recommended route west of the Aleutians. This placed him ahead of Collinson when he met Henry Kellett in HMS Herald on 31 July. Although Kellett was McClure’s senior, he hesitated to order him to delay but merely recommended that he wait, in the expectation that Enterprise was just a few days behind. McClure, however, insisted on pressing on and was rewarded by successfully rounding Cape Barrow on 7 August. Investigator was the first exploring ship to enter the Beaufort Sea.

With the help of the Moravian missionary Johann Miertsching, on board as interpreter, McClure quizzed the local Inuit for news of Franklin, but he learned nothing. Beyond the Mackenzie Delta the ice opened up to the north. Soon land was within view; McClure named it “Baring Land,” unaware that this was “Banks Land,” first seen by Edward Parry in 1820. Between it and Victoria Island farther west, they discovered Prince of Wales Strait. Leading promisingly northwest, McClure entered it and by 27 September had reached 73°10’N, just 30 miles short of Melville Sound and completion of the Northwest Passage. There, Investigator became firmly beset before slowly drifting back with the ice to 72°50’N near the Princess Royal Islands, where winter quarters were established in late September. Before winter began, there was time for McClure and second master Stephen Court to sledge along the strait to the northeastern extremity of Banks Island, from where they were able to confirm just how close they had come to reaching Melville Sound.

From 18 April 1851, slogging parties were sent out to explore the land to either side of Prince of Wales Strait. Lieutenant Samuel Cresswell and mate Robert Wynniatt followed the strait to its northern end. Cresswell then headed northwest along the coast of Banks Island, turning back just short of Mercy Bay, as Wynniatt investigated the north coast of Victoria Island east to near 110°W. Meanwhile, Lieutenant William Haswell sledged along the southwestern coast of Victoria Island to Prince Albert Sound. During this journey, Haswell encountered Inuit but was unable to communicate with them. With Miertsching’s assistance, they subsequently informed McClure that the land to his east formed one large island and that John Richardson’s “Wollaston Land” and Thomas Simpson’s “Victoria Land” were one and the same.

McClure was determined to make another attempt to get through the strait to complete the Northwest Passage. As soon as Investigator became partially free in mid-July, he took it northward. It was beset again, and on 15 August a northerly drifting ice stream brought it to 73°43’N, where it was halted by a solid wall of ice, frustratingly close to Melville Sound. Two days later, McClure decided to try his luck instead around the west coast of Banks Island. Hopes were raised when a rapid passage was achieved along the south and west coasts, only to be dashed on the north coast, where Investigator met very dense ice. On 20 August, it was once more beset and faced imminent shipwreck among violently disturbed ice. A westerly gale pinned it between the shore and great blocks of multiyear ice. Escaping this peril, it was then driven east with the heating pack, until released in mid-September to find safety in the coast’s one safe anchorage.

Mercy Bay was well named, but McClure was to find it both a refuge and a trap during the eighteen months he spent there. Beyond the dense ice stream lay Melville Island, where Edward Parry had wintered in 1819–1820 at Winter Harbour. A large block of sandstone—“Parry’s Rock”—provided a natural point to leave a record. Between 11 April and 11 May 1852, McClure and Court sledged across the strait, later named for
McClure, to deposit a message giving details of *Investigator*’s voyage, present whereabouts, and future plans. This was a journey that should probably have been undertaken the previous year, and McClure was to regret not having done so when he found a note from Leopold McClintock dated twelve months earlier. McClure could only hope that this did not mean that Winter Harbour would not be visited again.

Another winter was spent in Mercy Bay on reduced rations. Until now, the general health of the crew had been good, but with limited fresh meat available from hunting, scurvy began to spread, and Wynniatt became aggressively insane. McClure, however, remained as determined as ever to complete the Northwest Passage. Selecting the fittest men to remain with him to await the possibility of *Investigator* being freed to continue its voyage, he divided the others into two parties: one to make for the Coppermine River on the mainland, the other to head east to Port Leopold, Somerset Island, where a depot had been left behind by Ross. Prospects for both groups were slim in the extreme. All was ready for departure when a lone figure was seen hurrying across the ice toward the ship on 6 April 1853. This was Lieutenant Bedford Pim of HMS *Resolute*, whose captain, Henry Kellett, had learned of McClure’s presence from the note at Winter Harbour and had sent Pim to inform him that there were two British vessels on the southern coast of Melville Island.

It might be thought that McClure would have immediately given the order to abandon ship and followed Pim back to safety. This he did not do. Intent on claiming the parliamentary award of £10,000 for the officers and crew of the first vessel to complete the Northwest Passage, and to avoid having to share this money with all those on board Kellett’s ships, he carefully avoided any action implying that his transit was achieved only with Kellett’s assistance. Instead, he sent his weakest men to Kellett while he remained with *Investigator*. Only when the latter sent his surgeon to examine the health of those “volunteering” to stay on with McClure, and learned of their shocking condition, did he order McClure to abandon ship and bring the remainder of his men to Melville Island.

The saga of the “Investigators” did not end there. Before returning to Great Britain, most of them had one more winter to spend in the Arctic, when Kellett’s ships became beset in Melville Sound. When they too were abandoned, the transit through the Passage was completed by marching across the ice to Beechey Island, from where they were shipped
Medals

419

home in three overcrowded storeships. Before a committee set up to examine his claim to the parliamentary award, McClure brashly asserted that the Passage would have been accomplished with or without Kellett’s help. The committee took him at his word and agreed that the money should be paid as he requested. The truth was that a disaster of near Franklinian proportions had been avoided by only the narrowest of margins.

See also: Back, George (1826–1837); Banks Island; Collinson, Richard; Franklin, John (1845–1848); Franklin Search Expeditions; Kellett, Henry; McClure Strait; Melville Island; Northwest Passage; Parry, Edward (1819–1820); Ross, James Clark (1848–1849); Victoria Island (Canada)

References and further reading:

McClure Strait (Canada)

This westernmost section of the Parry Channel lies between the Beaufort Sea and Melville Sound, with Banks Island to the south and Prince Patrick, Elgintion, and Melville Islands to the north. It was first reached by Edward Parry in September 1819, during his attempt to sail through the Northwest Passage to Point Barrow. Parry made another attempt the following year, again meeting impenetrable ice. He noted that ice conditions made these waters particularly unfavorable for navigation. Indeed, multiyear ice from the polar pack generally clogs this strait, moving slowly eastward into an increasingly congested channel.

The strait is named for Robert McClure, who led the sledding party making the first journey across the ice in April 1852. The next crossing was made by Bedford Pim of Henry Kellett’s expedition in March 1853. (For an account of how members of McClure’s expedition were rescued across it, see the entry above.)

Joseph-Elzéar Bernier sailed halfway through the strait in 1908 in an exceptionally favorable year. Since his instructions did not encompass completing the Northwest Passage, he made no attempt to complete a transit. Two years later, he found the strait unnavigable. The first successful transit was completed by USCGC Northwind in August 1954. Despite icebreaker support, the 155,000-ton tanker SS Manhattan failed to reach Melville Sound via this route in 1969 and had to be diverted through Prince of Wales Strait.

See also: Bernier, Joseph-Elzéar (1908–1909, 1910–1911); Kellett, Henry (1852–1854); McClure, Robert; Northwest Passage; Parry, Edward (1819–1820)

Medals

Medals for polar exploration and research are awarded by several countries. This entry, written by Admiral John Myres, former hydrographer of the Royal Navy and secretary of the United Kingdom Polar Medal Assessment Committee, focuses on three British medals: the First and Second Arctic Medals, and the Polar Medal. The First Arctic Medal was the first award of its kind; its recipients included citizens of several nations; the Polar Medal also has been awarded to non-British nationals.

In 1855, a select committee of the House of Commons met to decide whether Captain Robert McClure and his ship’s company in HMS Investigator should be rewarded for being the first people to pass through the Northwest Passage linking the Atlantic and Pacific Oceans. Although the ship had been abandoned in Mercy Bay, Banks Island, in April 1853 after being beset there in 1851, and the men had walked over the ice to join HMS Resolute, it was true that they were the first to pass over the route of the long-sought passage, and the select committee agreed to a substantial monetary reward to McClure and his people. At the same time, the committee suggested that “the country would hail with satisfaction any distinctions or favours that might be conferred upon” captains Henry Kellett and Richard Collinson and the crew of the Resolute; and in the subsequent debate in Parliament, attention was promised “to a further suggestion relative to a Medal.”

These and many other vessels, together with land expeditions, had since 1848 been engaged in searching for Sir John Franklin’s missing expedition. When it became clear that no one would be found alive, there was strong pressure both publicly and within the Admiralty for a medal to be awarded to the participants in this and all the Franklin search expeditions.

The London Gazette announced formal authorization of the Arctic Medal on 5 May 1857, though its purpose was extended to include all expeditions taking place in Arctic waters as far back as 1818, which marked the renewal of British naval exploration, as well as the first participation of Franklin himself in an Arctic expedition. Although there is no documentary proof, it may be this fact, together with Franklin’s later leadership of two land expeditions in 1819–1821 and 1825–1827, that inspired the Admiralty to stretch the award so as to commemorate the extent of his Arctic career, as well as those of some 2,500 men participating in expeditions to reach the North Pole—to search for the Northwest Passage and for Franklin himself—in the four decades following the end of the Napoleonic Wars.

The octagonal medal, struck in silver and showing a sailing ship surrounded by ice floes on its reverse, is suspended from a pure white ribbon. It had to be claimed by those elig-
ble, and it is a measure of the poor communications in the late 1850s, and of the widespread illiteracy then, that only some 1,500 of the 2,500 medals that could have been awarded were ever claimed at the time. Unusually for a British medal, the Arctic Medal was awarded not only to British citizens in the naval or private expeditions; it was also awarded to 192 servants of the Hudson's Bay Company, both European and native North American. It was also awarded to ninety-four American citizens, mainly from the U.S. Navy, who took part in two expeditions in 1850–1851 and 1855. It was also awarded to members of the expedition organized by U.S. naval surgeon Elisha Kent Kane, who, having taken part in Edwin De Haven's 1850–1851 expedition, mounted his own in 1853 and had himself to be rescued by Henry Harstene's 1855 expedition.

This First Arctic Medal was issued unnamed and is thus difficult to authenticate and research. Neither was it issued with clasps for those who went on more than one expedition. A few were privately named, and a very few were modified with the addition of privately manufactured dated clasps. However, the majority of the medals issued give no indication as to which expedition or expeditions the recipient took part, and many individuals returned several times to the Arctic in different ships or for other land expeditions. This medal was awarded only for Arctic exploration, and no award was made to those going to Antarctica with James Clark Ross (1839–1843).

The Second Arctic Medal was awarded to members of the naval expedition of George Nares (see entry) and the two private expeditions of Allen Young, organized in 1875 and 1876 to continue the search for Franklin. During the second expedition, Young also carried Admiralty dispatches for Nares and for this reason was included in the award despite failing to locate Nares. This circular medal, struck in silver and also showing a sailing vessel among ice floes on its reverse, is suspended from a pure white ribbon. In all, 122 men with Nares and thirty-three with Young were awarded the medal. With only 155 recipients, this is a rare medal, and each was individually named. Twelve duplicates are known to have been issued, so there are probably less than 170 total in existence. Nares, Young, and possibly one or two others are believed to be the only recipients of both the First and Second Arctic Medals.

The Polar Medal was instituted in 1904 and continues to be awarded today. It has had the effigies of four monarchs on the obverse, with three different designs (one for King George V and two for Queen Elizabeth II). The design of the reverse, showing Robert Falcon Scott's Discovery in winter quarters, is by Ernest G. Gillick, and the obverse of the current medal, showing the Queen's head, is by Mary Gillick—a unique occurrence of a reverse being joined some fifty years later by an obverse designed by the widow of the original designer.

The Polar Medal, which is octagonal in shape and suspended from a pure white ribbon, was issued in silver and bronze for expeditions from 1902 to 1939 and in silver only since then. Some 900 have been awarded in silver and 260 in bronze, but in both cases there have been a number with multiple clasps to indicate men taking part in several expeditions, especially up to 1917, so there have been just more than 1,250 individual awards to date. The clasps indicate the region concerned—Arctic or Antarctic and very occasionally both—together with the dates of the expeditions.

Pressure to award a medal such as this followed the return of Scott from his first expedition to Antarctica in 1901–1904, and it was generally awarded to all those who went on the early expeditions thereafter unless misconduct was reported. From Scott's first expedition up to the end of World War I, the medal was given to members of the following expeditions: Ernest Shackleton (1907–1909), Scott (1910–1913), Douglas Mawson (1911–1914), and Shackleton (1914–1917). As a broad distinction, the silver medal was awarded to officers and scientists and to those who went ashore and/or who overwintered, and the bronze medal was awarded to the crews of ships, especially of relief ships not wintering in the south. In the early 1930s, King George V stated that he did not approve of this form of class distinction between officers and crew, and he wished to discontinue the award of the bronze medal. Bronze medals, however, continued to be given until 1939 (awarded to members of Mawson's BANZARE expedition of 1929–1931 and to many of those participating between 1925 and 1939 in the Discovery Investigations). The latter awards were gazetted in 1941 and as a result have the effigy of King George VI on the obverse, despite most of them taking place during King George V's reign (1910–1936).

During the 1930s, silver medals were awarded to members of the British Arctic Air Route Expedition of Gino Watkins (1930–1931), Sandy Glen's Oxford University expedition to North East Land (1935–1936), and John Rymill's British Graham Land Expedition (1934–1937). Several from this last expedition were also with Watkins in Greenland and were the first to receive clasps for both polar regions. The only other medals with King George VI's effigy on the obverse were awarded in silver for the two transits of the Northwest Passage made by Henry Larsen in St. Roch of the Royal Canadian Mounted Police (1940–1942 and 1944). In 1974, one more medal was awarded for the second voyage, being presented to the widow of an Inuk who had accompanied St. Roch during the east-west voyage as hunter and guide.

Two-thirds of all silver Polar Medals have been awarded during the reign of Queen Elizabeth II, the great majority for service in Antarctica. The first Elizabethan medals were gazetted in 1953 for members of Operation Tabarin (1943–1945), the predecessor of the Falkland Islands Dependencies Survey, known since 1962 as the British Antarctic Survey (BAS). Most Polar Medal awards nowadays go to those who have worked with BAS. The last "team awards" were made to members of the Commonwealth Trans-Antarctic Expedition (1955–1958) led by Vivian Fuchs and Sir Edmund Hillary, as
well as those participating in the Royal Society expedition to Halley Bay during the International Geophysical Year (1957–1958).

Since the 1960s, awards have become highly selective, largely because there are now permanent bases in Antarctica manned year-round. Conditions and qualifications for the award are extremely stringent, and it is regarded as an individual distinction presented by the queen at an investiture.

The Polar Medal has been awarded mainly to British citizens and to Australians and New Zealanders. Australia, however, developed its own honours system, including an Antarctic Medal in 1987. The last three Australians to be awarded the Polar Medal received it in 1982. New Zealand, too, is developing its own honours system and is unlikely to award any more imperial medals. The last was in 1993—to the second woman to receive it, Dr. Margaret Bradshaw, a polar scientist who headed New Zealand's Antarctic organization. (Incidentally, the most awards to any one individual were made to another New Zealander, James Paton, a double silver and a triple bronze.) To date, only two other women have received the Polar Medal. Other nations whose citizens have received the Polar Medal include Austria, Canada, Denmark, France, Germany, Russia, and the United States.

**John Myres**

See also: British Antarctic Survey; Collinson, Richard; Discovery Investigations; Franklin, John; Franklin Search Expeditions; Fuchs, Vivian; Glen, Sandy; Hillary, Edmund; Hudson's Bay Company; International Geophysical Year; Kane, Elisha Kent; Kellett, Henry (1852–1854); McClure, Robert; Mawson, Douglas; Nares, George (1875–1876); Northwest Passage; Operation Tabarin; Ross, James Clark (1839–1843); Rymill, John; Scott, Robert Falcon; Shackleton, Ernest; Watkins, Gino (1930–1931)

References and further reading:

**Meighen Island (Canada)**

Located at 79°56′N, 98°45′W, this member of the Sverdrup Islands lies west of Axel Heiberg Island and north of Ellesmere Island, being separated from the first by Sverdrup Channel and from the latter by Peary Channel. Generally low-lying and rising to a small central ice cap, it is approximately 30 miles long and 8–15 miles wide, with a total area of 290 square miles.

There is some question concerning when it was first discovered and by whom. On 13 June 1916, it was reached by Vilhjalmur Stefansson and named for Arthur Meighen (1874–1960), then solicitor-general and later prime minister of Canada. Many years later, Stefansson's attention was drawn to an article published in 1909 by Robert Peary in the *Chicago Daily Tribune*. The article was based on an interview with the two Inuit participating in Frederick Cook's claimed journey to the North Pole and included a map showing an island of size and shape similar to Meighen in precisely the same location. After reviewing the evidence, Stefansson concluded that he must indeed have been anticipated in the discovery of Meighen, almost certainly by Frederick Cook, who had reasons of his own for not claiming discovery. Cook's failure to report seeing Meighen is certainly puzzling given that he describes seeing Axel Heiberg Island 50–80 miles away, but not Meighen just 10 to 15 miles distant. (Some later commentators place him 30 miles away.) According to the testimony of Cook's Inuit companions, he spent one night on an island west of Axel Heiberg, which can only be Meighen.

For Stefansson, the most puzzling issue was Cook's possible reason for denying discovery of the island. Randall Osczewski (1990) suggests that Cook may have left a message there recording his discovery, dated around mid-April 1908. Later conceiving the possibility of fabricating a journey, in which the Pole was supposedly reached on 21 April, it was essential for Cook to ensure that this record was never found. Denying all knowledge of the island was the best way to prevent anyone looking for it, since a discoverer would certainly be expected to leave behind a record. All such speculation is naturally anathema to supporters of Dr. Cook, for whom the map depicting Meighen Island offers seemingly convincing corroboration for the damning testimony of his companions that he never traveled far from land. It is most unlikely that the map records preexisting knowledge of the island among the Greenland Inuit. As with all matters concerning Cook and Peary, the debate will undoubtedly continue.

In 1957, a note was found in the cairn built by Stefansson to commemorate his discovery, which did much to solve another of Arctic Canada's enduring mysteries: the disappearance of the German geologist Dr. Hans Krüger, the Dane Åge Rose Bjare, and their Inuk assistant Akqioq. Intending to search for land north of Ellesmere Island, they had departed from the Royal Canadian Mounted Police (RCMP) post at Bache Peninsula on 19 March 1930 and were never seen again. Two years later, a search expedition mounted by the RCMP and led by Corporal Harry Stallworthy discovered a message from Krüger at Cape Thomas Hubbard, Axel Heiberg Island, stating he had visited Lands Lokk on Ellesmere Island and was planning to continue to Meighen Island. Atrocious ice conditions in Sverdrup Channel dissuaded Stallworthy from following him. The message found by Dr. Ray Thorsteinsson of the Geological Survey of Canada in 1957 was also from Krüger. It referred to reaching the island from Axel Heiberg and his plan to continue on toward Cape Sverre, Amund Ringnes Island. Since Thorsteinsson was unable to find a note recording Krüger's arrival on the latter island, it is probable that his party lost their lives crossing Peary Channel, whether by falling through the ice or from carbon monoxide poisoning, the latter being perhaps more likely given that the ice would have been thick at the time they were traveling (early May). Carbon monoxide poisoning has caused many fatalities on polar expe-
ditions, generally resulting when stoves are used in inade-
quately ventilated tents or huts.

See also: Cook, Frederick (1907–1909); Peary, Robert; Queen Elizabeth Islands; Stefansson, Vilhjalmur (1913–1918); Sverdrup Islands

References and further reading:

**Melville Island (Canada)**

Located at 75°15′N, 110°00′W, this is the second-largest of the Parry Islands and the third-largest of the Queen Elizabeth Islands. It is 200 miles long and 30–130 miles wide, comprising 16,274 square miles. It is separated from Victoria Island to its south by Melville Sound and from Banks Island to its southwest by McClure Strait. Kellett and Fizwilliam Straits separate it from Eglington and Prince Patrick Islands farther west, and Byam Martin Channel divides it from Byam Martin and Bathurst Islands to the east. The interior terrain is rugged, ris-
ing to nearly 1,200 meters. Southeast Melville is generally accessible by sea in summer. The island has had no permanent Inuit population within historic times, though archaeologists have found evidence of past occupation by Thule and earlier peoples.

The island was discovered on 1 September 1819 by Edward Parry and named for Robert Dundas, Second Viscount Melville (1771–1851), first lord of the Admiralty. The first landing was made near Point Ross the following day. Unable to penetrate the dense ice occupying McClure Strait, Parry returned to establish winter quarters at Winter Harbour on 26 September. Following some investigation of the neighborhood for purposes of hunting and exercise, Parry completed a longer journey of 135 miles during June 1820, first traveling north to explore the southern shore of Hecla and Griper Bay, then along Liddon Gulf, and around Dundas Peninsula back to Winter Harbour.

Next to visit was Leopold McClintock, who led a sledding party here in May 1851 during Horatio Austin’s expedition. McClintock explored the southern coast as far as the head of Liddon Gulf for signs of Sir John Franklin. At the same time, the southeast coast was searched by Dr. Abraham Bradford. On 12 April 1852, a sledding party sent across McClure Strait by Robert McClure deposited a message at Winter Harbour stating that HMS *Investigator* was to be anchored in Mercy Bay,
Banks Island. This was found later the same year by Frederick Mecham and reported to Henry Kellett at Dealy Island, where the latter had established winter quarters. Kellett was able to arrange for the rescue of McClure’s crew the following spring. Two of the longest-ever man-hauling journeys were conducted from Dealy Island in 1853 by McClintock and Mecham—the former exploring the northwestern and western coasts, the latter the southern and southwestern coasts beyond Liddon Gulf. Both continued on to discover and explore Eglinton and Prince Patrick Islands, McClintock sledgeing 1,408 miles and Mecham 1,160 miles. In the same year, Sabine Peninsula was investigated by Richard Hamilton and George H. Richards—the latter from Sir Edward Belcher’s expedition also completing a survey of the eastern coast.

Melville Island was claimed for Canada in 1906 when Joseph-Elzéar Bernier landed at Arctic Point. Bernier returned in 1908–1909 and 1910, on the former occasion wintering at Winter Harbour, which afforded the opportunity to survey historic remains there and on Dealy Island. Vilhjalmur Stefansson established two camps through the winter of 1916–1917, one near Peddie Point on the southern shore of Liddon Gulf, and the other at Cape Grassy on the north coast. The next two visits were made by A. H. Joy’s Royal Canadian Mounted Police patrol in 1929, and then by Henry Larsen in August 1944, who landed at Point Griffiths, Palmer Point, Dealy Island, and Winter Harbour during his return voyage through the Northwest Passage.

In 1947, Task Force 68 of the U.S. Navy attempted to establish a meteorological station at Winter Harbour during Operation Nanook. After four unsuccessful attempts to reach the island through very heavy ice in Melville Sound, the icebreaker USS Edisto was withdrawn with both propellers damaged; the station was located instead at Resolute, Cornwallis Island.

A stone storehouse—the “Sailor’s Home”—remains on Dealy Island from Kellett’s expedition. Inside it were placed sufficient provisions, clothing, and equipment to keep sixty men through a winter. To ensure that it was easy to find, he had a tall cairn built on the highest point of the island, with plaques attached indicating the whereabouts of the storehouse in case the latter was buried in snow; it was still standing in 1978, when it was restored. The most visible memorial to Parry’s visit to Winter Harbour is “Parry’s Rock,” which is inscribed with messages commemorating his and later expeditions. The remains of a storehouse built by Bernier in 1908–1909 can also be found here.

See also: Austin, Horatio; Belcher, Edward; Bernier, Joseph-Elzéar; Kellett, Henry (1852–1854); Larsen, Henry (1944); McClure, Robert; Parry, Edward (1819–1820); Parry Islands; Queen Elizabeth Islands; Stefansson, Vilhjalmur (1913–1918)

References and further reading:

**Middendorff, Alexander von**

**Middendorff, Alexander von (1815–1894)**

The delineation of coastlines, mountain ranges, and rivers is but one part of exploration. Even after the first reasonably accurate maps were compiled, much remained to be learned of any imperfectly explored region. What animals and plants are there? If it is inhabited, by which peoples, and what are their customs? Rocks that are unearthed may contribute not only to an understanding of local processes but also to the wider history of geological evolution. Weather conditions similarly aid national and global forecasting. Dr. Alexander Theodor von Middendorff’s expedition to the Taymyr Peninsula in northern Siberia was one of the first truly scientific expeditions, and it was to return having accumulated vast quantities of information relating to all of these subjects.

In 1840, Middendorff—also known as Aleksandr Fedorovich Middendorf—joined an expedition to Arctic Russia organized by the distinguished scientist Dr. Karl Ernst von Baer. Three years earlier, Baer had led a scientific expedition to Novaya Zemlya; he now planned to continue that work. However, when prevented from landing by ice and unfavorable weather, the expedition was directed instead to Kildin Island off the Kola Peninsula. At this date, few scientists had studied the Kola, and Middendorff made a significant contribution by crossing the peninsula from north to south, in the process collecting 138 species of birds and making geological and ethnographic observations. Baer was particularly interested in the effect of increasing latitude on the distribution of plants and animals, and transects such as Middendorff’s provided the best means of testing his theories. Believing that latitudinal effects would be masked in archipelagos due to the moderating influence of the sea, Baer identified the Taymyr Peninsula as the ideal location for further research. Extending north to 77°42’N at Cape Chelyuskin, the latitudinal extent of tundra is greater here than anywhere else in Eurasia. Apart from preliminary surveys made during the Great Northern Expedition, particularly by Khariton Laptev’s detachment, the peninsula was virtually unknown, with enormous scope for scientific study.

**A Scientific Expedition Barely Survives the Taymyr, 1842–1844**

By 1841, Baer had acquired the backing of the St. Petersburg Academy of Sciences for an expedition to the Taymyr, which was also to conduct studies near Yakutsk and in the Amur Valley. As a proven traveler and scientist with broad interests ranging across natural history to ethnography, Middendorff was the acknowledged ideal leader of such an expedition; because he was unable to obtain release from his professorial duties at the University of Kiev until spring 1842, the expedition’s departure was delayed one year to accommodate him.

On 27 November 1842, Middendorff set out from St. Petersburg accompanied by the hunter, artist, and meteorologist Thor Branth, as well as Mikhail Fuhrmann, who was to pre-
pale zoological specimens. Reaching Yeniseysk by way of Omsk and Krasnoyarsk, he learned that the only boats in use on the rivers of the Taymyr were small, native-made canoes of bark and that no wood suitable for boat-building would be found farther north. Since he would undoubtedly need a boat of some size, Middendorff was therefore obliged to purchase timber and woodworking tools in Yeniseysk, continuing on down the frozen Yenisey with four heavily loaded sledges pulled by up to fourteen horses. When the horses were replaced by dogs, no less than twelve were required to pull each sledge. On 10 March 1843, the party reached Turukhansk, the last settlement of any size before the Taymyr, where Middendorff spent four weeks completing his preparations and recruiting three cossacks before setting out again on 6 April, still along the Yenisey to Dudino (present-day Dudinka), his sledges now drawn by reindeer. From Dudino, arrangements had been made to travel with Evenki and Dolgany reindeer herders to Lake Pyasino, and then with a party of Avam Nentsy to Vvedenskoye, where he was joined by Tit Laptukov, an elderly Russian settler who was to act as guide and interpreter. On 27 April, Kusennnoye-Filippovskoye was reached. This was to serve as the expedition’s base, consisting of no more than four log huts. It was also the winter home of the Asya Nentsy reindeer herders, who each year migrated north as far as the upper course of the Taymyr River, down which Middendorff intended to reach the Arctic Ocean. Although the Nentsy were unwilling to provide Middendorff with guides, they did invite him to accompany their annual spring migration. This delayed departure would cut into the short Arctic summer, but Middendorff had no choice but to accept.

Not until 20 May did the Nentsy begin their migration. Leaving Branth in charge at Filippovskoye to maintain a full meteorological record with the assistance of Fuhrmann and the cossack Viktor Tomilow, Middendorff set out with nine sledges pulled by thirty-six reindeer, accompanied by Laptukov, two cossacks—Yegor Daburskiy and Vasily Sedel’nikov—and Vasily Vaganov, a newly arrived surveyor who had been sent by the Academy of Sciences to join him. An epidemic of German measles was sweeping through the Nentsy, and Middendorff, a qualified doctor, did what little he could to help before his party moved north of their summer grazing grounds. On 15 June the banks of the still-frozen upper Taymyr were reached, where a camp was established. While a 4-meter boat, Tundra, was constructed out of the materials laboriously hauled from Yeniseysk, Middendorff spent several weeks studying the local geology and collecting plant and animal specimens. By 17 July, the river was navigable and Tundra completed. Setting out downstream to the very large Lake Taymyr, Middendorff discovered this lake to be considerably more distant than he had been led to believe by his guide. He realized that it would be necessary to relay his supplies rather than risk overburdening the boat with a single load. Further delay followed when contrary winds held him up in the delta above the lake, which was not finally entered until 8 August. Six days later, Tundra began its 100-mile descent of the Lower Taymyr to the Arctic Ocean.

There were now unmistakable signs that the brief summer was coming to an end. Snow fell, and ice was seen forming on shallow puddles. Supplies of food were beginning to run short, and it was with some relief that the ocean was finally reached on 26 August. There, on an island that Middendorff named for Baer, a hut was found dating back more than 100 years to Laptev’s expedition. Two days later, the party headed back upstream amid worrying signs that the river was beginning to freeze over. Depots of fish had been left behind to assist the return, but would they be able to reach them and, beyond that, the Nentsy in time? Time indeed was critical, but fortunately they were to benefit from northerly winds, which enabled them to sail much of the way on the return to Lake Taymyr. There, however, they were held up for a week by a succession of gales. Ice could now be seen forming on the lake, and on 9 September Tundra was badly nipped between a large field of ice and the shore. With the boat damaged beyond repair, they were forced to follow a circuitous route around the lake, dragging a large hand-sledge. Three days later the sledge had fallen apart, and Middendorff himself was unable to go on. Sending his companions ahead to seek help from the Nentsy, Middendorff remained behind with food for two days, no fuel, and only a windbreak for shelter. Not until fifteen days later was he rescued, still alive only because of his good fortune in shooting an injured ptarmigan.

Returning with the Nentsy to Filippovskoye on 23 October, Middendorff stayed there just one week before leaving for Krasnoyarsk, his sledges now laden with the extensive natural history collections acquired by Branth and himself. He arrived at Turukhansk on 1 December; Krasnoyarsk was not reached until 27 January 1844. The first part of his expedition was now complete, but Middendorff still had to conduct further studies at Yakutsk, the Sea of Okhotsk, and the Amur before he returned to St. Petersburg on 18 March 1845. His published report consisted of 4,669 pages together with an atlas, Middendorff himself contributing more than 2,500 pages. The range of subjects covered was remarkable, and the expedition’s work still provides the basis for all subsequent research on the Taymyr. Not until 1900 was another exploring expedition to visit the region, under the leadership of Eduard von Toll.

See also: Indigenous Peoples; Laptev, Khariton; Toll, Eduard von (1900–1903)

References and further reading:
The Search for the Northwest Passage as a Ploy in Imperial Politics, 1741–1742

In 1731, Arthur Dobbs, a member of the Irish parliament, wrote a lengthy memorial advocating resumption of the British search for the Northwest Passage. This ambition had all but been abandoned, apart from James Knight’s disastrous expedition of 1719, after the twin failures of Luke Foxe and Thomas James in the early 1630s. Extensive searches had been conducted in Hudson Bay, Davis Strait, and farther south along the American coast, but Dobbs believed that observations made during Foxe’s expedition, which showed a surprisingly large tidal range in Roes Welcome Sound in west Hudson Bay, indicated the probability of finding a channel through which the Pacific would finally be reached. Dobbs took his proposal for a new expedition to the Hudson’s Bay Company (HBC), where he met a decidedly unenthusiastic response. The HBC’s resources were fully committed to the fur trade, and exploration was risky and expensive. Nevertheless, pressured by Dobbs, the HBC agreed to organize a voyage north from Churchill up the west coast of the bay. From the company perspective, useful trade might be opened up with the Chipewyan Indians and Inuit, but some cursory exploration could possibly be conducted along the way. The voyage duly took place in 1637 and was reported as finding no trace of a passage. Dobbs, however, had an informant at Churchill who let him know that the two vessels had reached just 62°15’N, far south of Roes Welcome Sound, and had made no serious attempt at exploration.

Dobbs’s informant was Christopher Middleton, who had been visiting Churchill on HBC service when the vessels returned. Middleton had originally joined the HBC in the hope of assisting John Scroggs on his voyage to search for survivors from Knight’s expedition. For a company servant, he was unusually interested in exploration and was also distinguished by his expertise as a scientific navigator. In fact, he had first come to Dobbs’s notice through a paper on magnetic variation published by the Royal Society. Knight’s expedition was of particular interest in that he had searched for the Passage in just that region where Dobbs also wished to explore. Regrettably, Middleton had been left behind when Scroggs sailed in 1722 to reach 65°N in Roes Welcome Sound.

Faced by the obstructive HBC, Dobbs decided instead to use his influence with the government, finally obtaining permission for an expedition to be organized when King George II spoke favorably of the project to First Lord of the Admiralty Sir Charles Wager. Middleton, with his interest in exploration, navigational expertise, and extensive knowledge of Hudson Bay, was the obvious choice as leader. He now resigned from the company and was assigned two ships, the bomb-vessel Furnace, and the 150-ton collier Discovery. Middleton sailed in Furnace; his cousin William Moor was given command of Discovery.

In 1741, Great Britain was involved in the War of the Austrian Succession, and there was an acute shortage of skilled sailors. Recruiting able seamen was made even more difficult by the HBC’s deliberate poaching of former company staff back to its service. These problems, together with the need to make major adaptations to the vessels to fit them for Arctic conditions, delayed Middleton’s departure until 8 June 1741. Meanwhile, the HBC’s vessels had left for Hudson Bay by the end of April. Dobbs clearly had the major role in drafting Middleton’s instructions, which stated simply that he was to search for the Northwest Passage near 65°N, that being the farthest point reached by Scroggs, before describing in considerable detail his course of action after the Passage had been found. The company had been forced to give grudging permission for the expedition to winter at one of its trading posts—a wise precaution given the heavy loss of life on several previous expeditions wintering in Hudson Bay, where scurvy, cold, and probably trichinosis had accounted for the majority of deaths. Even so, Middleton was to lose ten men through scurvy during an uncomfortable stay in inadequate accommodations at Churchill, which he had reached on 8 August.

He was not to begin exploration until 30 June 1742, sailing north along the west coast of Hudson Bay to discover Wager Bay at 65°10’N. There, beyond a narrow entrance, a broad expanse of water stretched to the west at precisely the latitude indicated by Dobbs. With ice preventing him from sailing farther north, Middleton sent out four boats to explore the bay. Brief reconnaissance revealed the water to be almost fresh at the westernmost point reached, and the tides came unmistakably from the east. If this was the long-sought entrance to the Pacific, the tides should be from the west. Middleton’s conclusion was clear: There was no hope of finding a passage through Wager Bay. On 4 August, the water was sufficiently open to allow him to resume his course northward, soon coming upon Repulse Bay and the entrance to Frozen Strait. Middleton’s experienced eye convinced him that the Passage would not be found through either of these and that the strong tide through Roes Welcome Sound came from the impassable Frozen Strait. With land and ice all about him to the north, Middleton had no option but to turn about, sailing south to Marble Island to take on fresh water and then back to England; he reached London on 13 October.

It might be imagined that Middleton’s apparently final proof that the Northwest Passage was not to be discovered through Hudson Bay would have led to its being the last expedition sent there to explore for the Passage. Such was not the
case. Just four years later another expedition, this time led by Middleton's cousin Moor, was to be dispatched from Great Britain. Despite having been responsible for Middleton's appointment, Dobbs chose to disregard his conclusions and instead took the side of crew members who argued that Wager Bay was indeed a strait and that, for some reason, Middleton wanted to keep this a secret. The obstruction Dobbs had met from the HBC had convinced him that its monopoly over trade to Hudson Bay must be broken and that the best hope for achieving this was to prove it to be in breach of its charter in not pursuing exploration with sufficient vigor. This would be much more difficult if it was accepted as proved beyond doubt that the Passage was not to be found through Hudson Bay. For two years, he and Middleton exchanged views in a series of acrimonious pamphlets in which, among other claims, Dobbs accused Middleton of having been bribed by his former employers. Dobbs does not appear to have been above lying for his cause, and it is more likely that the witnesses who spoke in his support, and who surprisingly were to include Captain Moor, were themselves bribed by Dobbs, in Moor's case by promise of leadership of a new expedition. For Dobbs, the greater cause for which he was prepared to ruin another man's career was the expansion of the British Empire in North America. This he believed to be ill-served by the sluggish Hudson's Bay Company. Only through opening up trade to all could the British hope to compete with the more enterprising French. See also: Foxe, Luke; Hudson Bay; Hudson's Bay Company; James, Thomas; Knight, James; Moor, William; Northwest Passage

References and further reading:

Mikkelsen, Ejnar (1880–1971)
One of the many Danes largely responsible for exploring the east coast of Greenland, Ejnar Mikkelsen also founded the Inuit colony of Scoresby Sound and led an expedition to search for land reported north of Alaska. His epic journey and enforced wintering for two further years in northeast Greenland during the Alabama expedition is one of the great sagas of polar exploration.

Aged just sixteen, Ejnar Mikkelsen walked 320 miles to apply to join his first Arctic expedition. Since this was Salomon Andrée's disastrous attempt to reach the North Pole in a balloon, Mikkelsen was lucky to be rejected. He approached several other expedition leaders without success before being accepted as a member of Georg Amdrup's expedition to East Greenland, being one of four to participate in a 500-mile journey in an open boat during which a particularly inaccessible coastline was at last surveyed. The following year, he was appointed assistant cartographer on Evelyn Baldwin's expedition to Franz Josef Land. In contrast to Amdrup's well-organized venture, this was ill-led but at least provided Mikkelsen with the opportunity to make the acquaintance of the American geologist Ernest de Koven Leffingwell.

The Search for “Keenan Land,” 1906–1908
In 1905, Mikkelsen was engaged in hydrographic work in West Africa when he received a letter from Leffingwell stating that the latter's father was prepared to sponsor a proposed Arctic expedition to look for land in the Beaufort Sea. The American oceanographer Dr. Rollin Harris had studied the currents north of Bering Strait and concluded that there must be some obstruction causing them to change direction. Whalers too had reported sighting “Keenan Land” some way north of Alaska. With the aid of $5,000 from Leffingwell's father and further funds obtained by Mikkelsen in London and New York, a 66-ton former naval schooner was purchased and renamed Duchess of Bedford. They could not afford to install an engine. While Mikkelsen and Leffingwell sailed north from Victoria, British Columbia, the third member of the expedition, Vilhjalmur Stefansson, made his way down the Mackenzie. The gold rush to Nome was in full swing, and at Port Clarence, Alaska, many of the crew deserted. Some were rounded up with help from the U.S. revenue cutter Theis, whose captain generously supplied replacements, enabling Duchess of Bedford to continue through Bering Strait to Point Barrow, where Roald Amundsen was met, having just completed the first transit of the Northwest Passage. Whereas the tiny Gjøa was able to navigate the shallow coastal waters, which were relatively free of ice, the larger Duchess of Bedford was forced to sail farther from shore and had a much harder time of it during the way west toward Herschel Island. Mikkelsen eventually had to settle for Flaxman Island, 200 miles short of his goal, arriving on 17 August.

The winter was spent preparing for the long sledge journey north across the Beaufort Sea. “Keenan Land” was believed to lie about 300 miles north of the coast. With Stefansson at Herschel Island and unable to join them, the journey would be undertaken by Mikkelsen, Leffingwell, and Storker Storkerson, the sole remaining member of the original crew. They were fortunate to be befriended by the Inuk Sachawachiak, who taught them how to drive dogs. He considered their plans reckless in the extreme but nevertheless helped them over the shattered ice zone immediately adjacent to the shore when they departed in late February 1907. Rabies had reduced the number of dogs to twelve, requiring them to rely on man-hauling more than they had hoped. The ice was exceptionally rough close to the coast, and they had had to carve much of the way with pickaxes until reaching the thicker floes of the polar pack farther out. Regular soundings were taken, indicating the gradually increasing depth of the water and the improbability of nearby land. Having reached some 120 miles from the mainland, they
decided to turn back out of concern that the marked westerly drift of the ice was threatening to take them through Bering Strait into the Bering Sea. After sixty days on the ice, they returned to Flaxman Island to discover *Duchess of Bedford* sinking and abandoned by its crew, which was living onshore in a hut built out of the superstructure.

Mikkelsen was keen to continue the search for “Keenan Land.” Leffingwell, however, now wanted to devote his time to geology and Stefansson to anthropological research. When Storkerson deserted at Herschel Island, Mikkelsen opted to return home, which involved a journey of some 2,300 miles overland, by sledge and on foot, via Point Barrow, Nome, and Fairbanks to Valdez and the Gulf of Alaska.

**Searching for Mylius-Erichsen in Northeast Greenland, 1909–1912**

During a visit to London, Mikkelsen was approached by the newspaper proprietor Lord Northcliffe with the proposition that should he be prepared to lead an expedition to Northeast Greenland to recover the diaries of Ludvig Mylius-Erichsen and Niels Peter Høeg-Hagen, Northcliffe would cover all costs. This was an attractive suggestion, but on further consideration Mikkelsen reluctantly decided that such an expedition could only be paid for by Danish money. Mylius-Erichsen had been lost with two companions in 1907 during the *Danmark* expedition. Although Jørgen Brønlund’s body had been found the following year, together with maps and his diary, the bodies of Mylius-Erichsen himself and cartographer Høeg-Hagen remained to be discovered, despite supposedly lying just a few miles from where Brønlund had died. Although some of the *Danmark* survivors considered nothing more to be learned, so important was the pioneering work carried out by Mylius-Erichsen that his organizing committee was eventually persuaded to commission Mikkelsen to lead another expedition. The Danish government would pay half of the costs, with the remainder raised by public subscription. To keep expenses as low as possible, the expedition would be small, consisting of just seven men, who would sail in the 45-ton sloop *Alabama*, which was equipped with a 15-horsepower engine. Mikkelsen would be accompanied by Lieutenants Vilhelm Laub and C. H. Jørgensen, mates Hans P. Olsen and Georg Poulsen, and carpenter Carl Unger. In Iceland, machinist Iver P. Iversen joined the party, replacing the previous unsatisfactory engineer.

*Alabama* departed from Copenhagen on 20 June 1909; en route to Greenland, they were to collect dogs at the Færøe Islands, but unfortunately the animals were diseased, and replacements had to be found at Ammassalik instead. This detour delayed arrival in northeast Greenland until late August, when they could get no farther north than Shannon Island, where winter quarters were established on 27 August. They were 100 miles south of Danmarkshavn, where Mylius-Erichsen had wintered. On 25 September, Mikkelsen, Jørgensen, and Iversen set out on the first sledging journey, to Danmarkshavn and beyond, laying depots to assist the long journeys planned for the coming year. The sun rose for the last
time on 25 October. Five days later, fox tracks guided them to Brønlund's body, which was searched for further papers before being reburied. Nothing was found; nor were they able to locate the two other bodies. Having stayed out so long from the ship, they had stretched their food supplies to the limit and had 250 miles to travel with rations for just three days. Despite the darkness of the winter night, one depot after another was picked up, and on 16 December they reached Alabama. Five of Jørgensen's toes had to be amputated.

Following a series of further depot-laying journeys early the following year, Mikkelsen set out on 4 March 1910, accompanied by Iversen, Laub, Olsen, and Poulsen. Progress was slow. Having lost so many dogs the previous fall, only twenty now remained, forcing the men to relay the sledges. On 25 March, they left the coastal ice in Dove Bay and climbed onto the Inland Ice. There, near-constant blizzards delayed them further, keeping them in their tents for days on end. On 10 April, Laub, Olsen, and Poulsen were sent back to investigate the mountains of Queen Louise Land, Mikkelsen and Iversen continuing north with two sledges and fifteen dogs. It took six weeks for them to cross the ice cap, and before they reached the head of Danmark Fjord on 12 May, they were reduced to half-rations and had already eaten one of the dogs. Two more had died during the journey. In contrast to the sterile ice cap, the lowland surrounding the fiord appeared to be an Arctic paradise, studded with vegetation and animal tracks, which held out the prospect of good hunting. On 22 May, the first of Mylius-Erichsen's cairns was found. Inside was a note, dated 12 September 1907, containing the important information that he had returned not across the Inland Ice, as previously assumed, but along the coast to the east. Soon afterward, further signs of Mylius-Erichsen were seen: his summer camp and a second message, dated 8 August 1907. This note stated that he had discovered a land connection between Navy Cliff and "Heilprin Land" and had thus proved "Peary Channel" not to exist. Mikkelsen's original intention had been to continue through "Peary Channel" to Smith Sound. Learning now that this was impossible, he was presented with a dilemma, since his supplies were inadequate to reach Smith Sound around Peary Land, and another crossing of the Inland Ice was not to be contemplated. The best option appeared to be to follow the coast south to Alabama, where further records left by Mylius-Erichsen might be found. On 28 May, the two men turned back, with Shannon Island at least 750 miles away. They had food sufficient for forty-five days for themselves and twelve days for the seven remaining dogs.

The journey was a nightmare. With Mikkelsen badly affected by scurvy, Iversen bore the brunt of dragging the two of them through the deep, soft snow. At Mallemuk Fjord they were halted by open water. There Mikkelsen was able to recover, thanks to some gulls and geese shot by Iversen. Somewhere there was a depot, but when it was eventually found, the biscuits were moldy and the chocolate turned green by mildew. Considering that mildew was a vegetable, they ate it just the same. Also in the depot were clothes, cigars, and cigarettes, as well as a map indicating the location of depots farther south. By 8 July, when they were at last able to cross the fiord, only three dogs remained. Mikkelsen now was better, but the chronic shortage of food continued, with very little game to replenish dwindling food supplies. A few partridge were shot as well as some seals, but all of the latter sank before they could be recovered. Conditions underfoot were atrocious for traveling—soft, slushy snow alternating with pools of meltwater. By the time Lambert Land was reached, Iversen was weakening, and two of the dogs had to be eaten before they could reach the next depot. Fortunately, this depot was well-stocked, and by 4 September they were sufficiently recovered to continue the journey. Colder temperatures meant that surfaces were increasingly hard and they were able to make better speed to the next depot, but the two following depots were both empty. These had not been replenished on the assumption that Mikkelsen would be returning via "Peary Channel." A few cans of food were found in the next two depots and, aided by these, Mikkelsen and Iversen on 19 September at last staggered to safety at Danmarkshavn, where food and shelter was to be found in Mylius-Erichsen's hut. They had traveled 1,400 miles in 270 days.

Four weeks passed before they were ready to continue. Toward the end of their desperate journey, before risking a particularly treacherous crossing in Skærr Fjord, they had abandoned everything except their guns, including their irreplaceable diaries. It was essential that these be recovered, and so on 15 October they set out again north, traveling for a week through snowstorms in a futile bid to retrieve them. Returning to the hut, they resumed their journey south on 5 November, arriving at Shannon Island twenty days later, only to discover that Alabama had sunk and no one remained to greet them. At least, a hut had been built onshore out of Alabama's wreckage and sufficient food left to ensure that they were supplied through the winter.

Only long afterward did Mikkelsen learn what had happened. Sometime after Mikkelsen's departure the previous year, Alabama had been holed by the ice. There was little that the two men left at the ship could do, though once they were reinforced by the return of the three-man party from Queen Louise Land on 23 May, a house was built, into which all that could be salvaged was moved. A message placed at Bass Rock, off the Pendulum Islands, alerted a Norwegian hunting expedition, fortunately wintering in the vicinity; on 2 August, the five men were picked up, having delayed their departure in the hope that Mikkelsen would return in time to join them.

In mid-March 1911, Mikkelsen and Iversen sledged north in another attempt to recover their own diaries. This time they were successful. Most of Mikkelsen's had been eaten by a bear, but Iversen's fortunately remained intact. Returning to Shannon Island, they waited for a ship all through the summer,
ignorant of the arrival on 23 July of the Norwegian vessel Laura just 15 miles farther south; it sailed away again when there was no sign of them. This they discovered in the fall when they moved south to winter at Bass Rock in the huts built in 1901 for the Baldwin-Ziegler expedition. As the two men endured yet another long and tedious winter, Mikkelsen blamed himself for not having thought to leave a message at this location stating where they were. At last, on 19 July 1912, they were rescued by the Norwegian steamer Sjøblimsten. They had not seen another human being besides each other for twenty-eight months.

Later Life and Expeditions

Upon his sensational return after being presumed long dead, Mikkelsen alienated some among the Danish polar community by making comments about Mylius-Erichsen, comments that were interpreted as criticisms. He was thus not awarded the Danish Royal Geographic gold medal; nor was he among those attending the unveiling of a memorial to members of the Danmark expedition. For the next few years, he absented himself from polar affairs, writing novels and working as a foreign correspondent until 1921; after much of Europe had been devastated by severe storms, he suggested that such weather might be predicted were meteorological stations to be maintained in East Greenland. The suggestion proved controversial, as did his proposition the following year that, in light of the dispute between Denmark and Norway concerning sovereignty of East Greenland, a colony of Inuit should be established in Scoresby Sound. As with the meteorological stations, those opposing Mikkelsen’s ideas did so largely out of concern over cost. The Danish government wished to retain sovereignty but was unconvincing that any action involving significant expense was required.

As the dispute with Norway intensified, Mikkelsen was at last given permission to proceed with the colonization, and in 1924 he sailed to Scoresby Sound in the 260-ton Grenland. Onboard it carried equipment together with housing materials for the new community. Having safely negotiated the pack ice, Grenland’s rudder was damaged when tidal currents caught it between two large ice floes. Fortunately, it escaped being crushed, and Mikkelsen was able to complete the unloading, while his men erected the houses ready for occupation by the Inuit the following year. Six men stayed behind to winter. Mikkelsen’s prediction—that the colony would flourish given the fine conditions for hunting—proved correct, and it soon grew in size after some initial difficulties. Mikkelsen himself, however, was to be largely excluded from its development, having once again made powerful enemies, among them Jens Daugaard-Jensen, the director of the Greenlandic Administration.

In July 1931, Norway declared sovereignty over “Eirik Raude Land,” a large region of East Greenland lying between 71°30’ and 75°40’N. Mikkelsen was once more restored to favor and charged with leading an expedition in 1932 to conduct a scientific survey of the Blosseville Coast, the same area between Scoresby Sound and Ammassalik that he had previously mapped in 1900 during the open-boat journey with Amdrup. Apart from the survey, which included geological, botanical, zoological, archaeological, and other studies, a chain of huts was built, nominally for use by Greenlandic hunters but also as an effective demonstration of Danish occupation, lest Norwegian claims be extended there as well. In 1934, Mikkelsen was appointed inspector for East Greenland, a post he retained until his retirement in 1950. Throughout the remainder of his life, including the difficult years of Denmark’s occupation by Germany during World War II, the needs of his beloved Greenlanders continued to be Mikkelsen’s central concern.

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Minin, Fedor

(fl. 1730s–1740s)

The section of the Russian Arctic coast from the mouth of the Yenisey east to the Taymyr Peninsula was the most formidable to be surveyed by the Great Northern Expedition of Vitus Bering (1733–1743). Fedor Minin was to lead the first attempt.

From the Yenisey toward Taymyr along the Arctic Coast, 1738–1741

Whereas the western section of the Northeast Passage was comparatively well known at least as far as the Pechora River and to a lesser extent to the Ob’, beyond the Ob’ very few vessels had sailed.

Midshipman Fedor Alekseyevich Minin had served as a pilot during Lieutenant Dmitriy Ovtysyn’s expedition, which had been responsible for surveying the coast immediately west of the Yenisey to the Ob’. Finally completing this survey in 1737, Ovtysyn had planned to extend his work farther east when he learned that the detachment responsible for this section was having difficulties and its leader was dead. While Ovtysyn himself reported to St. Petersburg with his maps, Minin and navigator Dmitriy Sterlegov, with twenty-six men, were instructed to begin the new survey. Ovtysyn, however, was not to return,
being arrested en route to St. Petersburg by the secret police and reduced to the ranks by court-martial for fraternizing with a political exile. Minin was now left in charge of a detachment whose most ambitious task was to compile accurate charts of the coast of Arctic Russia as far east as Khatanga Bay. This required him to survey the entire Taymyr Peninsula; no one at this time realized just how large that peninsula was, the best estimates substantially underestimating the extent of its northerly projection. In fact, its tip, Cape Chelyuskin (77°42′N), is the northernmost point of continental Eurasia.

Setting out from Turukhanski on the Yenisey on 4 June 1738 in Ob’-Pochtai’on, Minin initially met disappointment as with his previous experiences with Ovtsyn, finding the mouth of the Yenisey blocked by ice with no way out. The entrance to the sea was reached on 16 August, but at 73°14′N he found himself surrounded by ice with no option but to turn back to winter on the Kureyka River, an eastern tributary of the Yenisey. The following year, his start was delayed by logistical difficulties in obtaining supplies from Turukhansk, and it was not until 31 July 1739 that he was able to sail north to experience no better fortune than before. While he was still in the Yenisey estuary at 72°09′N, he encountered a severe gale on 27 August; it being very late in the navigation season, Minin decided that his best option was to return to Turukhansk to winter. This settlement was some way upstream from the areas he was to survey, but provisions there would be more easily obtained and repairs made to his vessel. In January 1740, second-in-command Sterlegov surveyed the east coast of the Yenisey estuary by dog sledge, reaching 75°26′N before he was forced to turn back by a persistent eye complaint.

On 6 July, Minin was ready to make another attempt; this time he finally succeeded in escaping from the Yenisey estuary and followed the coast east to the Pyasina River. Some way beyond, having reached 75°15′N in late August, his progress was blocked by ice and he was forced to turn back, now wintering on the Yenisey at Dudinka. During this voyage evidence had been discovered that an earlier expedition had explored the coast many years before. Very little is known of Ivan Tolstoukhov’s voyage of 1686–1689, but Minin discovered a cross, inscribed with Tolstoukhov’s name, on the shores of the Yenisey estuary, which proved he had reached at least this far from Tobolsk; evidence of a second wintering site (presumably also from this expedition) was found on the estuary of the Pyasina. The following year, Minin succeeded in completing the survey of the Yenisey upriver to Yeniseysk. From there Sterlegov returned to St. Petersburg’s with the expedition's results. Minin himself had lost favor with the Admiralty College, which had received numerous complaints from his subordinates and others. These were taken sufficiently seriously for him to be reduced to the rank of ordinary sailor despite his achievements during the Ovtsyn surveys as well as his own. The Yenisey-Taymyr survey was to be completed by Khariton Laptev.

Montagu Island (South Sandwich Islands)

Located at 56°25′S, 26°20′W, this ice-covered island—roughly 12 miles square—is the largest and highest (1,370 meters) of the eleven small volcanic islands that form the South Sandwich Islands. It was first seen on 1 February 1775 by James Cook; unable to discern whether it was an island or part of some more extensive land, Cook named it Cape Montagu for John Montagu (1718–1792), Fourth Earl of Sandwich, First Lord of the Admiralty. Its separate insularity was established by Fabian von Bellinghausen in January 1820. George Avery, captain of Lively, made a determined but unsuccessful attempt to land here in December 1830 during the expedition led by John Biscoe. Not before 1908 was the first landing made, by Carl Anton Larsen at Allen Point during his investigation of the islands for whales and potential anchorages. Larsen compiled a rough chart of Montagu, which was improved upon by RRS Discovery II in 1930. Subsequent landings have been made from the Soviet whale-catcher Slava–15 in January 1957, and by helicopter from HMS Protector in 1964, but the interior of the island remains imperfectly explored. The most recent scientific visit was made in 1997 from HMS Endurance, during a comprehensive geological and biological survey of the South Sandwich Islands.

Moor, William (d. 1765)
The voyage of the British sailor William Moor in search of the Northwest Passage through Hudson Bay was the second to be inspired by a political campaign directed against the Hudson’s Bay Company (HBC), which was famously described by one of its former employees as having “for eighty years slept at the edge of a frozen sea” and for having “shown no curiosity to penetrate further themselves, and [to] have exerted all their art and power to crush that spirit in others” (Robson 1752, 6).
The Attack on Hudson's Bay Company Renewed, 1746–1747

The influential Irish politician Arthur Dobbs was much dissatisfied with the results of Christopher Middleton's 1741–1742 expedition, which had been organized by the British Admiralty at Dobbs's instigation. He believed that Middleton had come to an agreement with the HBC to keep his discoveries secret from the British public. Dobbs was highly critical of the company. Granted by its charter the rights to vast tracts of land in North America, the HBC had restricted its activities to a few trading posts on the southern coast of Hudson Bay. Meanwhile the French, with whom Britain was again at war, were expanding northward and westward from the St. Lawrence. In a series of speeches and publications, Dobbs urged that the HBC's monopoly be broken and its charter revoked. Only by opening up Hudson Bay to all British merchants could a vigorous colony be founded that was capable of repelling the French and achieving effective occupation of all territories claimed by Great Britain. In the middle of the War of the Austrian Succession (1740–1748), the British Admiralty had no vessels to make available to Dobbs, who instead persuaded Parliament to appoint a committee in 1745 to look into the prospects of finding the Northwest Passage, whose discoverer was to be given a reward of £20,000. Dobbs, through influence, was able to ensure that the committee's membership was disposed toward his personal views. Several members of Middleton's expedition were called to give testimony, but not its very capable leader. Not surprisingly, the committee's conclusion exactly matched that of Dobbs: Middleton had disproved the possibility of any entrance to the Northwest Passage, whose discoverer was to be the influential Irish politician Arthur Dobbs.

The most prominent witness called before the parliamentary committee was William Moor, Middleton's cousin and the captain of Discovery during the expedition. His role was surprising given that he had served in vessels captained by Middleton since joining the HBC as a ship's boy, gradually advancing to first mate until given Discovery as his first command upon his cousin's suggestion. During the course of the expedition, there was no evidence of Moor ever expressing dissatisfaction with Middleton's leadership, and his journal clearly records his concurrence in the view that, together with Middleton, he had disproved the possibility of any entrance to the Northwest Passage from Churchill north to 67°N. By 1745, however, Moor had changed his mind. Dobbs had offered him leadership of the new expedition, and this was sufficient to persuade him to take up with his cousin's enemies.

With the large parliamentary award as an incentive, Dobbs was now able to enlist subscriptions from merchants and private individuals sufficient to purchase and fit out two vessels: the 180-ton Dobbs Galley and the 140-ton California. Moor was to sail in Dobbs Galley; Francis Smith, an experienced HBC captain, took charge of California. On 20 May 1746, Dobbs Galley and California sailed from Gravesend, joining a convoy for safety against French raiders until reaching the Orkneys. From there, Moor was to be escorted into the Atlantic, together with four of the company's ships, by HMS Snark, which was captained by—of all people—Christopher Middleton. What Middleton said to Moor has not been recorded, but he did his job, and by 12 August Moor was within sight of Marble Island off the west coast of Hudson Bay. There, a cursory investigation was made of the tides and a meeting held to discuss plans for exploration. Moor was in favor of exploring Rankin Inlet, Smith for making straight for winter quarters. With Smith insistent that the season was too late for exploration, Moor agreed to head for York Factory, the most important HBC trading post; perhaps he anticipated finding better accommodation than at the more northerly Churchill, where he and Middleton had endured a harsh winter in 1741–1742. The chief factor then at Churchill had been James Isham, now newly reassigned to York Factory, and when Isham saw the two vessels approaching, he gave orders to remove the beacon and buoys marking the navigable channel. Although it is possible that Isham had mistaken them for French vessels, Dobbs Galley and California were distinctive. It is more probable that Isham, having had previous experience of a wintering expedition and knowing that this one had been sent out by enemies of the HBC, hoped to persuade Moor to select another place to winter. In this, however, he was unsuccessful, and Moor finally chose to anchor just 4 miles upriver from York Fort, where Isham, as an onlooker, was to record the already tense relationship between the two captains. It degenerated into increasing rancor until Smith and his wife sought sanctuary in the fort and Moor surrounded himself with an armed guard. Although this expedition was better clothed than its immediate predecessor, and as a result suffered less from cold and frostbite, seven men died of scurvy, and local food resources were severely tested to feed the expedition's seventy-six men in addition to the thirty-three at the fort.

On 24 June 1747, Dobbs Galley and California sailed from York Fort, leaving behind a relieved Isham. It was immediately apparent that Moor and Smith were unable to agree on a shared plan of exploration. The vessels soon separated as each captain pursued his own plan, Moor taking his longboat Resolution to survey the west coast of the bay from Eskimo Point north to Marble Island, Smith exploring farther north between Rankin Inlet and Wager Bay. On 12 July, Dobbs Galley and California were reunited off Marble Island. The two longboats were next sent to investigate the mainland coast, where they soon discovered a major inlet leading west—Chesterfield Inlet. Neither boat followed it to its termination in Baker Lake, but they went far enough to note that its water was practically fresh at low tide—a sure sign that no Northwest Passage would be found by venturing this way. Wager
Bay was reached on 29 July. Once they were safely past the surging tidal race in the narrow entrance, an anchorage was found in Douglas Harbour among islands near the northern shore. From there, the two longboats were sent out to explore the bay to its head or else prove it a strait. Some way west they met an unexpected obstacle—a waterfall that flowed to the east at low tide and to the west at high tide. Only at half-tide could it be passed in safety. After meeting Inuit in kayaks with whom they traded, they continued on to the western termination of Ford Lake, beyond which stretched only two unnavigable rivers. With the previously unsurveyed north shore presenting the only remaining chance of a passage out of Wager Bay, Resolution was sent to make a closer inspection, which soon closed off any such possibility. Satisfied that even Dobbs must be persuaded that Wager Bay offered no hope of finding the Passage, Moor and Smith on 14 August headed home, further exploratory work being cut short as scurvy took hold of the two crews. Reaching the Orkneys in late September, they joined a convoy south to London, where they arrived on 15 October.

Dobbs refused to be abashed by the results of his expedition; he blamed its failure largely on the inability of Moor and Smith to work together. The Northwest Passage might not be found in Wager Bay, but the company’s record of exploration was still grossly inadequate. He continued his attacks, which led in 1749 to the House of Commons setting up a committee to “inquire into the State and Condition of the Countries adjoining to Hudson’s Bay, and of the Trade carried on there.”

Few explorers come across so unattractively as William Moor. Clearly raised some way above his capabilities by the benevolence of his cousin, Christopher Middleton, Moor, when it served his purpose, was happy to side with his kin’s enemies and played no small part in ruining Middleton’s career. When given his own command, Moor demonstrated himself manifestly incapable of dealing with his second-in-command (not that Smith himself comes out well in this episode). There are no records of Moor or Smith receiving further commands. Despite the concerted attack on its monopoly, the Hudson’s Bay Company defended its case successfully before the parliamentary inquiry, though afterward it demonstrated greater energy in exploring the territories assigned to it. Dobbs himself was appointed governor of North Carolina in 1752, where he remained until his death in 1765, pursuing his vision of a vigorous British North America.

**Moore, Thomas (1819–1872)**

In the British Royal Navy during the nineteenth century, one route to advancement was through specialization in polar exploration. Thomas Moore was one of a group of officers to achieve high rank largely on the basis of his service in the Antarctic and Arctic. In particular, he led in 1845 the last Antarctic expedition carried out in a sailing ship without the aid of steam, and between 1848 and 1852 commanded HMS Plover, one of many ships engaged in the search for Sir John Franklin’s lost Northwest Passage expedition.

**A Magnetic Survey Voyage through the South Ocean, 1845**

Lieutenant Thomas Edward Laws Moore had served as a mate in HMS Terror during James Clark Ross’s Antarctic expedition of 1839–1843. That expedition brought back the results of a comprehensive magnetic survey for much of the Southern Ocean, but not for the southern Indian Ocean, where no readings had been provided for 130 degrees of longitude south of 60°S, Ross having been instructed to follow a more northerly course in order to visit Kerguelen. Observations of magnetic declination (the varying extent to which compass north differs from true north) were clearly of the greatest significance for navigation. Being a trained magnetic observer, Moore was now the natural choice to command the 362-ton barque HMS Pagoda, which sailed from Simon’s Bay, Cape of Good Hope, on 9 January 1845.

Although Moore’s primary task was to obtain magnetic observations, he was also enjoined to search for the elusive Bouvet Island in order to fix its position, as well as to explore the Antarctic coast in the vicinity of Enderby Land. Unfortunately, the success of the voyage was seriously compromised by Admiralty instructions, which, ignoring everything learned about wind direction close to the Antarctic continent, commanded Moore to sail from west to east, that is, into the prevailing easterlies. Largely as a consequence of this, Moore’s voyage was much less successful than it might have been.

Course set for Bouvet Island, the first icebergs were met on 25 January at 53°30’S. Given coordinates that were too far east, Moore failed to find Bouvet and made little attempt to look farther despite good visibility. As Moore was continuing south, a large rock estimated at 1,600 tons was seen on 30 January at 60°11’S, 04°03’E. Moore sounded. Thinking that he had struck ground—generally sure proof of land—he was about to repeat his observation when prevented by Pagoda’s drifting away from the rock. Since “Pagoda Rock” has never been seen again, it is assumed that the rock must have been embedded in a submerged iceberg, probably from the South Sandwich Islands.

With Moore now heading southeast toward Enderby Land, the Antarctic Circle was crossed on 5 February, and the edge of the pack ice was met on 11 February at 67°50’S, the farthest south reached during the expedition and 100 miles...
from Antarctica's Prince Olav Coast. Sailing directly into a headwind, he could make very little progress despite the relative absence of ice. Moore therefore determined to sail slightly farther north, where he might find westerly winds, though without abandoning his intention to make landfall with the continent. Unable to get within 70 miles of Enderby Land, he next tried farther east but with no greater success. At its closest point, *Pagoda* was still 45 miles from the continent, which due to poor visibility could not be seen. On 11 March, having reached 100°E, Moore decided that it was too late in the season for discoveries to be made and turned north, returning to Simon's Bay on 20 June via Western Australia and Mauritius.

Although he achieved no new discoveries, Moore had completed the expedition's major objective, obtaining magnetic readings for the area missed by Ross. In so doing, he had sailed through more degrees of longitude south of 60°S than any of his predecessors.

*Waiting for Franklin, 1848–1852*

In 1846, Moore was commissioned by the Hudson's Bay Company (HBC) to make a magnetic survey of the area around Moose Factory, James Bay, northern Canada. Returning to England, he was appointed to command the 213-ton storeship HMS *Plover*, sailing from Plymouth on 30 January 1848 toward the Bering Sea. Onboard *Plover* were supplies for Sir John Franklin's overdue expedition, which had been sent out in 1845 to explore a way through the Northwest Passage. Moore's instructions were to meet up with Henry Kellett in HMS *Herald* in Kotzebue Sound, Alaska. But having made a slow passage, *Plover* was unable to reach the agreed rendezvous before *Herald* sailed south; Moore decided to winter on the Chukotka coast in eastern Russia. On 28 October, he found a sheltered anchorage in Providence Bay; having established excellent relations with the local Chukchi, he sent out parties to examine the coast for any signs of Franklin's expedition.

On 13 July 1849, Moore reached Kotzebue Sound, *Herald* arriving one day later. The two ships sailed together north to Wainwright Inlet, from where Lieutenant William Pullen set out in a boat to explore the coast eastward for signs of Franklin. Moore returned to Kotzebue Sound to winter on Chaminso Island.

Rumors had reached British ships stationed in Bering Strait of white men seen by native Alaskans in the interior. Most probably, these were fur traders based at Fort Yukon, where a post had been set up by the HBC in 1847. Ignorant of this other development, Moore thought that the men might be survivors from Franklin's expedition. In March 1850, he sent out a small party led by Lieutenant Bedford Pim to investigate. Pim traveled overland to St. Michael on Norton Sound, returning in April empty-handed. In late July, Moore himself investigated the reports by sailing north. Leaving *Plover* at Icy Cape, he went on to Point Barrow and then beyond with two boats. Many Inuit were interviewed, but little could be discovered. Back aboard *Plover*, Moore sailed south to Grantly Harbor, Port Clarence, where he wintered.

Moore had one more winter yet to spend in the Arctic during this extended voyage. In February, he sent some men to St. Michael to inquire about a party led by Lieutenant John Barnard sent inland by Captain Richard Collinson of HMS *Enterprise* in October 1850 to investigate rumors of Franklin survivors. Moore now learned of Barnard's death—killed by Indians in a local dispute at which he was an unfortunate bystander. For the remainder of this season, Moore worked closely with Collinson and the American whaling fleet active in this area. Winter again was spent at Port Clarence.

On 30 June 1852, it must have come as some relief to Moore when HMS *Amphitrite* brought instructions announcing that he was to be succeeded as captain of *Plover* by Rochfort Maguire. His task in the Bering Strait had been largely one of waiting upon developments, which became increasingly unlikely as time passed; by 1850 it was clear that there was very little likelihood of anyone surviving from Franklin's expedition. The HBC employee and explorer John Rae met Moore in 1851 and censored him for keeping an Eskimo girl in his cabin “for purposes which were all too evident,” as well as for “selling spirits to the natives, and cheating them as much or more than the most rascally fur trader ever heard of.” In the circumstances, the former might have been understandable; the latter, if true, casts a distinctly unfavorable light on Moore's character, though Rae was noted for his harsh judgments of British naval officers—and not all were justified.

Moore returned home to be elected a fellow of the Royal Society in 1854, then served as governor of the Falkland Islands (1855–1862). In 1867, he was promoted to rear admiral on the retired list.

*References and further reading:*


*Morrell, Benjamin* (1795–1839)

Can any truth be recovered from the mass of inaccuracies and impossibilities reported in the account of an Antarctic sealing voyage in 1822–1823 by the American sealer Benjamin Morrell? Here it is argued that it can and that Morrell should be credited with being first to land on Bouvet Island and first to visit the east coast of the Antarctic Peninsula.
After a colorful early life, when he ran away to sea at age seventeen and was twice captured and imprisoned during the War of 1812 with Great Britain, Benjamin Morrell in 1821 was appointed first mate of the 123-ton schooner \textit{Wasp} under Captain Robert Johnson on a voyage to the South Shetland Islands. In the following year, he was himself to captain \textit{Wasp} while accompanying Johnson, now in command of the schooner \textit{Henry}. Although \textit{Wasp} and \textit{Henry} were not necessarily to sail in company, their owners, James Byers, Benjamin W. Rogers, William McIntire, and Walter Nexson, expected that they would on occasion operate together.

\emph{Wasp} set sail from New York on 20 June 1822, reaching Rio de Janeiro in early September and then running down the Patagonian coast, taking on water and carrying out hunting excursions until making the entrance to the Strait of Magellan in mid-October. Heading next to the Falkland Islands, \textit{Wasp} was reunited with \textit{Henry} at New Island, Johnson returning from a fruitless search for the Aurora Islands. On 2 November, Morrell sailed from the Falklands and spent the next sixteen days also searching in vain for the nonexistent Auroras before making for South Georgia, which he reached on 20 November. There, he reported his boats as circumnavigating the island in three days in the search for seals. This seems impossible, as does the distance he reports sailing during his search for the Auroras. The position Morrell gives for \textit{Wasp}'s anchorage is farther south and west than the island extends, although there is no reason to doubt that Morrell did visit South Georgia, which was much frequented by sealers at this time. Morrell next headed east toward Bouvet Island, which he was lucky to sight on 6 December; he sent his second mate ashore the next day to look for fur seals. He reports sailing around the island to look for more seals, but he found no other possible landing places, the coast elsewhere being fringed by steep cliffs. Leaving Bouvet behind, \textit{Wasp} continued eastward until caught in thick ice at 60°11'S, 10°23'E, unusually far north to encounter such ice at this time of year. Unable to head south, he set course east-northeast for the Kerguelen Islands, where he hoped to find seals and repair his battered vessel. On 31 December, safe anchorage was found in Christmas Harbor at the northern tip of Kerguelen, where \textit{Wasp} remained until 11 January 1823.

Meanwhile, Morrell and the second mate set out in the boats to search for fur seals. From Kerguelen, \textit{Wasp} headed southeast and south until a sun observation gave its position on 1 February as 64°52'S, 118°27'E, close to where John Balleny was to report Sabrina Land some years later in 1839. Although the sea was open to the south, Morrell decided instead to take advantage of a favorable northeast wind to sail west. His next given position is 69°11'S, 48°15'E, some 1,800 nautical miles farther west with no indication of date. What ought to have been an epic voyage is described in one brief paragraph in Morrell’s account: “The wind soon freshened to an eleven knot breeze, and we embraced this opportunity of making to the west; being, however, convinced that the further we went south beyond lat. 64° the less ice was to be apprehended, we steered a little to the southward until we crossed the Antarctic circle, and were in lat. 69°11'S, long. 48°15'E. In this latitude there was no field-ice and very few ice islands in sight” (Morrell 1832, 65). This passage appears to be strongly influenced by the theory of an open polar sea close to the Poles, and it bears no relation to the geography of this region, where icebergs and pack ice infest the sea and the continent extends north of the Antarctic Circle in most areas. Morrell’s quoted position is actually 120 miles inland! Continuing to sail westward, \textit{Wasp} on 23 February is reported at 69°42'S, 0°; if true, this was a voyage of 118° longitude in twenty-three days, surely unbelievably quick for a region where shelf ice, glacier tongues, and customarily thick pack ice extend far out to obstruct passage along the coast of Queen Maud Land. Having nearly exhausted his supply of fuel, Morrell now decided to make for the South Sandwich Islands, where he hoped to find driftwood and seals. Finding neither, he set course south on 6 March toward the Weddell Sea, where Morrell reported penetrating a zone of pack ice before finding open water in which he reached 70°14'S, 40°3'W on 14 March before being driven north.
by lack of water and fuel. Morrell believed that he could have reached 85°S. As Morrell was heading northwest, land was sighted the next day from the masthead, along which Wasp coasted for several days. Morrell sending out boats to seal. “New South Greenland,” as he called it, extended more than 400 miles from north to south, its north cape being located at 62°41’S, 47°21’W. On 19 March, Wasp headed north out of the Weddell Sea, first for Staten Island, Tierra del Fuego, then the Falkland Islands, and then one last push south beyond the South Shetland Islands, before sailing through the Strait of Magellan and along the Chilean coast to Valparaiso.

What, if anything, can be believed of this remarkable voyage? Starting from the end and working backward, we known that “New South Greenland” as such does not exist. Were Morrell trustworthy in other regards, we might credit him with having seen and mischarted the east coast of the Antarctic Peninsula some 10° to the west, an unlikely but not impossible error given the good positions he reported only shortly before for the South Sandwich Islands. His reported voyage south of the Antarctic Circle for 3,000 miles along the coasts of the Australian Antarctic Territory and Queen Maud Land is similarly impossible. Although he may indeed have undertaken a voyage westward in high latitudes south of the Kerguelen Islands and would have benefited on such a course from the prevailing easterlies, Morrell’s reported voyage was unbelievably fast and trouble-free, quite apart from lying south of Antarctica’s coastline for much of the way. Even with regard to Bouvet, Morrell may not be relied upon. He finds that elusive island with improbable ease, mentions its steep cliffs but not the fact that it is almost totally covered by ice, and all in all gives an account suspiciously reminiscent of reports provided by previous visitors.

All this appears to bear out Morrell’s reputation among his contemporaries as “the biggest liar in the Pacific,” and since then he has been regarded as such by many of the major scholars. However, there is another possible explanation. Nuggets of truth among the mass of disinformation—for example, that an excellent harbor, previously unknown, exists at Southern Thule in the South Sandwich Islands—indicate that not all may be fabrication. Furthermore, the whole style of the book—labored, earnest, and somewhat dull, anything but the good read one might expect of a fabricator with one boastful exploit to recount after another—suggests that Morrell’s narrative, at least in overall intent, is an honest account. The Antarctic sections of his long book—more than 500 pages—represent a tiny proportion of the whole and are given no special emphasis. He himself does not appear to regard his voyage as in any way remarkable, and credit for the discovery of “New South Greenland” is not claimed by him but instead given to Robert Johnson two years previously.

The possible alternative explanation is this: It is unlikely that Morrell was a man of great education; his account of his voyages is one of very few published by a sealer and is by far the longest; although the account seems to be derived from the ship’s log, the profusion of apparent errors with regard to positions and dates presents the possibility that he may not have had access to the log while writing up this section some years later and, instead, may have felt constrained to invent details that appeared plausible and conform in style to those provided elsewhere in his text. This is merely a hypothesis, but, if true, it suggests that something may be salvaged from Morrell’s account, although much of its detail must be discarded. The 1822–1823 navigation season is of considerable interest to historians of Antarctic exploration. Not only did the near-extinction of fur seals on the South Shetland Islands encourage many sealing vessels to undertake exploratory voyages to look for undiscovered seal populations; there is evidence that it was the most open year with regard to ice for more than 150 years. The most notable voyage was undertaken by James Weddell, who reached 74°15’S, 34°16’W in the customarily ice-strewn Weddell Sea. Discard the erroneous details in Morrell’s narrative and it appears likely that he also achieved a high latitude in the same sea just one month later. Furthermore, if we ignore his published longitude, his observations of “New South Greenland” match well with the east coast of the Antarctic Peninsula. Although subsequent scholars appear uniformly to have assumed that “New South Greenland” was a new discovery (if not by Morrell, then at least by Johnson, who is known to have made a long exploratory voyage south to the west of the Antarctic Peninsula in January 1821), a close reading of the relevant texts suggests instead that “New South Greenland” may simply have been Johnson’s name for the Antarctic Peninsula itself. If so, Morrell was remarkably perceptive in identifying the land he was seeing as the east coast of the peninsula, previously known only from the west. Similarly, if one discounts the unbelievably high latitudes reported for Morrell’s westward voyage south of Kerguelen, a voyage in this region benefiting from the easterlies lies far from impossible. Finally, on this reading of Morrell’s published narrative, what reason have we for doubting his landing on Bouvet Island, the first one documented for the world’s most isolated island?

**See also:** Antarctic Peninsula, East Coast; Balleny, John; Bouvet Island; Kerguelen Islands; Open Polar Sea; Queen Maud Land; Sealing and Antarctic Exploration; South Georgia; South Sandwich Islands; Weddell, James (1822–1824); Weddell Sea

**References and further reading:**

**Munk, Jens**
(1579–1628)
Norwegian-born Jens Eriksen Munk deserves better than to be remembered solely for his leadership of a particularly dis-
Mysterious Killer in Hudson Bay, 1619–1620

Christian's decision to send out an expedition to search for the Northwest Passage was probably made on the basis of optimistic reports submitted some years earlier by James Hall, the admired English pilot whom Christian had employed on three expeditions to Greenland. Given his previous Arctic experience, Munk was the obvious choice to command the two naval vessels, the small frigate Enlıörningen (Unicorn) and the sloop Lamprenen (Lamprey). Munk himself, however, had no knowledge of the Northwest Passage, which had previously been sought only by English expeditions. To supply that, an experienced English navigator, William Gourdon, was appointed chief pilot, along with the otherwise unknown John Watson. Although Gourdon had knowledge of Svalbard, West Greenland, and possibly also of the Northeast Passage, it seems that he had not previously visited either Hudson Strait or Hudson Bay. John Watson may possibly have accompanied Thomas Button's voyage to Hudson Bay in 1612–1613 in a junior capacity. For Munk's purposes, the critical voyage was Button's, yet very little was known about it other than a brief but intriguing note published by the chronicler Samuel Purchas. However, one of the crew, Josias Hubbart, had been less circumspect. His view that a channel leading west to the Pacific would be found in the vicinity of the Churchill River became widely disseminated, and it was thus to "Hubbart's Hope" that Munk was directed.

The expedition began badly, with one sailor committing suicide by leaping overboard shortly after departure from Copenhagen on 16 May 1619. Cape Farewell was passed on 30 June, and by 8 July they were within view of land to the west of Davis Strait. Munk's inexperienced pilots now lost their way in the fog and ice characteristic of this region, entering by mistake first Frobisher Bay and then Ungava Bay in an exceptionally tortuous voyage through Hudson Strait. Hudson Bay was reached only in late August. Munk now sailed southwest across "Novum Mare Christian," as he named it, to reach the west coast near the estuary of the Churchill River. "Hubbart's Hope" was most likely there or on the Seal River some way to the north. By now it was September, and with the weather worsening Munk decided to winter on the Churchill and to resume exploration the following year.

The expedition was equipped to winter, and careful preparations were made to convert the Enlıörningen to provide comfortable winter quarters for both crews. Munk fully appreciated the importance of fresh meat, and his hunting parties should have enjoyed good success, with bears, caribou, birds, and fish all relatively abundant. Churchill today is renowned as the world's polar bear capital, and each year bears throng the coast in large numbers, waiting for the sea ice to become sufficiently firm to allow them to hunt seals out in Hudson Bay. Although Munk makes specific mention of killing and eating only one bear, it is probable that bear meat constituted a considerable part of the expedition's diet from mid-September onward. He wrote that the bear meat "was of good taste and did not disagree with us"; to best preserve the flavor, he instructed the cook "just to boil it slightly, and then to keep it in vinegar for a night" (Gosch 1897, 24–25).

But all was not well, something that became apparent even before the expedition reached the Churchill. Munk's journal reports a general lassitude among the men. Other symptoms soon appeared, including diarrhea and muscular pains, that could be eased only by bathing in a wine cask. On 21 November the first burial took place. A second man died on 12 December, by which time several others were also clearly close to death. These fatalities and those soon to follow have been attributed to scurvy, caused by vitamin C deficiency. Although certainly a scourge of polar expeditions at this time, scurvy would not normally occur so early in the winter, and certainly not in such extreme form on an expedition that had taken such care to lay in stocks of fresh meat. As an experienced sailor,
Munk was familiar with scurvy, and the symptoms of this affliction appeared quite different to him. Much more likely is the suggestion (see Young 1973) that the mysterious killer was trichinosis, a parasitical disease endemic in polar bears, whose meat should never be eaten unless thoroughly cooked. “Light boiling” would not have destroyed the parasite, and it is not impossible that the bear meat may have been eaten raw (the taste of uncooked meat was compared to oysters by Salomon Andrée during his similarly fatal expedition of 1897). Regardless, by March half the crew was dead, and by 4 June only Munk and two others remained alive.

By this time, it is likely that they were also suffering from scurvy. Not until 16 July were they sufficiently recovered to attempt the return voyage in the sloop Lamprenen. The task ahead was formidable, and it was only with extreme peril that they negotiated their way back through the ice and swirling currents of Hudson Strait to the Atlantic Ocean, whose storms then blasted them westward until their arrival in Norway on 21 September. There, a new crew was taken on, and Copenhagen was reached on 25 December.

Even experiences such as these did not deter Munk and his sponsor, Christian. Munk was instructed to make plans for a second expedition. This time, rather than seeking the Northwest Passage, he would instead establish a colony to exploit the area’s rich fur resources. This far-sighted proposal anticipated the foundation of the Hudson’s Bay Company by fifty years. Others, however, were less sanguine, and the dire fate of Munk’s previous expedition must have made it virtually impossible to find anyone prepared to participate in this second venture. Plans for the second expedition came to nothing, and Munk was soon assigned to other tasks by Christian, which included commanding fleets in 1623 and 1624 to northern Norway and Lapland to deter Russian interference with Danish shipping. In 1625, he was promoted to admiral and placed in command of a fleet on the Weser during the Thirty Years’ War. The colorful legend that Munk’s death was caused by the vexed Christian poking him in the stomach with the point of his stick has no foundation in fact.

References and further reading:

Murav’yev, Stepan
(fl. 1730s–1740s)
One of the objectives of the Great Northern Expedition of Vitus Bering (1733–1743) was to compile accurate charts of the entire Russian Arctic coast east of Archangel. Naval lieutenant Stepan Vojnovich Murav’yev led the first detachment charged with responsibility for the westernmost section: Archangel to the Ob’ River.

From Archangel to the Ob’ along the Arctic Coast, 1734–1736
Pomor hunters from the White Sea region had routinely voyaged along much of this coast from perhaps as early as the eleventh century, on their way to walrus and polar bear hunting grounds on the Pechora River and north to Vaygach Island and Novaya Zemlya. From the mid-sixteenth century onward, exploring expeditions from western European countries, particularly England and the Netherlands, had sought the Northeast Passage in this location, though very few managed to enter the Kara Sea east of Vaygach Island. The most commonly used route to the Kara Sea was through Yugor Strait, a shallow waterway south of Vaygach that was completely closed by ice and un navigable for all but a six-week period. In 1499, the trading settlement Pustozersk was founded at the mouth of the Pechora River. There, the Pomors wintered before sailing through Yugor Strait in their shallow-draft lodyas, ideal craft for these shoaling waters, and then along the southern coast of the Kara Sea. Rather than attempting to sail north around the Yamal Peninsula, they towed or poled their vessels up the Mutnaya River, man-handled them across a low portage to the Zelenaya River, and then sailed down this to the Gulf of Ob’.

Although much of this section of the Arctic coast was well known, it had never been charted in detail, and navigators relied heavily on knowledge passed down through generations of local pilots. Apart from an expedition organized by Peter the Great in 1720–1721, which succeeded in reaching the Gulf of Ob’ (virtually nothing else is known), no expedition had managed to complete the entire route by sea, which required sailing north of the formidable Yamal Peninsula.

On 4 July 1734, Murav’yev and coleader Lieutenant Mikhail Pavlov set out in Ekspedition and Ob’, crewed by fifty-one men and accompanied by pilots, underpilots, surgeons, monks, mineralogists, guides, and interpreters. In this light ice year, good progress was made across the White and Barents Seas to Yugor Strait, which was reached on 25 July. Most unusually, the Kara Sea was also found to be largely free of ice, and six days later they had reached the west coast of the Yamal Peninsula. At this stage, it looked as if they would be able to survey the most inaccessible coasts of their section within the first year, but now headwinds held them up, and sickness set in. By 18 August, they were at 72°35’N, near the northern tip of the peninsula, with the Ob’ estuary less than 100 miles away. Having accomplished so much so quickly, Murav’yev and Pavlov felt confident that next year they could complete the survey, and therefore they decided to turn back to winter on the Pechora at Pustozersk.
The following year showed this confidence to have been misplaced. Setting out on 1 July 1735, they took fourteen days just to reach Yugor Strait, where they spent some time completing their survey of the strait before entering the Kara Sea on 6 August. Conditions were much less favorable than those of the previous year, with much ice and fog, and the two vessels became separated. Although Murav’yev was to reach 73°14’N and Pavlov 73°21’N, neither was able to enter the Gulf of Ob’ to complete the survey, and both opted to winter again at Pustozersk.

At this location the expedition, and not least its leaders, had become thoroughly unpopular. Pustozersk was a small settlement with scant resources of local wildlife to provide fresh food through the winter. Having to accommodate and supply more than fifty expedition members placed great strain on the inhabitants, which was exacerbated by ill-feeling between Murav’yev and Pavlov. Two years had been granted for completion of the survey. With time now up, Murav’yev applied to the Admiralty College at St. Petersburg for more, as well as new equipment and new staff. Reports of serious problems at Pustozersk, however, had been sent ahead, and Murav’yev and Pavlov were relieved of command and reduced to the ranks. Lieutenant Stepan Malygin was appointed to replace them.

**See also:** Bering, Vitus (1733–1743); Kara Sea; Malygin, Stepan; Northeast Passage; Pomor Contribution to Arctic Exploration; Russia; Vaygach Island

**References and further reading:**

## Muscovy Company

Although not always an enthusiastic sponsor of Arctic exploration, the Muscovy Company—which itself originated from an expedition—played a significant role in promoting English voyages to the northeast, north, and northwest of England. Acknowledging the importance placed on exploration by Edward VI, the veteran explorer Sebastian Cabot was appointed governor for life. Further expeditions were organized to begin trade with Russia and northern Norway, as well as to explore the possibilities of a Northeast Passage leading to Cathay. Russia was viewed as merely a profitable stop on the way to the true riches obtainable once contact could be established with China and Japan. Stephen Borough’s expedition of 1556–1557 showed just how optimistic these expectations were. And although Arthur Pet was to succeed in reaching the Kara Sea in 1580–1581, by then it had been long apparent that the route to the Far East would never be easy.

Although reaching the Far East proved troublesome, the company’s Russian trade was highly profitable, convincing many shareholders that they should concentrate on trade to the exclusion of exploration. The fact that the company’s privileges included exploration of the north and northwest was something of an embarrassment. With the Northeast Passage so lucrative, the company had no interest in encouraging the development of possible rival routes, which it wanted neither to explore itself, nor to see explored by others. As a consequence, several explorers had to appeal to the English monarch when the company refused to sponsor proposed expeditions. Martin Frobisher, John Davis, and George Weymouth all received support from the Privy Council, which threatened to rescind the company’s privileges and supported the claim of rival companies to explore the Northwest Passage.

Although in certain respects it acted as a brake on exploration, the Muscovy Company owed its origin to an exploratory voyage and later expanded its commercial activities significantly as a result of voyages. Thus in 1603, William Gorden and Stephen Bennet were instructed to “proceed upon some Discoverie” after taking trading goods to Kola in north Russia. Sailing north, they rediscovered Bear Island, where they sighted many walruses, an observation confirmed by another company ship the following year. As a result, the Muscovy Company was to dispatch annual walrus-hunting expeditions to Bear Island between 1605 and 1613. The Arctic whaling industry began in a similar manner. In 1607, Henry Hudson was sponsored by the company to investigate the possibility of reaching Cathay via the North Pole. His report of many whales off Spitsbergen led the company to send out annual expeditions to Svalbard from 1611 to 1619, following Jonas Poole’s confirmation of Hudson’s observation in 1610. These were large-scale expeditions involving many ships—thirteen in 1614 and eleven in 1615—and in the course of hunting for whales, much new was learned of this High Arctic archipelago and several islands discovered. With fat profits to be made from the Arctic fishery, the company resorted to force in 1613 to protect its monopoly against English interlopers and whalers of other nationalities, particularly the Dutch and
Danes. The Dutch responded with equal force and soon established a dominant position.

While assuming a generally negative attitude toward the Northwest Passage, the Muscovy Company did join the newly formed East India Company in sponsoring John Knight's unsuccessful venture of 1606. At this time the company's membership appears to have been more prepared to finance exploring expeditions, as shown by its backing of Hudson's voyages of 1607 and 1608, but in Knight's case the expedition was small and inexpensive. There may have been a need to demonstrate to the East India Company that interest had not been abandoned in a region where the Muscovy Company still retained privileges. It was the Russian trade, however, that remained the major source of profit, and in 1611 William Gourdon—possibly the same man who rediscovered Bear Island in 1603 and who was later to act as chief pilot of Jens Munk's disastrous expedition of 1619–1620—was sent to establish a trading post at Pustozersk on the Pechora River. From there Pomor traders and hunters were known to sail east to the River Ob' and Mangazeya, and the company's aim was to cut out middlemen in Moscow and obtain furs directly from Siberia. This initiative was to result in Tsar Mikhail Fedorovich issuing decrees in 1616 and 1619 banning all foreign shipping east of the White Sea and all shipping east of the Pechora River.

The year 1619 effectively marked an end to the company's involvement in Arctic exploration. Not only was it excluded from trading east of the White Sea; in this year it sold its whaling rights to the Greenland Company. Since 1612 privileges to explore the Northwest Passage had been assigned to the Company of the Merchants Discoverers of the North-West Passage.

The Muscovy Company provides a particularly instructive example of expedition sponsorship by a commercial concern over an extended period. Despite the terms of its charter, which stipulated extensive privileges in exchange for exploration, several expeditions were financed only under government duress. This shows the essential ambivalence of many of the company's members to exploration. Although on rare occasions they opened up important new opportunities for walrus-hunting and whaling, such expeditions might equally end in total loss, and most returned with few material results. Similar ambivalence was to be demonstrated by other commercial sponsors, most notably the Hudson's Bay Company.

References and further reading:
See also: Bear Island; Borough, Stephen; Cabot, Sebastian; Chancellor, Richard; Davis, John (ca. 1550–1605); Froghisher, Martin; Hudson, Henry (1607, 1608); Hudson's Bay Company; Knight, John; Munk, Jens; Northeast Passage; Northwest Passage; Pet, Arthur; Russia; Spitsbergen; Svalbard; Weymouth, George; Whaling and Arctic Exploration

Mylius-Erichsen, Ludvig (1872–1907)
In 1908, the body of Jørgen Brønlund was discovered in a snow cave in northeast Greenland. Brønlund had been one of a three-man sledge party led by the Danish explorer Ludvig Mylius-Erichsen that had disappeared the previous year. Together with his body were found maps and a diary, which told the story of their journey, discoveries, and tragic end.

The Danish Literary Greenland Expedition, 1902–1904
In mounting his first expedition, the idealistic young Danish reporter Ludvig Mylius-Erichsen declared his intention to describe life in Greenland in words and pictures. For years, access there had been proscribed to all but government officials and missionaries on the grounds that its inhabitants were best shielded from outside influences. Mylius-Erichsen's plan was to disclose the incompetence and corruption inevitable with such secrecy and, in particular, to do so by contrasting life in the Danish settlements of West Greenland with those of the still largely unaffected Polar Inuit of North Greenland. To that end, he chose as his companions the artist Count Harald Moltke, the ornithologist and medical officer Dr. Alfred Bertelsen, and Knud Rasmussen, then an apprentice journalist but later to become Denmark's and Greenland's most famous explorer. Rasmussen's childhood friend, the Greenlander Jørgen Brønlund, joined them in Godthåb as interpreter.

Proceeding north from Godthåb by boat and dog sledge, the five young men wintered at Jakobshavn before slogging to Upernavik during February and March 1903. Bertelsen chose to remain there, with the four others continuing on their journey in late March. As they sledged across Melville Bay, Moltke became dangerously ill after eating polar bear meat, but they nevertheless managed to reach Saunders Island off Wolsstenholm Fjord, where contact was made with the Polar Inuit.

From April 1903 to February 1904, Mylius-Erichsen and his companions lived among these little-known people. While Moltke compiled a fine folio of portraits and landscapes, Mylius-Erichsen developed his views on the impact of Danish rule on Inuit life. Rasmussen's knowledge of Inuktut and his part-Inuit descent gave him privileged insight, enabling him to make a detailed study of Inuit customs and culture, which he was to write up in his classic work The people of the polar north (1908).

On the return journey, Mylius-Erichsen and his colleagues traversed the entire west coast of Greenland before they sailed for Denmark. Their findings were considered so significant that they stimulated several reforms. What had been planned and financed as a private venture was accorded official recognition, and the Danish government took responsibility for all debts.

Tragedy in Northeast Greenland, 1906–1908
The aim of Mylius-Erichsen's first expedition was social reform. The objective of his second expedition was more
Expedition leader Ludvig Mylius-Erichsen (Friis, A. 1909. Danmark Ekspeditionen tils Grønlands nordostkyst. Copenhagen: Gyldendal, frontispiece)

straightforwardly geographical: to complete the survey of northeast Greenland by exploring the unvisited region between Cape Bismarck and Cape Wyckoff, reached by Karl Koldewey in 1870 and by Robert Peary in 1900. The expedition was sponsored by the Danish government, the Carlsberg Fund, and by public subscription. Twenty-eight men were to participate, including Lieutenant Alf Trolle, Danmark’s captain, chief surveyor Captain Johan Peter Koch, cartographer Lieutenant Niels Peter Høeg-Hagen, meteorologist and physicist Alfred Wegener, assistant meteorologist and stoker Peter Freuchen, artists Aage Berthelsen and Achtion Friis, mates Henning Bistrup and Gustav Thostrup, and the dog handlers Brønlund and Tobias Gabrielsen.

On 24 June 1906, Danmark sailed from Copenhagen. Dogs and coal were taken on in the Faroe Islands, before East Greenland was reached at Store Koldewey Island on 13 August near 76°N. By good fortune, a suitable anchorage was soon found on the south coast of Germania Land at Danmarkshavn, where winter quarters were established. Between 15 August and 19 September, boat trips were made to Cape Marie Valdemar, Dove Bay, and Store Koldewey before the coastal ice froze sufficiently for the first sledding journey to begin on 1 October. This succeeded in laying a depot at 78°13’N. Other sledding parties visited the Pendulum Islands, Shannon Island, and Bass Rock before cold and winter darkness ended field activities on 4 December. The expedition could hardly have begun better.

Depot-laying was resumed in late January 1907. By 28 March, when Mylius-Erichsen set out on his major journey accompanied by nine men with ten sledges and eighty-six dogs, three sledding parties had laid further depots to 78°14’N. At 80°N, Bistrup, Ring, Wegener, and Thostrup returned to the ship. They were to survey the coast on their way back. All plans had been made on the assumption that Independence Fjord, a region discovered by Peary in 1892, was just 250 miles away. In fact, Mylius-Erichsen would have to travel twice as far, in the process discovering Lambert Land and Howgaard Island, before reaching Crown Prince Christian Land, a large peninsula that extended far north and east beyond where Greenland had previously been thought to terminate. With Mylius-Erichsen having planned for a less ambitious journey, retaining the original objective involved considerable risk, but with so much unknown land still to explore he and his companions were prepared to take their chances.

At 81°30’N, 18°W, having reached a point where the coast began to bear westward, the six men separated. Koch, Berthelsen, and Gabrielsen were sent to explore farther north, whereas Mylius-Erichsen, Høeg-Hagen, and Brønlund headed west toward Independence Fjord. Traveling a considerable distance across the sea ice, Koch on 7 May reached Peary Land at Cape Eiler Rasmussen, from where he headed west to discover, five days later, the cairn marking Peary’s farthest east, Cape Wyckoff. During this journey the entire coast of northern Greenland had been traversed, and categorical proof was provided that Greenland was indeed an island. Dwindling food supplies were augmented by several muskoxen before Koch decided to turn back, having reached Cape Bridgman at 83°30’N.

On 27 May, the two parties met by chance at the entrance to Danmark Fjord, a deep inlet 80 miles long; its mapping had delayed Mylius-Erichsen, who was still intent on reaching Independence Fjord farther west. At the time of this meeting, Mylius-Erichsen had sufficient food for only a few days and was considering turning back. However, after acquiring some extra supplies from Koch, he determined to stay on, his plan being to reach Navy Cliff and complete surveys of Independence Fjord and “Peary Channel,” the latter reported by Peary in 1892 as extending between the fiord and Nares Strait and thus separating Greenland from islands farther north.

After a journey of more than 1,500 miles, Koch on 23 June arrived back at Danmarkshavn, where concern for the sledding parties had been mounting. Weeks went by without any sign of Mylius-Erichsen, but there was little that could be done until the coastal ice grew sufficiently firm for a search party to be sent out on 23 September, led by the second mate, Thostrup.
That party reached as far as Mallemuk Fjord, north of Hovgaard Island, before being stopped by open water.

Throughout the long, dark winter, preparations were made to continue the search, though there was little hope of finding any survivors. On 10 March 1908, Koch set out again with Gabrielsen, with the intention of searching across North Greenland as far as Cape York. He did not need to go so far. Less than 200 miles from the ship, he found a depot that showed signs of having been used. One hundred meters away was a sledge-box lid and, beyond that, a small cave in the snow. Inside, the body of the Greenlander Brønlund, hunched over a loaded rifle, was discovered. A box at his feet contained his diary and Høeg-Hagen's maps. It was clear that Brønlund, aware that he had no chance of surviving, had painfully hauled himself to a place where he was certain to be found. Since his diary was written in Inuktitut syllabics, much of it could not be read before the expedition returned to Copenhagen. Included within it were instructions in Danish as to where the bodies of his two companions might be looked for. They were never discovered.

Once deciphered, Brønlund’s diary had this story to tell. After the meeting with Koch, his party had headed west to discover Hagen Fjord and reach Independence Fjord. After mapping Academy Glacier and Navy Cliff, they turned back on 4 June. Summer was now sufficiently advanced for the ice to be breaking up in Danmark Fjord, and they were forced to camp on its western shore until it froze over. Brønlund was an excellent hunter, but they were barely able to survive on the rabbits, geese, and few muskoxen that he was able to shoot. Driftwood provided their only fuel, and it had to be used sparingly. They could not afford a fire to keep them warm as temperatures began to fall in late summer, with the first snow coming in August. By the end of that month they were subsisting on meat from their dogs, with very little game for Brønlund to hunt. At last, Danmark Fjord was sufficiently frozen over to attempt a crossing. Brønlund’s diary is silent for the next few weeks. Although the enforced leisure of the summer camp had allowed him time to write, no further entries were made until 19 October, during what must have been a harrowing journey as they sought to hurry south as fast as possible, starved of food and with their patched-up shoes disintegrating on their feet. Two food depots were picked up, and with this aid the party reached Mallemuk Fjord about the time that Thostrup was still on the southern shore. Disastrously, the fjord was still open, and they were forced inland, high onto the ice cap.

There, conditions were truly appalling. The sun set for the last time at the end of October, deepening still further the already intense cold. Yet they kept on, dressed in tattered clothes and almost without food. The first to die was Høeg-Hagen on 15 November. Arrangements had been made to have a depot left in Lambert Land, and that was the objective of the two survivors. With Mylius-Erichsen too weak to go on, Brønlund continued alone to reach the depot, which had been left by Thostrup only a few weeks earlier. Did Brønlund then return to find Mylius-Erichsen dead, then collect his party’s irreplaceable records to ensure that they at least were found along with his body close to the depot where he knew search parties would come? Or did he take the records with him when he went ahead of Mylius-Erichsen to the depot, collapsing when he reached it? Either way, his action ensured that their lives had not been lost in vain. The last words of Brønlund’s diary read: “Perished in 79 Fjord after attempt to return over inland ice in November. I arrive here in waning moonlight, and could not go further for frozen feet and darkness. Bodies of the others are in middle of Fjord off glacier (about two and a half leagues). Hagen died 15th of November, Mylius about ten days later. Jørgen Brønlund.”

As with Robert Falcon Scott, a near-contemporary, the tragic loss of this expedition leader overshadowed very real achievements. After Mylius-Erichsen, although certain details remained to be fixed, the outline geography of northeast Greenland was no longer a matter for conjecture. Six large volumes of the journal Meddelelser om Grønland were required to publish the expedition’s scientific results. Further records found by Ejnar Mikkelsen in 1910 proved Mylius-Erichsen’s discovery of the nonexistence of “Peary Channel.” Peary Land was not an island but joined to the mainland. The official account identified Peary’s error as contributing to the tragedy, but this is debatable. Mylius-Erichsen’s decision to continue his explorations long after he had inadequate food resources to support them may be considered heroic, but it rendered his fateful end likely, if not probable.

See also: Greenland, North; King Frederik VIII Land; Koldewey, Karl; Mikkelsen, Ejnar (1909–1912); Peary, Robert (1891–1892, 1898–1902); Rasmussen, Knud; Scott, Robert Falcon (1910–1913); Wegener, Alfred

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Nansen, Fridtjof (1861–1930)

What was most special about the expeditions of the Norwegian scientist and explorer Fridtjof Nansen was the boldness of their conception. On the first, he dared to cross Greenland from east to west in the face of all expert opinion, which decried landing on the east coast as too dangerous. On the second, on the basis of a few fragments from a shipwreck, he risked freezing his ship *Fram* into the ice of the Arctic Ocean, gambling that it would not be crushed and that its drift would take him close to the North Pole.

Fridtjof Nansen exhibited a range of talents unrivaled by any other explorer. As a scientist, he accomplished pioneering work in two very different fields: neurophysiology and oceanography. His *In northern mists* is a classic of historical scholarship, still not superseded for its account of Viking and other early Arctic voyages. *Farthest north* is quite simply one of the best-written accounts of any expedition. For many, all these achievements pale in insignificance when compared to his role in the foundation of the League of Nations and his humanitarian work on behalf of refugees.

The First Crossing of Greenland, 1888–1889

Nansen planned the journey across Greenland as mental relaxation from his academic studies. His attention had first been drawn to the possibility of crossing Greenland by the expedition of Adolf Erik Nordenskiöld in 1883. Nordenskiöld had hoped to prove that past an exterior ring of ice inland Greenland would be found to be ice-free and fertile. He had been accompanied by two Saami, who in skiing more than 140 miles into the interior had disproved Nordenskiöld’s theory and shown how suitable the surface of the ice sheet was for skiing. Three years later, the American naval surveyor Robert Peary had made the first serious attempt to cross the ice sheet and, despite his inexperience, reached more than 90 miles inland. Aware that Peary planned to return, Nansen knew he had little time, but with Peary sidelined for a year by surveying duties in Central America, Nansen made his plans with speed while also making final preparations to defend his doctoral thesis.

The January 1888 issue of the Norwegian journal *Naturen* contained the first detailed outline of his plan. A team of experienced skiers was to cross Greenland from east to west. Traveling 10–20 miles each day, Nansen anticipated that they would reach the west coast settlement of Christianshåb (Quasi-giannuit) within a month. The plan was controversial because it proposed starting from the east coast. Although the advantages of finishing on the populated west coast were clear, the east coast was viewed as all but inaccessible, and Nansen would have to take considerable risks if he was to reach it. Taking risks never deterred Nansen, and some years earlier he had written an article proposing a method for making just such a landing over the ice floes from an offshore vessel, and this he now proposed to put into action. The University of Oslo expressed some initial interest, but no funds were forthcoming from the Norwegian government. If necessary, Nansen was prepared to pay all expenses himself, but he was saved from having to do so by the generosity of the Danish businessman Augustin Gamél, who had previously sponsored Andreas Hovgaard’s North Pole expedition of 1882–1883.

Following extensive consultation with Nordenskiöld, Nansen had heard much about the Saami as skilled polar travelers, especially on skis. Himself having no experience with dogs, which were difficult to obtain in any case, he considered taking reindeer as draught animals, which provided another reason for including Saami in the party. With Nansen fully occupied with general preparations as well with his doctoral defense, he commissioned others to recruit two suitable Saami, those selected being Samuel Johannesen Balto and Ole Nielsen Ravna from Karasjok. Experienced Norwegian travelers were slow to volunteer, most considering the expedition too risky, but eventually Nansen was able to complete his team with army lieutenant Oluf Christian Dietrichson, woodcutter Kris-
tian Kristiansen, and farmer and seaman Otto Neumann Sverdrup. All were fine skiers.

On 2 May 1888, the six-man party departed from Christia-
nia (Oslo) in the sealer Jason. Although the coast of East Green-
land was sighted near 65°N as early as 11 June, Nansen (as he
had been warned by Jason’s captain, Mauritz Jacobsen) found
it impossible to approach sufficiently close to land through the
solid stream of ice brought down with the East Greenland Cur-
current. For another month, Jacobsen continued sealing while
awaiting a possible opening. Finally, on 17 July, although still
some 12 miles offshore in the vicinity of Sermilik Fjord,
Nansen’s party left in two boats. On the first day they made suf-
ficiently good progress for Nansen to anticipate landing the day
after, but then with the ice closing up the boats had to be
hauled out onto a sizable floe, which was borne rapidly south
in the strong current. The experience was particularly terrify-
ing for the two Saami, but after twelve days they were at last
able to scramble ashore near Puissortoq near 62°N. At this lati-
tude Greenland is so narrow that any crossing would have
been meaningless, so Nansen led his men north in a slow voy-
age along the coast during which they encountered parties of
local Inuit, also heading north, who accompanied them much
of the way until they reached Umivik on 10 August at 64°23’N.

After five days of recuperation and some preliminary recon-
aissance of routes onto the inland ice, Nansen was ready to
start. Initial progress was dispiritingly slow as the heavy sledges
had to be heaved up steeply inclined glaciers cut through by cre-
vasses. Nansen had fitted his sledge runners with steel, hoping
that this would make them easier to pull. Soon disappointed, he was
to compare pulling them through newly fallen snow to hauling
weights through clay. On 27 August, after twelve days of hard
labor, he had no option but to change his destination from Christi-
anshåb to Godthåb (Nuuk). At 64°N, Godthåb was 5
degrees south of Christianshåb and 90 miles closer. By the end
of August, the last of the coastal nunataks was lost to view, and
all except Nansen and Sverdrup were on skis. Two days later, the
pair abandoned their snowshoes entirely for skis, finding the
snow surfaces firmer and the gradient much reduced. As Nor-
denskiöld’s Saami had reported, once on the plateau the sur-
face was perfect for skiing, though Nansen, whose boredom
threshold was notoriously low, later complained of finding his
three weeks there “inordinately monotonous.” By 12 September,
skiring at some speed toward the west, they were beyond the
highest point of the ice sheet at 2,718 meters. Seven days later
they could see the west coast. As the ice began its steep descent
to the sea, the surface again became dissected by dangerous
crevasses, which they picked their way through with extreme
care. Once off the ice, they followed the Austmannav Valley to the
head of Ameralik Fjord, reaching it on 26 September. The
crossing had taken forty-four days.

They were still some 60 miles from Godthåb, and the only
way to reach it was by sea; for that they needed a boat. Having
brought with them few suitable materials, they had to put
together a fragile craft using the tent groundsheet and what-
ever wood could be found locally on low-growing shrubs. At
some hazard, Nansen and Sverdrup then rowed to Godthåb,
where they arrived on 3 October. Two boats were sent to pick
up the others, and by 12 October all were at Godthåb. They
were too late to catch the last ship to Europe, but wintering in
Greenland was not wholly unwelcome to Nansen, who used the
opportunity to learn kayaking from the Inuit, as well as other
knowledge suggesting further improvements in expedition
equipment.

Although Nansen had missed the last ship, messages for-
warded by kayak ensured that news of his achievement
reached Europe before the end of the year. Thus when he even-
tually returned to Copenhagen in May 1889, it was to a tri-
umphant welcome. Nine days later, he was greeted as a national
hero in Christiania.

Nansen’s journey demonstrated that the ice sheet extended
across Greenland with no mountains or ice-free land of any
kind interrupting its unbroken expanse. From what he had
seen, he was also able to infer that it did so at least as far north
as 75°N, and probably farther. The expedition’s other contri-
butions to science were slight, although a meteorological reg-
ister was maintained and some geological and hydrographic
studies conducted. In terms of equipment and methods of
polar travel, however, what had been learned was altogether
more significant. The “Nansen sled” soon became standard.
Skis—previously little known outside Norway—had been
proved the method par excellence for long-distance travel
over snow and ice.

Across the Arctic Ocean in Fram, 1893–1896

In June 1884, fragments of boxes bearing the name “Jeannette”
were found off the coast of southwest Greenland along with
other relics unmistakably from the shipwreck of George De
Long’s expedition vessel. Jeannette had sunk in June 1881
some way north of the New Siberian Islands. Since these
objects had clearly been transported by a current, Nansen cal-
culated that they had been brought across the Arctic Ocean at
a rate of about 4 miles per day. If so, then surely a suitably con-
structed ship, entering the ice sufficiently far east, might be
carried by this same current across the North Pole. The ex-
periment would not only be risky; it would be expensive. But after
his trek across Greenland Nansen’s prestige was such that the
Norwegian parliament was prepared to vote him almost all
that he needed and certainly sufficient to begin work on the
construction of his ship, which was to be built by the naval
architect Colin Archer. The design of the 400-ton schooner
Fram (Forward) incorporated many innovations, the most
distinctive being a smoothly rounded hull designed to reduce
risks posed by ice. In theory, intense ice pressure should cause
the ship to rise up out of the ice rather than being crushed
within it.

Through sheer steadiness and reliability, Otto Sverdrup had
come to be regarded as second-in-command on the previous expedition, and Nansen was keen that Sverdrup participate again as Fram's captain. Others selected were Sublieutenant Sigurd Scott-Hansen (navigator), Dr. Henrik Greve Blessing (medical officer), Theodor Claudius Jacobsen (chief mate), Anton Amundsen (chief engineer), Lars Pettersen (second engineer), Bernhard Nordahl (electrical engineer and stoker), Adolf Juell (steward and cook), Peder Leonhard Hendriksen (harpooner), Hjalmar Johansen (stoker), and seamen Ivar Otto Irgens Mogstad and Bernt Bentsen. Scott-Hansen was given primary responsibility for scientific observations.

On 24 June 1893, Fram left Christiania, making several brief landings along the Norwegian coast before sailing east to Yugor Strait, where its engines were overhauled and thirty-four dogs taken on at Khabarovo. Departing on 3 August, Fram was in relatively open water for this region once past the Yama Peninsula and succeeded in rounding Cape Chelyuskin on 10 September, almost certainly only the second vessel to do so after Adolf Erik Nordenskiöld's Vega in 1878 (see also Tolstoukhov, Ivan). On 22 September, having crossed the Laptev Sea to the New Siberian Islands, it was made fast to an ice floe at 78°50'N, 133°37'E and three days later was firmly frozen in. On 25 October the sun set for the last time.

For next two months there was very little movement, but by January a slow northwest drift was apparent. By 2 February 1894, Fram was north of 80°N, now at 132°10'E. This drift gradually became more marked, and by mid-May it was beyond 81°N at 126°E. Although Nansen in particular found progress frustratingly slow, others busied themselves with scientific measurements and shipboard duties; he at least had the satisfaction of proving this area of the Arctic Ocean to be free of land and more than 3,000 meters deep. Latitude 82°N was passed on 31 August at 114°E longitude. By now, it was evident that Fram was indeed drifting in the direction of Greenland as Nansen had predicted and that its design should enable him to reach the recently discovered archipelago of Franz Josef Land. In fact, neither exists, and Nansen and Johansen were to encounter no land north of 82°N.

When land was seen for the first time in nearly two years on 24 July, it came as considerable relief. Through an unfortunate accident, both chronometers had been allowed to run down at the same time, meaning that Nansen could only guess the longitude. To be as certain as he could of reaching Franz Josef Land, he had calculated their position on the basis of an assumed longitude some way farther west of his best estimate, and he was reasonably sure that the islands now in view formed part of this archipelago, despite not being shown on Payer's map. Presuming that they were new discoveries, Nansen named two of them for his wife and baby daughter. Actually it was just one island; today it bears the combined name Eva-Liv. On 4 August, Nansen was waiting with his sledge by his side when he heard Johansen cry "Grab your gun!" Seizing his rifle, he let go the sledge, which slid into the water with his kayak. Without the kayak he would be dead, so Nansen first hauled it out of the water and then aimed his rifle at an enormous bear that was about to devour his colleague, who plaintively exclaimed, "You had better be quick, Mr. Nansen!" Nansen shot the bear. On 10 August, they managed to scramble ashore for the first time on a tiny island. There was no prospect of being found there, or of surviving for any length of time. Nansen's hope was to reach Cape Flora, where Benjamin Leigh Smith had wintered in 1881–1882. However, on 28 August, with the days rapidly shortening and still without any clear knowledge of his location, Nansen decided to winter at Cape Norway on Jackson Island, building a primitive hut in which he and Johansen spent much of the winter huddled in their shared sleeping bag with just walrus and polar bear meat to eat (see Jackson Island).

On 19 May 1896, the journey south was resumed. During the winter Nansen had come to the conclusion that they were on "Gillis Land," an island reported as lying between Franz Josef Land and Svalbard. His plan was first to cross this land and then paddle to Svalbard in the kayaks. This was ambitious in the extreme, but before he could make the attempt his kayak was pierced by a walrus. Delayed two days for repairs, Nansen was cooking when he heard the sound of barking dogs. Leaving Johansen behind with the kayaks, he skied toward the sound and soon encountered the British explorer Frederick Jackson, who had come out to investigate reports of mysterious figures seen on the ice. (A full account of this extraordinary meeting is given in the entry for Jackson.)
Nansen and Johansen remained six weeks at Cape Flora, Northbrook Island, before returning to Norway on Jackson's supply vessel, *Windward*, to reach the north Norwegian port of Vardø on 13 August. From there telegrams were sent reporting the expedition’s success. Nansen had mixed feelings about the absence of any word from *Fram*. On the one hand, he was naturally concerned for its safety. On the other, he had wished to spare his wife worry should his ship return before he did. Nansen did not have to wait long. On the very next day, *Fram* reached Danes Island, Spitsbergen, having been released into the North Atlantic exactly as predicted and having achieved a farthest north of 85°55’N at 66°31’E. The results of the scientific work conducted on board would fill six large volumes.

Although Nansen long nurtured plans to lead an expedition to Antarctica (he recognized that reaching the South Pole would be a sporting challenge for expert skiers), he was never able to achieve that ambition, which instead was to be realized by his compatriot, Roald Amundsen. Caught up in domestic and then international politics as Norway struggled first to assert independence from Sweden and then establish its own place in the world, he was to have only limited opportunities to visit the Arctic and was to undertake no more major expeditions.

**See also:** Amundsen, Roald; Arctic Ocean; Danes Island; De Long, George; Farthest North; Franz Josef Land; Greenland, Inland Ice; Inuit Contribution to Polar Exploration; Jackson, Frederick (1894–1897); Jackson Island; New Siberian Islands; Nordenskiöld, Adolf Erik; North Pole; Northbrook Island; Peary, Robert; Smith, Benjamin Leigh; Sverdrup, Otto

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**Nares, George**
(1831–1915)
The British naval officer George Nares led two expeditions to the polar regions. As captain of HMS *Challenger*, he had the privilege of commanding what became known as the founding voyage of the modern science of oceanography. In the course of its circumnavigation, *Challenger* visited several sub-Antarctic islands and sailed briefly across the Antarctic Circle, the first steamship to do so, but its most important contribution to Antarctic exploration were the rocks dredged up from the seafloor, which provided additional evidence that Antarctica was a continent and not a collection of islands. His Arctic expedition was cut short by a severe outbreak of scurvy, but nevertheless it achieved a record farthest north and significant discoveries in northern Ellesmere Island and Greenland.

George Strong Nares first visited the polar regions as second mate aboard HMS *Resolute* during the Franklin search expedition commanded by Henry Kellett. He was subsequently to prove himself a fine surveyor. In 1871, as captain of HMS *Shearwater*, he assisted Dr. William B. Carpenter (1813–1885) in making pioneering studies of ocean circulation during a voyage that enabled Carpenter to demonstrate, at least to his own satisfaction, that temperature and salinity differences led to significant water movements beneath the surface of the sea. Carpenter’s work played a major role in persuading the British Admiralty to organize what became known as the *Challenger* expedition, though leadership of the scientific party was ultimately given to Charles Wyville Thomson (1830–1882), professor of natural history at Edinburgh University, rather than to the abrasive and now somewhat elderly Carpenter. Nares was the obvious choice to command the ship, HMS *Challenger*, a 2,306-ton square-rigged corvette with auxiliary steam power; it was converted from a warship into the world’s first oceanographic research vessel.

**Challenger Explores the Southern Ocean, 1872–1874**
*Challenger* sailed from Portsmouth on 21 December 1872. During the voyage, it was to log 68,890 miles and carry out a systematic program of measurements at 362 observation stations. Measurements at each station included sounding the depth of sea, lowering a dredge to collect marine life and samples (including rocks) from the seabed, and obtaining temperature measurements and water samples at various levels in the ocean from the surface downward. In addition to this scientific program, Nares was to conduct hydrographic surveys of the many uncharted islands *Challenger* would visit during the course of its extended voyage.

During its slow passage south through the Atlantic, *Challenger* did not reach the region of the Prince Edward Islands until 24 December 1873. The first chart of these islands was compiled, and, when a landing was made on Marion Island two days later, it was the first for scientific purposes. During the visit, which lasted only a few hours, specimens of the island’s rocks, plants, and animal life were collected for later study. Nares next set course for the Crozet Islands. Hog Island was seen on 31 December, but little charting could be attempted in the foggy conditions so characteristic of these islands. Nor did it prove possible to land on Possession Island when *Challenger* sailed along its southern coast. At Kerguelen, however, Nares was able to complete his program. Anchoring at Christmas Harbor on 6 January 1874, *Challenger* circumnavigated the main island in a clockwise direction during the next month. As he moved slowly around the coast, Nares busied himself with hydrographic and topographic surveys designed to link the comparatively unknown southern to the better known northern coast. Meanwhile, scientists were landed at various locations to add to their natural history collections.

On 2 February, Nares sailed from Kerguelen toward Heard Island. Fog made navigation difficult, but the Macdonald Islands were sighted on 6 February, and that afternoon *Chal-
lenger anchored at Whisky Bay, Heard Island. There, they were met by some forty American sealers. Remaining on the island for three years at a time, these men dwelled in crude stone cabins and made a living from the large population of elephant seals. Challenger again had made the first scientific visit.

After remaining just one day at Heard, Challenger sailed south for the next six days. The first iceberg was seen on 11 February. Five days later, it became the first steamship to cross the Antarctic Circle. At 66°40'S, 78.30°E, Nares decided to turn about. His ship was not ice-strengthened, and he was not instructed to go as far south as possible. Even so, alarms were experienced with the icebergs, particularly on 24 February, when Challenger collided with one, losing its jib-boom and being saved from further damage only by its auxiliary steam power. Three days later, course was set for Melbourne, and the Antarctic was left behind.

Apart from charts and natural history collections for several sub-Antarctic islands, what had Challenger's voyage contributed to knowledge of Antarctica? The most significant work had been accomplished by the dredge that brought up quantities of rock from the ocean floor apparently of continental origin, including granite, quartz, limestone, and sandstone. Moreover, the farther south Challenger sailed, the greater the quantity of rocks dredged up. Previous observations of rocks being transported on icebergs suggested that they had been deposited from melting icebergs, which had carried them there from a continental landmass to the south. Not being of volcanic origin, it seemed unlikely that the rocks had come from oceanic islands. Similar findings were to be reported subsequently by Carl Chun's German Deep-Sea Expedition of 1898–1899.

In late 1874, Nares was informed that he had been appointed to command an expedition to the Arctic, in which he was to be joined by Challenger's first lieutenant, Pelham Aldrich. Frank Tourle Thompson was to replace him as captain of Challenger during the remainder of its voyage.

**A Major Arctic Expedition Is Blighted by Scurvy, 1875–1876**

It was the fondest hope of Clements Markham, as well as the Royal Geographical Society and a bevy of admirals who owed their careers to participation in Arctic expeditions, that Nares would now restore the Royal Navy’s grand tradition of Arctic exploration. Markham and his colleagues had watched as a succession of American expeditions—under Elisha Kent Kane (1853–1855), Isaac Hayes (1861–1862), and Charles Francis Hall (1871–1873)—advanced toward the Pole in a region previously considered the exclusive preserve of the British navy. Since the last of the Franklin search expeditions in the 1850s, however, all exploratory activities had ceased. A change of government in 1874 helped Markham and his colleagues to persuade the Admiralty at last to organize a new expedition. Nor was it to be a penny-pinching affair. If Great Britain were to involve itself again in the Arctic, then it would be in the grandest manner possible, as befitted its past achievements. A total of £150,000 was made available, enabling the fitting out of two large vessels: the 751-ton steam sloop HMS Alert, and the 556-ton former whaler HMS Discovery, crewed by sixty-two and sixty men, respectively. Nares would sail in Alert, with Captain Henry F. Stephenson taking command of Discovery. Unlike the Challenger voyage, this venture was more exploratory than scientific, though a scientific manual was compiled and each ship carried one scientist: Captain Henry W. Feilden in Alert, and Henry Chichester Hart in Discovery.

On 29 May 1875, the two ships sailed from Portsmouth, accompanied as far as West Greenland by HMS Valorous with extra stores, which were transshipped at Godhavn. Thirty-five dogs were purchased at Ritenbenk. At Proven, the Greenlander Hans Henrik came aboard. He had previously been with Kane, Hayes, and Hall as a hunter and dog handler. Last to join was the interpreter and dog handler N. C. Petersen at Uper-
navik. Smith Sound was entered on 28 July. Nares now stationed himself in the crow’s nest, from where he conned his ships north, keeping to the western side of Kane Basin and Kennedy Channel, where previous explorers had reported better conditions. Given the real danger that the vessels might become icebound, Alert and Discovery were to winter separately, so that if one was trapped its crew could return home in the other. A suitable anchorage for Discovery was found on 25 August on the northern shore of Lady Franklin Bay. There, in Discovery Harbor, it would winter, while Alert continued through Robeson Channel to 82°28’N, where winter quarters were established on 1 September at Floeberg Beach. This was the farthest north achieved by any ship and the farthest north that any expedition had wintered.

After first building a depot at Cape Joseph Henry, from where an attempt on the Pole was to be made the following year, Nares followed well-established naval practices to ensure his crew’s comfort and occupation through the long, dark months. Unfortunately, naval expertise in the edification and entertainment of crews was not matched by knowledge of how they should be fed. So far north, hunting was poor and little fresh meat was available. The crews subsisted largely on salt beef and other preserved food, the best that the navy could provide; nevertheless, the food was deficient in vitamin C. Thus, by spring many of the men were already on the point of developing scurvy.

On 3 April 1876, Commander Albert Markham and Lieutenant Pelham Aldrich led out their sledging teams from Alert. While Nares remained on board with a skeleton crew, fifty-three men hauled seven sledges northward. Each sledge was bedecked with flags and bore a name—Marco Polo, Victoria, Challenger, and so on—redolent of medieval chivalry, an image maintained by the men’s clothes, which were marked with heraldic symbols to render them more recognizable. With the reiterated cry “One, two, three—heave!” they slowly made their way north, officers walking ahead with sextants, compasses, and other badges of office, the men hauling for their lives behind.

From Cape Joseph Henry, Markham’s party headed due north toward the Pole across the sea ice, while Aldrich continued to follow the coast of Ellesmere Island, sledging past Capes Columbia and Aldrich—at 83°06’N and 83°07’N, the northernmost points in the Canadian Arctic—to Alert Point, in the process naming many features, including Markham Fiord, Ward Hunt Island, McClintock Inlet, and Yelverton Bay. Already on the outward journey, signs of scurvy had appeared among his men; the symptoms became more evident on the way back to Alert. By the time that he was reached by a relief party on 20 June, Aldrich was attempting to haul both sledges helped by just one man, all the others being incapacitated. Five days later, he and his men were safely back aboard.

On 6 April, Lieutenant Lewis Anthony Beaumont left Discovery with a third major sledging party. After first following the coast of Ellesmere north to Alert, from there he crossed Robeson Channel to reach North Greenland. Scurvy again was soon apparent, and Lieutenant Wyatt Rawson was sent back on 11 May with the worst-affected. Beaumont himself turned back eleven days later, but not before discovering St. George and Sherard Osborn fiords. With most of his party weakening rapidly, Beaumont struggled south toward Polaris Bay. It is doubtful whether any of this party would have survived had they not been found by Rawson and Hendrik’s dogsledge relief party. Even so, two were to die—James Hand and Charles Paul—before Discovery was reached on 15 August.

The expedition had been organized on the assumption that it would spend two winters in the Arctic. With forty men in Alert and twenty in Discovery affected by scurvy, Nares reluctantly concluded that he must curtail his activities and bring his men home. With Alert’s anchorage surrounded by thick pack, this looked likely to prove difficult, but Nares succeeded in blasting a path through, and Alert steamed away from Floeberg Beach on 31 July. Again during the voyage south, Nares was to be found day and night in the crow’s nest, as first Discovery was picked up, then Baffin Bay safely entered through Smith Sound on 9 September.

The reception given to Alert and Discovery on their return to Portsmouth on 2 November was altogether different from their enthusiastic sendoff. Not only had they returned one
year early; they had not attained the Pole or, indeed, ventured anywhere near it. Worse still, scurvy had been allowed to break out. At this time, officials liked to believe that, even if the causes of this disease were not yet understood, there were at least well-established practices a prudent commander could adopt to prevent its occurrence. So severe an outbreak on a major expedition was thus a considerable embarrassment to the Admiralty and, most of all, to Nares himself. The official report did not entirely exonerate him, stating that he should have ensured the provision of lime juice to the sledging parties, something that would have involved almost insoluble logistical difficulties. In truth, the problem lay partly with the lime juice, much less effective as an antiscorbutic than lemon juice, which it had only replaced since limes and not lemons were grown in the British West Indies. More significant, however, was the lack of fresh meat. Nares was not to suffer from this unfair judgment. Knighted in 1877, he was soon bedecked with awards by geographical societies and rose to the rank of vice admiral on retirement in 1892. Yet the cause of polar exploration in Great Britain most certainly was blighted, and not for another twenty-five years was Markham again to be in the forefront in persuading his government to equip another expedition—this time to Antarctica and led by Robert Falcon Scott.

References and further reading:
Markham, A. H. 1878. The great frozen sea. London: Dally, Isbister.

Nares Strait (Canada and Greenland)

This channel, 500 nautical miles long, connects Baffin Bay with the Arctic Ocean. Robert Peary called it “the American route to the Pole,” as it had been explored by a succession of American expeditions: Elisha Kent Kane (1853–1855), Isaac Hayes (1860–1861), Charles Francis Hall (1871–1873), and his own. Peary’s name was also designed to deter others from attempting the route while he himself was set on reaching the Pole. Nares Strait consists of three channels (Smith Sound, Kennedy Channel, and Robeson Channel) and two small inland seas (Kane and Hall Basins). At its narrowest, it is just 12 miles wide. Strong currents and treacherous pack make navigation exceptionally difficult, especially close to the entrance to Smith Sound, where the channel narrows sharply between Capes Alexander and Isabella. It is packed through much of the year by polar ice brought south from Lincoln Sea; conditions for sledding are also generally poor, though an ice bridge forms in most years in Smith Sound, allowing the Inuit and others to cross from Greenland to Ellesmere Island in February, March, and April. As elsewhere in the Arctic, the best sledding is generally along the fast ice close inshore.

Smith Sound at the entrance to Nares Strait is 35 miles across. It was discovered by William Baffin on 6 July 1616 and named for Sir Thomas Smith, the first governor of the East India Company and sponsor of his expedition. Baffin described it as “the greatest and largest sound in all this bay” (i.e., Baffin Bay). In 1818, John Ross did not approach closer than 50 miles but nevertheless declared it a bay and not a sound, being closed to the north by mountains. On either side of its entrance, he named Capes Isabella and Alexander for the two vessels under his command. Although Edward Inglefield is generally credited with being the first to prove Ross wrong when he reached 78°28′N in August 1852, it is possible that he was anticipated by whalers, who are reported as having attained 79°N in this region in the 1820s.

Inglefield’s report of open water stretching far north led directly to the succession of American expeditions. In 1853, Elisha Kent Kane reached 78°41′N in Kane Basin, before wintering on the Greenland coast in Rensselaer Harbor. In the following year, two members of his party—William Morton and Hans Hendrik—sledged to 81°22′N to discover Kennedy Channel. Again, open water was sighted, encouraging the belief that an open polar sea might be found near the Pole. Isaac Hayes sought to reach this in 1860–1861, wintering in Foulke Bay, just south of Etah, before sledging north along the Ellesmere coast to reach 81°35′N. His failure to report Lady Franklin Bay has led some to believe that he did not get so far. Hall Basin and Robeson Channel were discovered by Charles Francis Hall in 1871. After attaining a farthest north of 82°11′N, he wintered on the Greenland coast in Thank God Harbor.

First to navigate the entire strait was George Nares in 1875, when HMS Alert reached 82°24′N to winter off Cape Sheridan. At the same time HMS Discovery wintered in Lady Franklin Bay, where Adolphus Greely’s expedition was based at Fort Conger between 1881 and 1883. For an account of Greely’s boat and sledge journey south to Smith Sound, and the harrowing tale of starvation at Cape Sabine, see the entry under his name. Peary sought to emulate Nares in 1898, but his underpowered vessel Windward was unable to reach farther than Cape D’Urville, on the western shore of Kane Basin. Following later winterings at Fort Conger (1899–1900), Etah (1900–1901), and Cape Sabine (1901–1902), Peary finally obtained a ship in 1905; Roosevelt was sufficiently powerful to force its way through to Cape Sheridan, and only then under
In 1864, Adolf Erik Nordenskiöld and Nils Dunér had climbed a mountain on the east coast of Spitsbergen to see in the very far distance “a rather high land with two rounded domes. It was the westernmost part of a still almost unknown Arctic continent, which, though forgotten and omitted on the newest charts, had been discovered already in 1707 by commander Giles” (translated in Liljequist 1993, 264). What Nordenskiöld and Dunér were in fact seeing was King Charles Land; what Cornelius Giles had discovered in 1707 was almost certainly White Island. Neither by any means constitutes a continent, but it took Nathorst’s voyage of 1898 to prove this fact.

Whereas the sea to the west of Svalbard is customarily navigable to 80°N on account of the warming influence of the Gulf Stream, east of Svalbard conditions are much more difficult for navigation. Only in exceptional years were these waters accessible to sailing ships, which largely accounts for the sporadic sightings of land here and of failures to locate it subsequently. (The complex histories of first sightings, searches, and final confirmations of King Charles Land and White Island are given under their respective entries.)

Nathorst had known of Nordenskiöld and Dunér’s reported continent since his youth, and he now determined to search for it. Nathorst was a scientist, and his goals naturally included science as well as geographical discovery, and with the assistance of grants from King Oscar II and the businessman Oscar Dickson, among others, sufficient funds were raised to purchase the fine expedition vessel Antarctic, which had visited Antarctica with Henrik Bull in 1893–1895. To meet the needs of the large scientific staff, it was fitted out with a laboratory, a darkroom, and a cabin for the taxidermist. Those participating in the expedition included the botanists Dr. C. F. Gunnar Andersson and O. A. Henrik V. Hesselman, oceanographer and geologist Dr. Axel Hamberg, surveyor Lieutenant C. J. Otto Kjellström, taxidermist and zoologist Gustaf I. Kolthoff, physician and bacteriologist Dr. Ernst I. Levin, and marine zoologist Dr. Axel G. Ohlin. Also included in the party was the undergraduate oceanographer and geologist J. Gunnar Andersson, who was later to serve as second-in-command on Dr. Otto Nordenskiöld’s expedition to Antarctica.

Departing from Gothenburg on 25 May, Antarctic anchored off Bear Island on 13 June. During a brief visit in 1870, Nathorst had observed glacial striae—scratch marks in the rock—that appeared to prove that this island had once been covered by an ice sheet. He was now able to confirm these observations while his colleagues compiled the first accurate topographic survey and investigated the island’s plants, animals, and geology. Prevented by a heavy swell from landing on Hope Island, Nathorst next made for Spitsbergen, where he anchored in Bell Sound on 27 June. Antarctic remained there for three weeks while further scientific and mapping studies were completed, proving the fiord system to be considerably more extended than depicted on previous maps. After spending a few days in Ice Fjord and making a brief visit to Prince Charles Foreland, Antarctic sailed west to obtain soundings close to the edge of the ice extending off East Greenland. With indications that this was to be a good ice year, now was the opportunity to attempt to reach previously inaccessible King Charles Land. Heading south around Spitsbergen and Edge Island, Antarctic was off Swedish Foreland on 4 August, remaining for four days to survey the island. For Nathorst, the
geology was of particular interest, possibly linking Spitsbergen and Franz Josef Land farther east. A multitude of polar bear tracks showed the island to be an important denning site. On 8 August, **Antarctic** anchored off King’s Island at Cape Altmann, where further studies were conducted for the next eight days whenever weather permitted. Nordenskjöld and Dunér’s “continent” was proved to consist of no more than a group of small islands. Nathorst, however, was not to have the honor of making the first scientific survey, being narrowly anticipated by Theodor Lerner’s German expedition, which left King Charles Land the day after **Antarctic** arrived.

White Island was Nathorst’s next objective. First sighted by the Dutch whaler Giles in 1707, the existence of this long-sought island had finally been confirmed in 1876 by the Norwegian walrus hunter Johan Kjeldsen. As they approached the reported position on the morning of 18 August, a low white dome was seen looming in the distance. White Island was evidently well-named, being completely covered by an ice cap except at its northeastern and southwestern extremities. At both of those locations, members of the party landed briefly before **Antarctic** completed its circumnavigation and headed north to meet the pack ice. They followed the ice edge west, making landings on the Charles XII Islands, two small islands north of North East Land. On the same day—20 August—**Antarctic** reached 81°14’N, its farthest north, before continuing on past the Seven Islands to land at Grey Hook, north Spitsbergen, on 25 August. After one final attempt to get farther north was repelled by dense ice, they set course for home, following the west coast of Spitsbergen south to complete one of the earliest circumnavigations of Svalbard and certainly the first to land on all of the major outlying islands, with the exception of the customarily inaccessible Hope Island. The voyage had been outstandingly successful.

**The Fiords of East Greenland, 1899**

Despite searches covering much of the Arctic, no trace had been found of the Swedish balloonist Salomon Andrée and his two companions, who had taken off from Danes Island, northwest Spitsbergen, on 11 July 1897 and had not been seen since. Following the suggestion of Fridtjof Nansen, the Swedish government decided to organize an expedition to search the east coast of Greenland, just in case Andrée had been caught on an ice floe and drifted south with the East Greenland Current. If so, it was possible that he had been able to reach land with sufficient game to support the three-man balloon for an extended period. It was a long shot but by no means impossible, and the Swedes felt that they had no option but to investigate, commissioning Nathorst to lead the attempt. There was no talk now of deafness making him an unsuitable leader! Since the chances of finding Andrée were slim, Nathorst received permission to include in his party several scientists, including Per K. H. Dusén (botanist, surveyor, and photographer), Dr. Filip Akerblom (meteorologist, oceanographer, and physicist), Ivar Arwidsson (zoologist), Dr. Josef Hammar (physician and ethnographer), and H. Skoog (taxidermist).

**Antarctic** sailed from Stockholm on 20 May 1899. Reaching the ice off East Greenland at 70°48’N, 15°30’E on 10 June and finding it impenetrable, Nathorst decided to head back to Jan Mayen, where he landed two days later. There, the expedition remained until 24 June, landing whenever possible to conduct scientific studies and search for signs of Andrée, one of whose message buoys could well have drifted here. Waiting until he judged the season sufficiently advanced to allow another attempt to reach East Greenland, Nathorst headed **Antarctic** west toward the ice; its edge was followed north until a promising opening was found, through which the ship was at last able to make steady progress toward land. By 2 July, it was through the drift ice and in relatively open water. Ahead lay Pendulum Island and King Christian X Land.

The most likely places to look for Andrée were prominent capes and offshore islands. With better hunting to be had inland along the fiord systems, it was not likely that he would remain in such spots, but he surely would have left messages there to indicate his whereabouts. This early in the summer, the fiords themselves were largely blocked by ice. The first landing was made on Pendulum Island on 6 July, the next at Walrus Island farther south, where a large depot was left for Otto Sverdrup’s expedition, expected to explore this region. A landing was then made on Sabine Island to visit the site where Karl Koldewey had wintered in 1869–1870. Surely here, if anywhere, would be found some message from Andrée? There was no sign, though hut remains showed the island to have been formerly occupied by the Inuit. Further evidence of past Inuit settlement was found on Clavering Island, from where on 17 July **Antarctic** sought to enter Franz Josef Fjord, only to be turned back by dense coastal ice. Nathorst was particularly keen to explore this fiord, which Koldewey had reported to be rich in game and therefore one of the few places where Andrée and his companions might subsist for any length of time. The fact that the inner fiord system remained entirely unexplored presented another reason for investigation. After waiting five days for conditions to improve, Nathorst decided to return later in the year and continued on to examine the coast farther south. By 29 July, **Antarctic** was off Cape Stewart at the head of Scoresby Sound. If Andrée had been here, he would surely have left a message at this prominent landmark; when none was found, Nathorst concluded that there was little point in searching for him in the sound itself. Returning north, scientific studies were made in Hurry Inlet before Franz Josef Fjord was at last entered on 9 August. What Nathorst now discovered was far beyond his expectations. As they headed inland, the fiord narrowed rapidly, with sheer rock walls ascending to well over 1,000 meters on either side. More fiords entered laterally, and a great sound—King Oscar Fjord—was found leading east back out to sea. With so much to survey and map, all other
studies had to be sacrificed since there was far too much work for the one surveyor—Dunér—to complete unaided. Thus, Nathorst the geologist could do no more than stare at the magnificent rock exposures, which he now was discovering but had no opportunity to examine. In such a place one season was not enough, but Antarctic was not equipped to winter. On 30 August, it stood out to sea to begin a surprisingly rapid passage through the ice, borne south with the East Greenland Current. Two days later, the ship was in the open waters of the Atlantic, arriving at Stockholm on 17 September.

Again, Nathorst’s voyage was recognized as exceptionally successful. No one was too surprised that he had not found Andrée, and his discovery of the true extent of the Franz Josef and King Oscar Fjord systems was a geographical find of the first significance. What, however, of Andrée? Strangely enough, Nathorst had come within a few hundred meters of solving the mystery of his disappearance—but on his previous expedition, not this one. Andrée and his companions had indeed reached land on 5 October 1897, when they struggled ashore on the very isolated White Island. There they died soon after. On 18 August 1898, Nathorst had landed briefly at the covered only in 1930.

see also: Andersson, Gunnar; Andrée, Salomon; Bear Island; Bull, Henrik; Greenland, East; Greenland, West; Hope Island; Jan Mayen; King Charles Land; King Christian X Land; Koldewey, Karl (1869–1870); Nansen, Fridtjof; Nordenskiöld, Adolf Erik; North East Land; Prince Charles Foreland; Spitsbergen; Svalbard; Sverdrup, Otto (1898–1902); Torell, Otto; White Island

References and further reading:

Nelson Island (South Shetland Islands)
Located at 62°18'S, 59°03'W, this island—12 miles long and 7 miles wide—is separated from Robert Island by Nelson Strait and from King George Island by Fildes Strait. It was first sighted from the north in October 1819 by William Smith. Edward Bransfield’s chart, based on observations made in January 1820, fails to distinguish it as a separate island, and sealers later that year would thus have been the first to identify its insularity. Fabian von Bellinghausen charted it from the south in February 1821 and named it “Leipzig Island” for the Russian victory over the French in 1812. Harmony Cove was much used by sealers with the American sealing vessels Harmony and William and Nancy being the earliest, based here in 1820–1821. The name dates back at least to 1821 and probably derives from the British sealing vessel Nelson.

As elsewhere in the South Shetlands, the island was largely left alone for the next 130 years, apart from occasional visits during the nineteenth century by sealing parties. Otto Nordenskjöld did spend a few hours ashore in January 1902 to collect specimens and make natural history observations while on his way to the Antarctic Peninsula.

In 1954, Argentina built the refuge hut Francisco de Gurruchaga at Harmony Cove, and since 1985 there has also been a Brazilian refuge hut. Vaclav Vojtech Station was opened at Maxwell Bay in February 1988. Initially the first Czechoslovakian Antarctic station, this is now operated in occasional summers by scientists from the Czech Republic and is named for a Czech member of Byrd’s first Antarctic expedition.

see also: Argentina; Bellinghausen, Fabian von; Bransfield, Edward; Brazil; Byrd, Richard (1928–1930); Czech Republic; Nordenskjöld, Otto; Sealing and Antarctic Exploration; Smith, William; South Shetland Islands

Netherlands
Vaygach Island in the Russian Arctic, the Waigat Islands in Hinlopen Strait, Svalbard, and Vaygat Strait north of Disko Island, West Greenland, preserve names derived from the Old Dutch word vaigat, or “passage.” They demarcate the geographical range of early exploration by Dutch navigators. Since the Englishman Stephen Borough refers to Vaygach Island by that name in 1553, we know it to have been visited by the Dutch earlier than any voyages for which we have record, and prior to the establishment of the trading station on Kildin Island off the Kola Peninsula in 1560. Since there is no other evidence for the Dutch exploring as far east as Vaygach until the 1580s, this is something of a mystery.

The Republic of the United Provinces was established by successful wars of independence fought in 1568–1609 and 1621–1648 against the Habsburg family—the kings of Spain and other dominions. After 1583, when the English fell out of favor with Ivan IV, the Russian tsar, the Dutch came to control all trade with northern Russia. With the Hanseatic League restricting access to Russia through the Baltic Sea, Dutch merchants founded a trading post on the Northern Dvina River that later developed into Archangel. In exchange for luxury goods including wine and precious metals, merchants such as Gillis Hooftman and Balthasar de Moucheron imported furs, caviar, hemp, and wheat. The earliest Dutch voyages to the Arctic were thus mercantile in inspiration, and the first significant explorer was the merchant Olivier Brunel. After Brunel’s untimely death, de Moucheron was prominent in sponsoring the three expeditions in search of a Northeast Passage to Cathay piloted by Willem Barents. The search for the Passage was continued by Henry Hudson in 1609 (sponsored by the Dutch East India Company), and by Jan Cornelisz May in 1611–1612 (sponsored by the States General).
Curiously, Barents failed to note—or at least did not report—the presence of whales off Bear Island and Spitsbergen when discovering these islands in 1596, and it was not until 1612 that Dutch whalers began to visit Svalbard. In 1614, monopoly rights were vested in the Noordsche Compagnie (Company of the North). Until its monopoly was successfully challenged by excluded ship owners in 1642, this company performed a role comparable to that of the Muscovy Company in England, organizing annual whaling fleets as well as a number of exploring expeditions to search for new whaling grounds and trading routes. In 1614, Joris Carolus claimed to have reached 83°N in the vicinity of Spitsbergen. Since this is known to have been a bad ice year with the pack pressing hard upon the north coast, his claim is not generally believed, particularly since Carolus was later to put forward other impossible claims (e.g., discovering land 20 miles east of Iceland). Yet Carolus was quite probably the first to see Edge Island in 1614. In the following year, he claimed to have attained 80°N through Davis Strait, a most unlikely latitude, which would have involved passing through Baffin Bay into Nares Strait. In defiance of the Russian ban on foreign shipping east of the White Sea, the company sent Cornelis Bosman to resume the search for the Northeast Passage in 1625. Bosman succeeded in entering the Kara Sea via Yugor Strait, but ice and bad weather forced his return without his having achieved any significant new discoveries. Following an attack by Basque whalers on the Dutch whaling station at Jan Mayen, two parties of seven men were sent to winter on Jan Mayen and Amsterdam Island in 1633–1634 to protect facilities outside the hunting season. Whereas the party left at Smeerenburg wintered successfully, those on Jan Mayen all died.

Throughout the latter seventeenth and much of the eighteenth centuries, the Dutch remained preeminent in Arctic whaling. Although the most important whaling grounds were off Svalbard, the whalers also searched for new hunting grounds in Davis Strait and across the Barents Sea to Novaya Zemlya. Willem de Vlamingh is reported as rounding Novaya Zemlya to the north in 1664 and sailing across an ice-free Kara Sea to see the Yamal Peninsula in what must have been an exceptionally good year. He visited Novaya Zemlya again four years later. Not long afterward, Cornelis Roule also visited this island, from where he sailed northwest to discover land at 84–85°N. Although this is north of its actual position, this was quite possibly the first sighting of Franz Josef Land. In another good ice year, 1707, Cornelius Giles sailed along the north coasts of Spitsbergen and North East Land to see undiscovered land in the northern Barents Sea—probably White Island, though explorers were to continue to search for “Gillis Land” until the 1930s. Davis Strait was first visited in 1614, with regular expeditions organized from the early years of the eighteenth century. With whale stocks diminishing off Svalbard, the Dutch toward the end of this century were increasingly displaced by the British, and by 1800 the great days of Dutch exploration of the Arctic were long over.

The discovery by Elling Carlsen in 1871 of the hut where Barents had wintered on Novaya Zemlya sparked a revival of interest in Dutch Arctic history. A private initiative led to the organization of a series of voyages to the Barents Sea region in the schooner Willem Barents between 1878 and 1884, with the purpose of erecting memorials to Dutch navigators and reinstating their original place-names, many of which had fallen into disuse. At the same time, Maurits Snellen attempted to establish a scientific station in the Russian Arctic at Dikson Island as the Dutch contribution to the First International Polar Year (1882–1883). Although his vessel Varna became beset in the Kara Sea, a full scientific program was conducted on the ice, whose results were brought safely home despite Varna being abandoned on 22 June 1883. For the Second International Polar Year (1932–1933), Van Zuylen led a station at Ammassalik, East Greenland.

As the Netherlands is a seafaring nation, it is not surprising that Dutch interest in the Southern Ocean dates back to the sixteenth century. Indeed, some believe Antarctica to have been discovered in 1599 by the Dutch navigator Dirck Gerritsz, though that is unlikely. What perhaps is more surprising is the almost negligible role played by the Netherlands in Antarctic affairs since—far less significant, for example, than by its neighbor Belgium. In 1696–1697, Willem de Vlamingh visited the Southern Ocean looking for harbors and searching for missing vessels, but he did not sail south of 40°S. There is little else to report until the modern period.

The Netherlands ratified the Antarctic Treaty on 30 March 1967, after participating in a series of joint expeditions with Belgium to Princesse Ragnhild Coast between 1964 and 1967. Although awarded consultative status on 19 November 1990, the Netherlands has never maintained an Antarctic station of its own. Instead, Dutch scientists have participated in expeditions mounted by other countries. In 1988–1989, for example, Dutch members were included in the Brazilian expedition to Elephant Island; and in 1990–1991, Dutch scientists participated in the Australian and German expeditions, in addition to working with the Poles on King George Island. The national Antarctic program is coordinated by the Geosciences Foundation of the Nederlandse Organisatie voor Wetenschappelijk Onderzoek. The Arctic Centre of the University of Groningen has organized several expeditions to the Arctic, often to conduct archaeological research on sites associated with historic Dutch exploration or whaling, for example, Amsterdam Island (1978–1981) and Novaya Zemlya (1992).

See also: Amsterdam Island; Barents, Willem; Bear Island; Belgium; Brunel, Olivier; Davis Strait; Edge Island; Elephant Island; Franz Josef Land; Gerritsz, Dirck; Hudson, Henry (1609); Jan Mayen; King George Island; Muscovy Company; Northeast Passage; Princess Ragnhild Coast; Spitsbergen; Vaygach Island; Whaling and Arctic Exploration; White Island
References and further reading:

Neumayer Channel (Antarctic Peninsula)
Located at 64°47'S, 63°30'W, this navigable strait separating Anvers Island from Wiencke Island in the Palmer Archipelago was first seen and correctly identified as a channel by Eduard Dallmann in 1874, who named it for Georg von Neumayer (1826–1909), founding father of German Antarctic studies. The first to navigate it was Adrien de Gerlache when he sailed around Wiencke Island on 8–9 February 1898. The Chilean refuge hut Yelcho was built in 1962 on Doumer Island and has since operated intermittently as a summer station.
See also: Anvers Island; Chile; Dallmann, Eduard (1873–1875); Gerlache, Adrien de; Palmer Archipelago; Wiencke Island

New Siberian Islands (Russia)
Located at 75°00'N, 142°00'E, this archipelago lies between the Laptev and East Siberian Seas in the Russian Arctic. The main islands are New Siberia (Novaya Sibir), Be’lkovskiy, Kettle (Kotelny), and Faddeyev. Kettle and Faddeyev are in fact one island, joined by a sandspit north of a deep inlet, which misled early explorers into thinking the two were separate. Predominantly low-lying, the New Siberian Islands are best known for the frequency with which the remains of large animal species from the Late Pleistocene era—mammoths, woolly rhinoceroses, and others—can be found preserved in permafrost, which occupies the plane between the degrading hills. Sannikov Strait separates the main group from the Lyakhovskiy Islands to the south. The De Long Islands lie to the northeast. The official Russian name is Novosibirskiy Ostrova.

These islands were almost certainly discovered by Maksim Mukhoplev. In 1690, Mukhoplev traveled from Yakutsk down the Lena River and then along the coast to the Kolyma River, where he was to take up the position of regional administrator. On his way there—or just possibly on his return voyage in 1692—he sighted an island two and a half days’ sailing northeast of the mouth of the Lena opposite Cape Svyatov Nos. This was probably Stolbovoy Island, though he may also have seen the Lyakhovskiy Islands farther east.

The two Lyakhovskiy Islands are the southernmost members of the archipelago (see relevant entry). In 1770, the hunter Ivan Lyakhov observed reindeer heading south across the sea ice. Following their tracks, he came upon the Lyakhovskiy Islands, noting that the tracks continued on beyond. Hummock-strewn sea ice prevented him from pursuing his investigations, but three years later he returned with the merchant Protodyakov. After reaching the Lyakhovskiy Islands by boat, the two men discovered a large island farther north, which they named Kettle Island because of a copper kettle found there. Clearly, they were not the first to reach it. Remaining there to winter, they traveled widely across the island, exploring its commercial possibilities, which in addition to reindeer were primarily mammoth ivory and arctic foxes, both found in profusion. Lyakhov’s exclusive rights to hunt and trade were acquired on his death by the merchants Semen and Lev Syrovatskiy, who employed Yakov Sannikov on several hunting expeditions beginning in 1800. During his extensive travels, Sannikov added considerably to knowledge of the archipelago, discovering Faddeyev Island in 1805 and New Siberia Island in 1806. Bel’kovskiy Island is named for the hunter who discovered it in 1808.

The first large-scale survey was conducted under the leadership of Mathias von Hedenström between 1809 and 1810 and completed by P. Pshenitsin in 1811. Both were fortunate to include Sannikov in their party, who knew the archipelago better than anyone. In 1810, Hedenström and Sannikov believed that they saw land far to the north, a sighting repeated by Sannikov the following year. Many later expeditions were to search for “Sannikov Land,” which, though possibly nonexistent, could well have been Bennett Island “miraged up” (see De Long Islands). Vasil’yevskiy and Semenovskiy Islands were discovered west of Stolbovoy Island in 1815 by Maksim Lyakhov. Between 1821 and 1823, Peter Anjou led a government-sponsored expedition to improve upon Hedenström’s survey and search for “Sannikov Land.”

No more exploring expeditions were to visit the archipelago until 1881, when George De Long led his men south through the islands on his way to the Lena Delta after his vessel Jeannette had been crushed by ice at 77°15’N, 155°E. But throughout the intervening period the New Siberian Islands continued to be visited by hunting and trading parties. De Long naturally had no opportunity for exploration, which was resumed in 1886 by Aleksandr Bunge and Eduard von Toll, whose investigations focused on geology. Toll mistook the eastern part of Kettle Island for a separate island, naming it “Bunge Island” for his colleague. After a brief visit in 1893 to lay two depots for Fridtjof Nansen on Kettle and Great Lyakhovskiy Islands, Toll returned in 1901 to winter in Nepalakh Bay, a sheltered anchorage on the west coast of Kettle Island. From there Toll set out to search for “Sannikov Land,” a journey from which he did not return. Aleksandr Kolchak’s unsuccessful rescue attempt was made from New Siberia Island in 1903.
The first scientific survey was conducted by the icebreakers *Taymyr* and *Vaygach* in 1923 (see Vil’kitskiy, Boris). Interestingly, these confirmed the existence of the two small islands Semenovskiy and Vasil’yevskiy. When resurveyed in 1936, the former had disappeared, leaving just a sandbank, and the latter was one-eighth of its original size. Both consisted largely of permafrost, which would have thawed rapidly once its protective covering of sand was removed.

The first expedition of the Soviet era took place in 1927. This was followed by the establishment of several meteorological stations, including Kettle Island (1933); Bunge Island (1945); and Cape Pestsovy, on the east coast of New Siberia Island. For stations maintained in the De Long and Lyakhovskiy Islands, see the relevant entries.

**See also:** Anjou, Peter; De Long, George; De Long Islands; Hedenström, Mathias von; Lyakhovskiy Islands; Toll, Eduard von; Vil’kitskiy, Boris

### New Zealand

New Zealand’s intimate connection with Antarctica goes back to James Cook. Having become very familiar with its shores during his first circumnavigation (1767–1770), he chose in 1773 to recuperate in a sheltered anchorage in Fiordland, on the west coast of the South Island, after the first Antarctic season of his second major expedition. There fresh water and food were found in abundance, together with magnificent forests providing wood to meet every need. Although Cook himself was to experience few difficulties, the presence of European expeditions was generally unwelcome to the warlike Maoris, and the previous year the French explorer Marc-Joseph Marion Dufresne was killed after overstaying his welcome in the Bay of Islands, North Island. Cook’s second-in-command, Tobias Furneaux, lost a boat crew to the Maoris when a landing was made to gather wild vegetables.

By 1900 it was apparent that vessels attempting to penetrate the pack ice surrounding the Ross Sea should not do so to the west of 170°E. Previous expeditions had sailed south from Hobart, Tasmania, but at 147°18’E this now appeared a less suitable point of departure than Lyttleton, New Zealand, at 172°42’E. Thus it was from New Zealand rather than Australia that Robert Falcon Scott sailed for Antarctica in *Discovery* in December 1901, as did Ernest Shackleton in *Nimrod* in January 1908. And it was to Lyttleton that *Terra Nova* returned on 12 February 1913 with the tragic news of Scott’s death and of all those who had reached the South Pole with him. On 3 April 1916, another ship in distress returned from Antarctica. This was the battered *Aurora* under the command of Joseph Stenhouse, which had been all but sunk by ice in the Ross Sea. Richard Byrd was to inaugurate a long-standing and still continuing relationship with American Antarctic expeditions when he chose to set out from New Zealand ports to his base at Little America in 1928, 1933, and 1939. New Zealand has since acted as a forward base for most American expeditions to Antarctica with the exception of those to the Antarctic Peninsula region.

New Zealand’s claim since 1923 to the sector of the Antarctic continent bordering on the Ross Sea is treated in the entry Ross Dependency. Since 1863, Campbell and the Auckland Islands have also formed part of its sovereign territory.

Despite New Zealand’s long and significant relationship with Antarctic exploration, its first expedition there was not organized until 1955. (See the entry for Edmund Hillary.) While Sir Edmund Hillary was primarily concerned with laying depots in support of a party making the first continental crossing, scientists accompanying his expedition began a research program at Scott Base, which Hillary had established on Ross Island. Initially New Zealand’s contribution to the International Geophysical Year, this initiative was subsequently continued by annual expeditions organized within a national Antarctic program. Scott Base remains the main center, though Cape Hallett on the coast of Victoria Land was operated jointly with the United States from 1957 to 1964, and farther south in the Dry Valleys, the summer station Vanda was maintained between 1968 and 1992.

As a claimant state, New Zealand was naturally one of the twelve original signatories to the Antarctic Treaty. The national Antarctic program is coordinated by Antarctica New Zealand, located within the International Antarctic Center at Christchurch, where the logistics centers of the United States and Italian Antarctic programs are also accommodated. Although some research is conducted by government-employed scientists, the majority of those participating in the national program are staff and students from New Zealand’s universities, among which the Victoria University of Wellington and the University of Canterbury have been particularly prominent.

**See also:** Auckland Islands; Campbell Island; Cook, James; Furneaux, Tobias; Hillary, Edmund; International Geophysical Year; Marion Dufresne, Marc-Joseph; Ross Dependency; Ross Island; Ross Sea; Scott, Robert Falcon; Shackleton, Ernest (1907–1909); Stenhouse, Joseph; Victoria Land

**References and further reading:**

### Nicholas of Lynn (Fourteenth Century)

Nicholas of Lynn was a real person, but whether he was the English friar who explored the west coast of Greenland continues to be a matter for scholarly debate. Whether or not he was Nicholas, the friar’s recorded observations of the far north were significantly to influence depiction of the Arctic in Renaissance world maps.

A sixteenth-century cartographer such as Gerard Mercator (1512–1594) compiled his maps on the basis of a variety of sources. Best of all were up-to-date maps informed by knowl-
edge acquired during recent voyages of discovery. Such maps were chiefly drafted in Portugal and Spain, and access to them was highly restricted since they were regarded as state secrets, export to another country being punishable by death. As a result, Mercator had largely to rely upon the best-informed published maps, to which he added details derived from extensive reading of expedition accounts and other sources. It is one of these other sources that concerns us here.

At some time prior to publication of his great world map of 1569, Mercator borrowed The historie of the voyage of Jacobus Cnoyen Buschoducensis from a friend in Antwerp. This account of a fourteenth-century traveler was of interest to Mercator primarily for its author’s description of meeting a priest recently. The meeting took place in 1364 at the court of the Norwegian king in Bergen. The priest—almost certainly Ivar Bárdarson—had with him an astrolabe, an astronomical instrument given to him in 1360 by an English Minorite friar from Oxford. The priest reports this friar as journeying “through the whole of the North etc.” and as subsequently writing an account of his travels from “latitude 54° . . . continuing to the Pole” under the title Inventio fortunatae (Taylor 1956, 59). Inventio fortunatae was the chief source for Mercator’s depiction of the north polar regions, and Cnoyen’s account was useful to him for appearing to confirm its author’s credibility. Since Inventio fortunatae no longer survives, and indeed probably existed only in a small number of handwritten copies, our knowledge of the travels of the English friar is now limited to the maps of Mercator and other cartographers influenced by his book, a brief note published by the chronicler Richard Hakluyt identifying the friar with Nicholas of Lynn, and a letter from Mercator sent in reply to an enquiry from Dr. John Dee about his sources of information. Cnoyen’s narrative is no longer extant.

The Arctic Travels of an English Friar, 1360

English ships are first recorded as fishing off the coast of Greenland in the early fifteenth century (Seaver 1996). Although not inconceivable that earlier voyages took place, it is more likely that the English friar—whoever he was (Hakluyt’s identification with the distinguished astronomer and traveler Nicholas of Lynn being rejected by many scholars today on the grounds that Nicholas was a Carmelite rather than a Franciscan)—was brought to Greenland in a Norwegian ship. This appears to have been an exploring rather than a trading expedition, and it is possible that he was asked to participate in the voyage led by Paul Knutsson, charged by the Norwegian king with seeking out Norse colonists who were rumored to have abandoned Christianity and gone to live at some unknown location on the coast of mainland North America. For a friar to participate in such a voyage would be natural, and for him to be an Englishman was not unlikely at a time when the church was very much an international institution.

By this date, only the more southerly Eastern Settlement was flourishing as Ivar Bárdarson—the priest with whom the friar most probably exchanged his astrolabe for a Bible—would have been able to report having previously visited the Western Settlement, which he had found to be deserted. From there, the friar is reported as “leaving the rest of his party” before going on to journey “further through the whole of the North” (Taylor 1956, 59). Since it is unlikely that he would have been able to travel far unaided, this may mean that he separated from the others, perhaps to join a party of Norse Greenlanders going farther north, where they were known to hunt for walrus at least as far as 73°N. Since Inventio itself is no longer extant, what he saw is preserved only in Cnoyen’s much garbled account, based as it is on Cnoyen’s interpretation of Bárdarson’s interpretation of what the friar actually saw. Presumably, Bárdarson did meet the friar again after his travels, in which case his interpretation at least is based on hearing the friar’s story firsthand. However, it is possible that he did not—Cnoyen refers to no second meeting—in which case even Bárdarson’s account is secondhand. Much of what appears most fantastic in the preserved narrative may thus be explained in terms of the indirectness with which the friar’s account has reached us. As it is, we learn that the friar saw a mountain range that “goes round the North like a wall,” as well as “four Indrawing Seas” dividing the North into four islands and draining into a whirlpool through which water descended into the earth “as if one were pouring it into a filter funnel.” Most memorably, “right under the Pole there lies a bare rock in the midst of the Sea . . . all of magnetic stone” (Taylor 1956, 59–60). All these details were faithfully recorded by sixteenth-century maps depicting the northern polar regions, no other source being available.

Reconstructing where the friar actually went is impossible without rediscovery of the long-lost Inventio. This naturally has not prevented some from making the attempt, and indeed references to seeing “many trees of Brazil wood” suggest that he may have reached at least as far south as Ungava on mainland North America, while the “furious overfall” of Hudson Strait, as John Davis was later to describe it, would certainly be a good match for the friar’s “Mare Sugenum” (whirling, sucking sea). According to Hjalmar Holand (1957), the friar might have traveled close to the North Magnetic Pole, then possibly near Hudson Bay, and been enough of a scientist to identify its approximate location in the bare rock of the Canadian Shield. Alternatively, Tryggyvi Oleson (1963) confidently identifies the friar’s “magnetic stone” with Himinrodaafjall, a distinctive mountain south of Thule, which he suggests was well-known to the Greenland Norse, as marking the point beyond which currents were too strong for them to travel farther. Wherever he went, the friar seems to have certainly had a close encounter with at least one Inuit hunting party—“23 people not above 4 feet tall . . . whereof 16 were women”—and probably to have seen other Inuit at a distance, since he identified
an extensive area as inhabited by them: “20 days’ journey” across and “33 days’ journey” long. To identify such a large area as inhabited suggests many sightings, and indeed this would be expected if sailing north along the coast of West Greenland.

However unlikely the friar’s tale may now appear as retold by Cnoyen, his original account in Inventio was sufficiently credible to convince Mercator and his predecessors at least as far back as Martin Behaim, whose globe of 1491–1492 presents the earliest surviving depiction of the Arctic clearly derived from Inventio. As for the friar’s actual identity, it is unlikely that this will ever be known with certainty, though the claims of Nicholas of Lynn seem to have been too easily discounted. Like the better-known Franciscans, the Carmelites were one of the four Mendicant Orders and indeed were closely associated with the Franciscans. Lacking any convincing Franciscan candidate—Oxford University, mathematician-astronomer, possessor of an astrolabe—Nicholas of Lynn looks like an inspired guess, for Nicholas meets all these criteria and came from a port with important trading links with Norway, Iceland, and possibly Greenland.

See also: Cartography of the Arctic; Davis, John (ca. 1550–1605); 
Greenland, West; Norse Arctic Exploration

References and further reading:

Nobile, Umberto (1885–1978)

Few explorers have been more vilified than the Italian airship pilot and designer Umberto Nobile. He was the pilot of Norge during the first crossing by air of the Arctic Ocean in 1926; two years later his own expedition ended disastrously when the airship Italia crashed returning from the North Pole. As five states collaborated in an international search effort, the airship

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see also: cartography of the arctic; davis, john (ca. 1550–1605);
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nobile, umberto (1885–1978)

few explorers have been more vilified than the italian airship pilot and designer umberto nobile. he was the pilot of norge during the first crossing by air of the arctic ocean in 1926; two years later his own expedition ended disastrously when the airship italia crashed returning from the north pole. as five states collaborated in an international search effort, the italian government of benito mussolini disclaimed responsibility and set up a commission to indict nobile after his rescue. fortunately, he was to live long enough to see its verdict overturned and his reputation restored.

after narrowly surviving their flight toward the north pole in 1925, roald amundsen and lincoln ellsworth decided that their next attempt should be made not in an airplane but in an airship and sought to acquire one from colonel umberto nobile. at 106 meters long, nobile’s airships were much smaller than those built elsewhere, but they had almost equal range. the italian dictator mussolini was enthusiastic about the project and was prepared to allow an airship to be sold at a much reduced price on the conditions that nobile would participate as commander of the airship and that five of the crew would

be italians. the resulting expedition had indeed been a triumph, with norge accomplishing the first crossing of the arctic ocean. on their arrival in alaska, however, relations between amundsen and nobile deteriorated. during the negotiations in rome, the expedition had been referred to by all parties as the “amundsen-ellsworth-nobile” expedition. therefore, nobile was surprised to note that his name was now omitted from the expedition’s title and that insofar as amundsen referred to him at all, it was merely as pilot. nobile’s response was to send out his own press releases in which his own role was magnified and amundsen figured as little more than a passenger. under instructions from mussolini, he then conducted a grand tour of the united states in which norge’s flight was portrayed as a largely italian triumph to crowds of enthusiastic italian-americans.

the italy disaster, 1928

one of the advantages of an airship over an aircraft was that it provided a stable platform ideal for conducting science and searching for new land. disappointingly, no new land had been discovered from norge, but nobile considered that there was every possibility that undiscovered islands would be found in the shallow seas north of the soviet union, greenland, and canada. very little science had been conducted aboard norge, but nobile now planned an extensive program of observations to be carried out both from the airship and by parties landed near the pole and elsewhere.

this time mussolini was less enthusiastic, feeling that fate should not be tempted a second time, and the undersecretary for aviation, italo balbo, was openly hostile, having his own plans for long-distance formation flights in the arctic, which he was unwilling to see overshadowed by another airship expedition. nobile nevertheless obtained mussolini’s consent in october 1927, having also obtained the backing of the italian royal geographical society and funding guaranteed by the mayor of milan. an airship and crew were supplied by the air ministry, and arrangements were made with the italian navy for città di Milano to be sent on a training cruise to king’s bay, spitsbergen. the crew of eighteen consisted of four veterans of the norge expedition—ettore arduino, attilio caratti, vincenza pomella, and renato alessandrini; three naval officers—adalberto mariano, filippo zappi, and alfredo viglieri; two radio operators—giuseppe biagi and ettore pedretti; two journalists—francesco tomaselli and ugo lago; and three scientists—dr. aldo pontremoli (physicist), dr. finn malmgren (meteorologist and oceanographer), and dr. francis behounek (atmospheric electricity and radioactivity). the party was completed by felice trojani, natale cecioni, calisto ciocca, and nobile’s inseparable lapdog titina. all but the swede malmgren and the czech behounek were italians.

italia reached king’s bay on 5 may 1928 after a difficult journey from milan, during which its propellers were pitted by hailstones over the alps and a crankshaft broke on one of its
On the second, he intended to survey the maximum area Nobile planned to make for the Pole via northern Greenland. At King’s Bay, having flown 2,400 miles. Apart from the disappointment of no new land to discover, the flight had been a total success. Sixty-nine hours after takeoff they were back thirty-four hours after takeoff. A more southerly course was followed to Novaya Zemlya and then across the Barents Sea to North East Land. In the final hours of the flight, the clouds lifted, and in brilliant sunshine Italia flew high over the interior of North East Land and then across the mountains of central Spitsbergen, its crew looking down upon areas never previously seen. Sixty-nine hours after takeoff they were back at King’s Bay, having flown 2,400 miles. Apart from the disappointment of no new land to discover, the flight had been a total success.

There was sufficient time for two more flights. On the first, Nobile planned to make for the Pole via northern Greenland. On the second, he intended to survey the maximum area possible. With a skeleton crew of twelve, Italia was to remain aloft for a week, always heading downwind to conserve fuel.

At 4:28 P.M. on 23 May, Italia took off on the flight to the Pole. Sixteen were on board as it headed west toward north Greenland, where Cape Bridgman was reached after twelve hours. There, Nobile altered course for the Pole, hoping to discover land in the shallow water north of Greenland in a region never before overflown. Conditions for flying were perfect, with excellent visibility and a tailwind to speed Italia on its way. Although the crew was able to see 60 miles in all directions, no land could be seen. On 24 May at 12:20 A.M. they were at the Pole, but here the strength of the tailwind presented something of a problem. Nobile had hoped to land to make scientific observations, but the wind was too strong. He had the choice of continuing on toward northern Canada or Siberia with the wind behind him, or of keeping to his original plan and turning back toward Spitsbergen. Meteorologist Malmgren advised the latter, forecasting that the wind would soon change to the northwest. After dropping the national flag and a cross presented by the Pope, Italia headed back to Spitsbergen.

As the craft flew low to avoid thick fog, headwinds now reduced Italia’s speed to 28 miles per hour. Ice began to accumulate, especially on metal objects such as the propellers, from which splinters were periodically hurled against the airship’s fragile outer skin, causing concern over the hydrogen tanks within. Flying at an altitude of 250 meters, the elevator wheel suddenly jammed, with Italia’s nose pointing downward. Just in time, Nobile ordered the engines turned off, and it managed to level off only 80 meters above the ice. Disaster was not long to be averted, however; having reached about 180 miles north-east of King’s Bay, the helmsman’s shout of “We are heavy!” alerted Nobile to the slow subsidence of Italia’s stern. Increasing power to the engines merely resulted in its nose pointing up more vertically as the descent continued. As the airship smashed into the pack, the control cabin broke into pieces, spilling out ten of the crew together with piles of food and equipment. With its load suddenly reduced, Italia now shot upward, bearing away the remaining six members of the crew—Alessandrin, Lago, Pontremoli, Carratti, Cioaca, and Arduino. What happened to them is not known, but a plume of black smoke seen shortly afterward by the survivors in the distance almost certainly marked the second point of impact and Italia’s end.

Of those thrown out on the ice, Pomella was dead, Nobile had a broken arm and leg, and Cecioni had a broken leg. Among the wreckage was equipment and supplies intended for one of the planned landing parties, including a four-man tent, a sleeping bag, 70 kilograms of food (chiefly pemmican and chocolate), and, most important, an emergency radio transmitter and receiver. Nobile and Cecioni were placed in the sleeping bag, which was cut open to accommodate two, while Biagi began sending an SOS every two hours. Biagi was also able to pick up messages exchanged between Città di Milano and Rome. A search had begun for survivors but far west of their actual position. It was clear that no one had heard the SOS. By 30 May, they were within 7 miles of Foyin Island to the north of North East Land. Since waiting for rescue appeared hopeless, Zappi and Mariano urged Nobile to let them attempt to reach land and summon help. Nobile was reluctant but eventually agreed to their going, accompanied by Malmgren, who alone had some experience in traveling over the pack. Before setting out, Malmgren succeeded in shooting a bear, considerably improving the food situation.

On 6 June, Biagi picked up a broadcast announcing that fragments of his SOS had been heard three days earlier by a Russian radio ham, Nikolay Shmidt, who had been unable to catch the coordinates of Nobile’s exact position, but this did not matter, since Città di Milano was now able to establish contact. Although Balbo declined to send help, declaring that the Italian government had no responsibility for the expedition, other countries mounted a major search effort, and by mid-June Finland, France, Norway, the Soviet Union, and Sweden had sent planes or ships, and two flying boats were funded by a private Milanese citizen ashamed of his government’s response. In all, the search effort was to involve 1,500 men, eighteen ships, and twenty-two planes. Clearly, some coordination was essential, and early on the Swedes concluded that the only person capable of this role was Nobile himself. One of those who had offered to assist the search effort was Roald Amundsen. Flying north across the Barents Sea on 18 June, his plane was in
the vicinity of Bear Island when last in radio contact. Soon afterward, the search was expanded to look for Amundsen as well as Nobile.

Out on the ice, Nobile was kept informed of developments from Città di Milano. On 17 June, the first plane was seen but turned back 2 miles away without seeing them. On the following days other planes were sighted but again were unable to spot the survivors despite their tent being now dyed red to increase its visibility. They were finally located on 20 June by the Italian pilot Umberto Maddalena, who was able to drop much-needed supplies, including two sleeping bags, rifles, and two collapsible boats. Three days later, a Swedish lieutenant, Einar Lundborg, managed to land. There was room in his single-engine Fokker IVD for just one passenger, and he had been given clear instructions that Nobile was to be evacuated first so that he could coordinate the rescue operation. Knowing that this would look bad, Nobile was extremely reluctant, but Lundborg would take no one else, and the sooner he could take off and return for the others, the better. Unfortunately for Nobile, Lundborg was prevented from rescuing anyone else when his plane crashed on its next landing. Lundborg himself was uninjured, but there was no other ski-equipped aircraft available. Rumors soon circulated that Nobile had been so keen to be flown out first that he had injured his leg running to the plane. Far from being allowed to coordinate the complicated search efforts, as the Swedes had intended, Nobile found himself treated as a disgraced man and confined in his cabin.

On 6 July, Lundborg was airlifted off the floe, where the ice was so soft and corroded that no further flights could be attempted. The only hope of rescue now rested with the Soviet icebreaker Krasin. Commanded by Rudolf Samoylovich, Krasin was off Cape North, North East Land, by 1 July, some 50 miles west of Foyin Island. There, the ice was intensely heavy, and Krasin's progress was slowed almost to a halt by a broken propeller blade and damaged rudder. On 10 July, Boris Chukhovskiy managed to take off in Krasin's three-engine Junkers aircraft. Before making an emergency landing on the pack, he radioed back the exciting news that although he was unable to see the red tent he had spotted three men on the ice some 15 miles from the ship. Two days later two men were seen from the deck. These were Mariano and Zappi, but where was their companion Malmgren? According to Zappi, he had died a month before and Chukhovskiy had been mistaken in reporting three men. Although Mariano was clearly suffering from malnutrition, Zappi was in surprisingly good condition for a man who claimed not to have eaten for twelve days. Certain other evidence suggested that cannibalism might have occurred, but nothing was proved, and it was in no one's interest to investigate too closely. At 8:15 P.M. on the same day, Krasin finally succeeded in reaching the floe where the remaining five survivors were camped. Vigieri, Behounek, Biagi, Cecioni, and Trojani had spent forty-eight days on the ice.

Although eight members of the expedition had been rescued and two more were known to be dead, no attempt had yet been made to look for the six men still aboard Italia after the crash. Nobile begged his government to stay on to assist Krasin with the search, but to no avail. He was to be sent back to Italy in disgrace. In Norway, he was blamed for Amundsen's disappearance and presumed death. In fact, the bad feelings were so intense that when Nobile landed at Narvik he and his crew were ushered onto a waiting train through a specially constructed gangway to prevent any contact with the local inhabitants. As he headed south in a sealed carriage, Nobile had an insight into what was to come from the uniformly hostile newspaper coverage. Despite this, on arrival in Rome he was welcomed by a vast crowd of more than 200,000. Nobile was locked out of his office and was refused permission to explain himself to Mussolini. In 1929, an official commission published a damning report in which Nobile was blamed personally for the Italia disaster, after which he felt he had no choice but to resign his commission. Outside Italy he was better regarded, and the Soviet Union lost no time in offering him employment as an airship designer. In 1945, a second commission was held, exonerating Nobile of all blame. Although it might have been thought than no further airship expeditions would have been attempted after the Italia disaster, one more did take place. An account of it is given under the entry for its leader, Hugo Eckener.

**References and further reading:**


**Nordenskiöld, Adolf Erik**

*(1832–1901)*

Most famous for his first transit of the Northeast Passage, the Swedish explorer and scientist Adolf Nordenskiöld led eight expeditions to the Arctic, during the course of which his achievements included pioneering studies of Svalbard, a record farthest north by sea, the first crossing of North East Land, and the first deep penetration of the Greenland ice sheet. He is rightly regarded as one of the greatest polar explorers.

Nils Adolf Erik Nordenskiöld, whose surname means “Shield of the North,” was born in Helsinki into an aristocratic Finnish Swedish family. His father, Nils Gustav, was a distinguished mineralogist, a discipline that the younger Nordenskiöld studied at the University of Helsinki, where he hoped to make his career. His move to Sweden in 1857 came about after...
some injudicious comments at his graduation dinner were reported to the governor of Finland, then a grand duchy of Russia. Soon after arriving in Sweden, Nordenskiöld got his first chance to visit the Arctic on two expeditions led by the young geologist Dr. Otto Torell in 1858 and 1861. The second expedition, during which Nordenskiöld assisted Torell in making the first scientific surveys of the western and much of the northern coast of North East Land, had as one of its objectives the investigation of the feasibility of measuring an arc of meridian in the far north, a finding that if carried out with absolute accuracy could be used in conjunction with measurements from lower latitudes to calculate the Earth’s exact ellipsoidal form. In 1864, Nordenskiöld, now professor and curator of the mineralogical department of the Royal Swedish Museum, was asked to lead an expedition to complete reconnaissance work for the meridian arc survey.

**Topographic and Scientific Survey in Svalbard, 1864**

Accompanied by two colleagues from Torell’s expedition, astronomer Dr. Nils C. Dunér and zoologist-botanist Dr. Anders J. Malmgren, Nordenskiöld set out from Tromsø on 7 June 1864 in the former gunboat *Axel Thordsen*. Torell had managed to complete the northern part of the survey but had been unable to begin work on the southern section, extending north from the Spitsbergen’s South Cape through Stor Fjord to Heley Sound. After he made a brief visit to Bear Island, he made an unsuccessful attempt to enter Stor Fjord. There, the ice characteristically breaks up late, and with fog and calms also to contend with, Nordenskiöld decided to delay his survey in the hope of better conditions later. With some difficulty *Axel Thordsen* reached Ice Fjord, where it remained from 25 June to 16 July to conduct geological and topographic studies. Not until 6 August was Nordenskiöld able to enter Stor Fjord following further work in Bell and Horn Sounds. This left him no more than three weeks to complete his survey. The fjord was still packed by ice, but *Axel Thordsen* managed to force its way through to Whales Point, the southwestern tip of Edge Island, where a landing was made. From the high ground good views were obtained of the entire western coast of Stor Fjord. After he crossed the fjord to Agardh Bay, he climbed another mountain and obtained good views of the eastern coast. On 13 August, *Axel Thordsen* anchored at Cape Lee, the northwestern tip of Edge Island, for further views of the west coast and, five days later, at Mistakodden, Barents Island. A northerly gale having cleared ice from the northern sections of the fjord, Nordenskiöld finally reached Heley Sound on 21 August to link together his and Torell’s surveys.

This work completed, *Axel Thordsen* rounded South Cape and headed north, Nordenskiöld having every expectation of achieving a high latitude in seas at last free of ice. In this, however, he was to be frustrated when a party of shipwrecked walrus hunters was encountered off Prince Charles Foreland. Forced to abandon their vessels off North East Land, these men had accomplished a remarkable journey in seven open boats, circumnavigating Svalbard’s second largest island before making their way along the northern and western coasts of Spitsbergen. Thirty-seven men in all had to be brought back to Norway, of which twenty-seven had to be packed into the already overcrowded *Axel Thordsen*, which arrived at Tromsø on 13 September.

**Record Farthest North, 1868**

For his next expedition, Nordenskiöld planned to combine further exploration of Bear Island and Spitsbergen with achieving a high northern latitude, in the belief that the latter would best be achieved very late in the year—in October—when the ice would be most fragmented. Estimating his total costs at no more than £1,000, Nordenskiöld raised this money without difficulty from the Gothenburg merchant community. The Swedish government provided him with the small iron-steamer *Sofia*, which was placed under the command of the future prime minister, Captain Fredrik Wilhelm von Otter (1833–1910), and provisioned for seventy weeks. In addition to Malmgren, the strong scientific party included the zoologists August E. A. Holmgren and Dr. Fredrik A. Smitt, the botanists Dr. Sven Berggren and Dr. Theodor M. Fries, the physicist Karl S. Lemström, and the geologist and mineralogist Gustaf R. Nauckhoff. *Sofia’s* second officer was Lieutenant A. A. Louis Palander (1842–1920), who was to command vessels on two of Nordenskiöld’s future expeditions, including *Vega* during his epic first transit of the Northeast Passage.

Setting out from Gothenburg on 7 July 1868, Nordenskiöld spent 22–27 July on Bear Island before visiting Ice Fjord to conduct further studies in early August. On the way north to King’s Bay, Nordenskiöld surveyed the waters on either side of Prince Charles Foreland and on 23 August left a party of scientists onshore on Danes Island. The first attempt to get far north was made toward Greenland. There, impenetrable ice was encountered, so *Sofia* was turned to follow the edge of the pack east as far as North East Land, while Nordenskiöld achieved in 1806 (see Farthest North). After returning to recoal at Danes Island, Nordenskiöld again headed north on
29 September, but he was to be unable to test his theory that the highest latitudes would be achievable in early October when *Sofia* was badly damaged in heavy pack on 4 October. Barely making it back to Amsterdam Island, the ship was repaired at King’s Bay before heading back to Gothenburg, which was reached on 15 November.

In addition to achieving the record farthest north, significant studies had been accomplished by the expedition’s scientists. Furthermore, Nordenskiöld had noted the potential of the Seven Islands as a suitable base for an attempt on the Pole, which he now believed should be made not in a ship but over the ice. This was to be his next objective.

**The First Crossing of North East Land, 1872–1873**

At this time, no one in Sweden had any expertise in using dogs to haul sledges. To learn more about dogs and obtain teams for his planned next major expedition, Nordenskiöld traveled to West Greenland accompanied by Berggren and geologists Dr. Per Öberg and Dr. C. F. Theodor Nordström. The visit is notable primarily for Nordenskiöld’s brief incursion onto the Inland Ice, during which he became convinced that rather than covering the entire interior of Greenland, this consisted merely of a ring of ice surrounding ice-free land. Accompanied by Berggren, he ventured about 35 miles inland before turning back when their supply of food ran low. Nordenskiöld, however, was to be disappointed in his main objective. Distemper had broken out among Greenland’s dog population, and no dogs were available for his expedition. He would have to rely on reindeer instead.

In order for his polar journey to begin before the Arctic pack started to melt, Nordenskiöld had concluded that his expedition must winter in the far north, preferably on the Seven Islands. This would be the first scientific expedition to winter in Spitsbergen, offering great opportunity for meteorological and geomagnetic observations, which could be maintained for the first time throughout a year. Sufficient funds were raised thanks to Oscar Dickson (1823–1897), Nordenskiöld’s most loyal sponsor, and the Swedish government, which also loaned two vessels: *Polhem*, like *Sofia* a mail-steamer used for winter crossings of the Baltic, and the cargo-brig *Gladan*. Forty reindeer and 3,000 sacks of reindeer moss were collected in Lapland by the expedition’s third vessel, *Onkel Adam*; four Saami were also taken on board to look after the reindeer. To keep his wintering party as small as possible, Nordenskiöld chose just two scientists to accompany him, the botanist Dr. Frans R. Kjellman and the geophysicist-
astronomer Dr. A. G. August Wijkander. Palander was placed in command of Polhem.

On 4 July 1872, Polhem and Gladan departed from Gothenburg, to be united on 13 August with Onkel Adam at Fair Haven in the Norway Islands, off the northwest coast of Spitsbergen. There, they were delayed until 1 September before Nordenskiöld could head east, aiming to reach the Seven Islands; he was able to make it only to Mossel Bay with some difficulty two days later. A large wooden house was built on a small island at the eastern entrance to Wijde Bay to serve as winter quarters for the scientists and the crew of Polhem. On 16 September, Gladan and Onkel Adam attempted to leave but were prevented by a gale, which filled the bay with ice. When that froze into a continuous mass, it was clear that they too would have to winter, and supplies that had been intended for twenty-two would have to be eked out among sixty-six. Nor could the reindeer be looked to for meat, since during the gale they had fled inland and only one of them returned. This was a severe blow as well for Nordenskiöld’s projected polar journey.

A hard winter was now endured on two-thirds rations, the Polhem party observing a strict routine of scientific observations and other duties in the hut, while the crews of Gladan and Onkel Adam got by as best they could on their ships. Relations between the two groups were not particularly amicable, with those on Polhem viewing the cargo vessels as an unnecessary burden threatening the success of their expedition, while the others blamed Nordenskiöld—“Mr. Science”—for unnecessarily delaying their departure until it was too late. Nearby, fifty-eight Norwegian sealers were also wintering after their vessels had also been caught in the ice. On 8 December, the first case of scurvy was reported aboard Gladan, and fourteen days later the first death occurred. Nordenskiöld encouraged the captains of the cargo vessels to leave whenever there seemed an opportunity, even in the dead of winter, but they were not always willing, and even when they were the circumstances conspired against them.

On 24 April 1873, Nordenskiöld set out toward the Seven Islands with three heavily loaded sledges pulled by every fit man on the expedition as well as by the one remaining reindeer. After one sailor was lost on the sea ice, Phipps Island was eventually reached on 17 May, where Nordenskiöld climbed to the highest point to see a chaotic jumble of ice extending north to the horizon. With the snowmelt season not far off, he had no time to reconnoiter a route, and therefore he decided to abandon his polar journey and instead explore North East Land. Accompanied by Palander and nine seamen, he headed southeast across the sea ice to Cape Platen, the farthest point reached by Torell in 1861, then along the north coast to Rasch Island, which they climbed on 31 May to assess their chances of getting still farther east. Without a boat and with open water extending close to the coast, Nordenskiöld decided to head back, but he would do so across the ice cap, which remained still completely unexplored.

The misleadingly gentle snow slope disguised fearsome crevasses, into which individual members of the party fell at regular intervals. However, because they were all securely roped together, no one came to any harm. Nordenskiöld’s initial aim was to reach Cape Mohn, which the British yachtsman Benjamin Leigh Smith had sighted in 1871 and reported as the island’s southernmost point. Once on the plateau at 600–900 meters, they were exposed to driving snow alternating with thick mist whenever the wind dropped. As they approached Cape Mohn, the surface became all but impassable, being cleft by a series of deep ravines, each 30 meters wide and 10 meters or more deep. Having reached close to 79°35’N, Nordenskiöld decided to alter course and head west to Wahlenberg Bay, which was reached on 16 June. From there, they followed the west coast of North East Land to Shoal Point, where a boat had been left for them, then crossed Hinlopen Strait to reach Mossel Bay on 29 June.

Scurvy had been rife at the time of Nordenskiöld’s departure. There had, however, been no further deaths due to the care and attention of the doctor, Axel Envall, and the arrival on 12 June of the British yachtsman Benjamin Leigh Smith with large quantities of fresh vegetables, preserved meats, and wines. When Nordenskiöld returned, Onkel Adam and Gladan were being readied for departure, to sail on 29 and 30 June, respectively. Polhem followed on 18 July, allowing time for its scientists to complete further studies on Spitsbergen’s west coast. Nordenskiöld was not to visit Svalbard again.

The First Transit of the Northeast Passage, 1878–1880

During the 1860s, the Russian merchant Mikhail Konstantinovich Sidorov (1823–1887) had begun a campaign to open a commercial shipping route between Europe and Siberia. In 1862, he sponsored an expedition by Pavel Pavlovich Krusenshtern to demonstrate that such voyages were practical, and in 1869 he attempted to sail through it himself. Both voyages were unsuccessful, Krusenshtern being forced to abandon ship and escape over the ice to the Yamal Peninsula, while Sidorov himself set out too late in the year and could reach no farther than the Pechora. Sidorov’s efforts, however, did alert others to the potential of the Northern Sea Route. If only vessels could reach the Ob’ and Lena Rivers on a regular basis, they would be able to return to Europe laden with furs, timber, and other Siberian products, in exchange for which they could trade manufactured goods and other items currently available in Siberia only at exorbitant prices. Next to make the attempt was the British merchant and seaman Joseph Wiggins (1832–1905). In 1874, he managed to reach the Ob’; he was probably the first to do so from western Europe since the seventeenth century.

Nordenskiöld was now looking for a new field of endeavor. With Dickson’s support, he undertook two voyages to investigate the practicalities of the proposed route. The first voyage in 1875 was purely exploratory. Chartering the 43-ton Norwe-
Nordenskiöld, Adolf Erik

Late summer by the warm outflow of the Ob’ and Yenisey. He expected that, just as in the Kara Sea, open water was created in the flow into the Arctic Ocean, this meant that much of the way water would be found near the coast. Since many great rivers had reached the Kara Sea, it was possible to navigate through the entire Northeast Passage, and return voyages. Nordenskiöld concluded that it should be reached farther north—77°42’N—than anywhere else on continental Eurasia. Nordenskiöld now traveled up the Yenisey to Yeniseysk and, from there, to Stockholm via Moscow and St. Petersburg. Prøven returned to Tromsø via Matochkin Strait. The next year’s voyage was made along the same route in the 400-ton freighter Ymer bearing cargo for Dickson and the Russian businessman Aleksandr Mikhailovich Sibiryakov (1849–1933). The latter owned gold mines in Siberia and had much to gain from the opening of the Northern Sea Route. Again, Nordenskiöld was able to demonstrate that the Yenisey could be reached without great difficulty, this time passing through Matochkin Strait on both outward and return voyages.

Nordenskiöld’s experiences on these two voyages led him to expect that, just as in the Kara Sea, open water was created in late summer by the warm outflow of the Ob’ and Yenisey Rivers; wherever there were large rivers flowing north, ice-free water would be found near the coast. Since many great rivers flowed into the Arctic Ocean, this meant that much of the way east to Bering Strait should be navigable at the right time of year, the region of greatest difficulty being off the Taymyr Peninsula, where there were few large rivers and the land reached farther north—77°42’N—than anywhere else on continental Eurasia. Nordenskiöld concluded that it should be possible to navigate through the entire Northeast Passage, and he succeeded in persuading Dickson, Sibiryakov, and Oscar II, king of Sweden and Norway, to sponsor his attempt in the steam-whaler Vega. It was to be accompanied for part of the way by three vessels carrying cargo for Sibiryakov: Lena, Fraser, and Express. Vega was to be captained by Louis Palander, who had participated in two of Nordenskiöld’s previous expeditions. Also well known to him were the botanist Dr. Frans Kjellman and the zoologist Dr. Anton J. Stuxberg, both of whom had been with him in 1875 and 1876. In all, thirty men were to sail on Vega, others on board including second-in-command Lieutenant Eric C. Brusewitz, medical officer and lichenologist Dr. Ernst B. Almquist, and three lieutenants representing Russia, Italy, and Denmark. Oscar F. Nordqvist (interpreter and assistant zoologist) was a Finlander from the Imperial Russian Guard; Giacomo Bové (hydrographer) and Andreas P. Hovgaard (meteorology and geomagnetism) were naval officers. Both Bove and Hovgaard were later to lead their own expeditions.

Vega departed from Karlskrona on 22 June 1878. At Tromsø, Nordenskiöld came aboard on 17 July, and Vega was joined by Lena. Following a trouble-free passage across the Barents Sea, Express and Fraser were met at Yugor Strait on 30 July. Conditions in the Kara Sea were favorable, allowing the convoy to arrive at Dickson on 6 August. Fraser and Express now headed up the Yenisey to Dudinka, where they were to deliver their cargo. Four days later, Vega and Lena resumed their voyage northeast along the coast of the Taymyr Peninsula, where several landings were made to allow the scientists to pursue their studies; a number of uncharted islands were noted, including the archipelago later named for Nordenskiöld. Cape Cheleuskin was rounded on 19 August, something no previous expedition had achieved, except possibly Ivan Tolstoukhov in the seventeenth century. From there, Nordenskiöld had planned to sail east across the Laptev Sea to the New Siberian Islands but was obliged by fog and ice to keep close to the coast. This did have the advantage of allowing him to improve upon existing charts of the Taymyr Peninsula, which he found most inaccurate, perhaps to be expected in maps for the most part compiled more than 100 years earlier and from the land rather than the sea (see Laptev, Khariton, and Pronchishchev, Vasily). On 28 August, Lena separated from Vega to make for the Lena River, where it was to sail upstream with its cargo to Yakutsk. Vega now continued alone to reach the New Siberian Islands, where Nordenskiöld had hoped to land on Great Lyakhovskiy Island but was prevented by shoaling water. Conditions continued to be favorable, and by 3 September Vega had reached the Bear Islands and, three days later, Cape Shelagskiy on the Chukotka Peninsula. At this stage, Nordenskiöld was confident of sailing through the entire Northeast Passage in one year, but conditions began to turn against him. Not only was there increasing dense pack encountered; navigation was inhibited by dense fog as well as by the shortening hours of daylight as winter approached with a rush. Concluding that he had no option but to winter in Chukotka, Vega dropped anchor in Kolyuchin Bay on 28 September, just 130 miles short of Bering Strait.

Moored to a piece of grounded ice some way from the shore, Vega was made ready for winter. A routine of scientific observations was soon established, concentrating on meteorology, geomagnetism, tides, and the aurora. Close-by lay a large encampment of Chukchi. Each day, Vega received some twenty to thirty visitors, who brought fish and cultural artifacts to exchange for food, tobacco, and Dutch clay pipes. Nordqvist learned the Chukchi language, and Nordenskiöld was to include detailed ethnographic notes in his published account of the voyage.

Vega continued its voyage on 18 July 1879, taking just two days to reach Bering Strait. As it steamed south toward the Pacific, it made brief stays on the eastern tip of the Chukotka Peninsula (21–30 July), St. Lawrence Island (31 July–2 August), and the Commander Islands (14–19 August), adding to the natural history and ethnographic collections. The ship finally arrived back at Stockholm on 24 April 1880, after completing a long voyage via Japan, China, Singapore, Sri Lanka, and the Suez Canal. Nordenskiöld’s pioneering voyage achieved its...
Nordenskiöld, Adolf Erik

object of focusing attention on the commercial potential of the Northern Sea Route. Its further development, however, he left to others. He was ready to move on to a new field of endeavor, this time choosing Greenland.

Ice-Free Land and the Ancient Norse in Greenland, 1883

On his previous visit to Greenland in 1870, Nordenskiöld had come to the view that the so-called Inland Ice was no more than an exterior ring surrounding an ice-free interior, which to the south might even be fertile and wooded. He had good scientific reasons for believing this, arguing that unless the view that the so-called Inland Ice was no more than an exterior ring surrounding an ice-free interior, which to the south might even be fertile and wooded. He had good scientific reasons for believing this, arguing that unless the central area would receive insufficient precipitation to maintain an ice sheet. Nordenskiöld also wished to investigate the location of the ancient Norse Eastern Settlement, which he believed had probably been situated on the unexplored east coast of Greenland. With Dickson again underwriting costs, Nordenskiöld acquired the iron-steamer Sofia, which he had used previously in 1868.

Departing from Gothenburg on 23 May 1883, Sofia headed for East Greenland, whose coast came in view on 12 June at a latitude near present-day Ammassalik. No ship had ever succeeded in reaching land here, which is rendered nearly inaccessible by the dense stream of ice brought down by the East Greenland Current. However, for a while it seemed as if Nordenskiöld might be successful. The masthead lookout reported ice-free water all the way to the coast, and Sofia steamed ahead. As it drew closer, it became clear that the lookout had been misled by the crystal-clear Arctic atmosphere. The coast was farther away than it seemed, and as the lower slopes of the mountains came into view, between them and the ship could be seen a solid belt of ice. Course was now altered to follow the ice edge south. On 15 June, Cape Farewell was rounded, and thereafter Sofia headed north off West Greenland to Egedesminde, where Nordenskiöld disembarked with nine men at Tasissassarssuq Fjord. Ascending the same glacier he had climbed in 1870, he now made his way to reach the Inland Ice on 4 July. Progress across the ice sheet was exceptionally slow as sledges were man-hauled across streams, cryoconite holes, and the slushy snow characteristic of the ice margins at this time of year. Having traveled slightly more than 70 miles by 21 July, Nordenskiöld decided to turn back. There was no sign of the ice-free areas that he had predicted, but since he expected these to lie farther inland, the two Saami members of his party—Pava Lars Tuorda and Anders P. Rossa—were sent ahead to investigate as far as they could. They were to collect flowers and grass if they found land. Both were expert skiers, and when they arrived back fifty-seven hours later they reported traveling 140 miles. The ice sheet provided an excellent surface for skiing and appeared to continue indefinitely. They had attained a maximum elevation of 1,950 meters. Later authorities are skeptical of the exact distance traveled. The Saami could only estimate how far they had been, and on the basis of their reported altitudes, it is probable that they reached no farther than 60 miles (Liljequist 1993, 162).

By 3 August, Nordenskiöld was back on the coast, where he was picked up thirteen days later by Sofia, which had in the meantime explored north as far as Cape York, enabling Alfred Nathorst to collect many fine fossils. Nordenskiöld was still intent on searching for the Norse Eastern Settlement and now engaged an interpreter and two Inuit to help pilot Sofia through the narrow sounds north of Cape Farewell to the east coast. At just this time, the Danish explorer Gustav Holm was exploring the same channels. But whereas Holm was to do so successfully with the aid of Inuit umiaks and kayaks, Sofia was simply too large a vessel to navigate these tortuous waters. Steaming north just outside the ice stream, Nordenskiöld saw an opportunity to penetrate through the ice to open water immediately offshore on 4 September and soon afterward managed to land. This was the first documented landing by any European ship in the region Holm was to name King Christian IX Land the following year. Nordenskiöld was a man of wide knowledge, but he was no archaeologist. Inuit hut rings were identified as similar to Norse house ruins in southwest Greenland, and two stone piles located on high ground were said to be markers to help Norse vessels find safe anchorage. Although no Inuit were seen, fresh footprints, graves, and broken hunting tools indicated that the area was still inhabited. The main Inuit settlement was rumored to lie beside a large fiord farther north. Putting out to sea again on 6 September, Nordenskiöld tried to reach this but was forced outside the ice stream. By now, coal stocks were running low, and although a deep fiord could be seen from far offshore, he reluctantly decided not to risk the ice again but instead to head back to Iceland. Three days later, Sofia arrived at Reykjavik, Nordenskiöld returning to Göteborg on 27 September.

At least since the time of his voyage through the Northeast Passage, Nordenskiöld had given thought to organizing an expedition to Antarctica. In 1887, he was approached by the premier of Victoria, Australia, regarding the possibility of a joint Swedish-Australian expedition, which would have both commercial (i.e., whaling) and exploratory purposes. Nordenskiöld replied that he was only interested in a purely scientific venture. This was subsequently agreed to, as was the destination: Victoria Land. By now, Nordenskiöld was well into his fifties and eager to pass leadership of field activities to the next generation, particularly to his son, Gustaf Nordenskiöld, until the latter’s untimely death in 1897. The Australians proved unable to fund a ship, and Nordenskiöld’s initial enthusiasm waned. It was to be left to his nephew Otto to inaugurate Swedish exploration of Antarctica. During the last years of his life, Nordenskiöld increasingly devoted himself to the collection and study of early maps. His fine library is preserved at the University of Helsinki.

See also: Barents Island; Bear Island; Danes Island; Edge Island; Farthest North; Greenland, Inland Ice; Holm, Gustav; King Christian IX Land;
Laptev, Khariton; Nathorst, Alfred; Nordenskjöld, Otto; North East Land; North Pole; Northeast Passage; Pronchishchev, Vasily; Seven Islands; Smith, Benjamin Leigh; Spitsbergen; Svalbard; Tolstoukhov, Ivan; Torell, Otto

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Nordenskjöld, Otto
(1869–1928)
The Antarctic expedition of the Swedish scientist Otto Nordenskjöld is best remembered today less for its excellent scientific and geographic work than for the manner in which its members became divided into three separate wintering parties in 1903 when their ship Antarctic was crushed by ice in the Weddell Sea. How these parties came to be reunited and rescued is one of the epics of polar exploration. (For the full story of this expedition, see the entries Andersson, Gunnar, and Larsen, Carl Anton.)

Dr. Nils Otto Gustaf Nordenskjöld, lecturer in geology at the University of Uppsala, was the nephew of Adolf Erik Nordenskjöld, whose exploits inspired him as a child. Intent also on exploring the polar regions, he prepared himself by leading a Swedish expedition to the Magellan region (1895–1897), where he studied post-Tertiary deposits in Tierra del Fuego and the former extent of land ice in southern South America, and also by participating in expeditions to Alaska in 1898, as well as to Greenland in 1900 on Georg Amdrup’s Danish expedition to East Greenland.

The Swedish Antarctic Expedition, 1901–1904
Following adoption of a motion at the International Geographical Congress of 1895 that the greatest priority should be given to the exploration of Antarctica, Sweden was one of several countries planning to send an expedition. This was a private endeavor organized by Otto Nordenskjöld without government backing, the relevant committee having advised that he was too young and insufficiently experienced in the polar regions to lead a national expedition. Nordenskjöld’s proposed Swedish Antarctic Expedition was to study the Antarctic Peninsula area, its meteorological and magnetic observations being coordinated with contemporary British, German, and Scottish expeditions working elsewhere in Antarctica.

Whereas the British and German expeditions were sufficiently well-funded to construct purpose-built ships, Nordenskjöld chose the cheaper option of purchasing the 226-ton steam-whaler Antarctic, previously used on the Antarctic expedition of Henrik Bull as well as on several Arctic expeditions. For its captain, Nordenskjöld appointed Carl Anton Larsen, himself leader of voyages to Antarctica in 1892–1893 and 1893–1894, during which he had made significant new discoveries in the regions Nordenskjöld now wished to explore. In addition to a crew of sixteen, the party included Dr. J. Gunnar Andersson (second-in-command), Karl Andreas Andersson and Dr. Axel Ohlin (zoologists), Dr. Güsta Bodman (hydrography, meteorology, and magnetics), Lieutenant Samuel A. Duse (surveyor), Dr. Eric Ekelöf (physician, bacteriology), Carl Skottsberg (botany), and the American artist Frank Wilbert Stokes.
On 16 October 1901, *Antarctic* sailed from Gothenburg. Stopping in England to take on coal, Nordenskjöld took the opportunity to visit London to confer with Sir Clements Markham and William Speirs Bruce to improve coordination of his plans with those of the British and Scottish expeditions. Further discussions were held with the Argentine government on landing at Buenos Aires on 15 December. There, Nordenskjöld received generous support in return for making a naval sublieutenant, José Maria Sobral, a member of the wintering party. After checking the instruments at Staten Island, off Tierra del Fuego, *Antarctic* made for the Falkland Islands, where sheep and additional dogs—a motley selection—were collected before heading south for Antarctica.

The South Shetland Islands were sighted on 10 January 1902, a brief landing being made at Harmony Cove on Nelson Island to make natural history observations, hunt seals, and collect specimens. Reaching the Antarctic Peninsula the next day, Nordenskjöld sailed south along the coast, hoping to determine the relationship between the Orléans Channel reported by Jules Dumont d’Urville and the recently discovered Gerlache Channel of the Belgian Antarctic Expedition. He saw enough to suspect that the Orléans Channel was merely a northern extension of the Gerlache Channel and that it did not cut the Antarctic Peninsula in two as Dumont d’Urville had supposed.

After two days, *Antarctic* headed north. At the tip of Trinity Peninsula, open water was found stretching southwest, through which Nordenskjöld now made the first passage, naming the channel Antarctic Sound for his ship. On the south shore of the sound, he noted Depot Glacier’s potential for a depot or wintering site. Through Antarctic Sound *Antarctic* reached Erebus and Terror Gulf, an area first explored by James Clark Ross, and a landing was made on Paulet Island, where the scientists studied the extinct volcano and the vast colony of Adélie penguins. Parties from this expedition were subsequently to endure unplanned winters both here and at Hope Bay, the name by which Depot Glacier would later become better known.

*Antarctic* next sailed south through spectacular fields of tabular icebergs to Seymour Island, where a depot was left, before being stopped by ice at 66°15’S. Since Nordenskjöld had every intention of wintering as far south as possible, he attempted to skirt this barrier by sailing east, deep into the Weddell Sea, where he reached 63°30’S, 45°7’W before turning about. Accepting the inevitable, he selected Snow Hill on 12 February rather than Seymour Island for his winter station, a decision he was later to regret when he found the fossils on the latter island to be even more spectacular than those that had initially attracted him to Snow Hill. In addition to himself and the Argentine Sobral, the wintering party consisted of the scientists Bodman and Ekelöf and the seamen Ole Jonassen and Gustav Åkerlund. The powerful Jonassen was chosen as Nordenskjöld’s primary sledging companion. He was also given special responsibility for the dogs, a task for which he proved less suited. He was reluctant to tether them, and time and again the dogs ate essential supplies, while the Falkland Island dogs were picked off one by one and killed by the pack of Greenland huskies.

With the winter station and its accompanying magnetic hut established, *Antarctic* departed on 14 February in an abortive attempt to set up a depot farther south before returning to Snow Hill to deposit more provisions on 21 February. It then headed north to the Falkland Islands—the last time Nordenskjöld was to see his ship.

Before winter set in, Nordenskjöld, Sobral, and Jonassen undertook one long sledge journey, demonstrating that Admiralty Bay was actually a sound rather than a bay, as previously reported by James Clark Ross. Snow Hill was thus an island and not a peninsula. A routine of scientific observations was established, and the winter was endured without substantial discomfort, though strong storms repeatedly shook the hut. Being north of the Antarctic Circle, there were no days without daylight. They were generously supplied with provisions, to which they helped themselves freely, having no expectation of remaining another year. The atmosphere was relaxed and amiable.

For the coming season, Nordenskjöld planned to make one long journey south to investigate Larsen’s Oscar II Coast. Accompanied again by Sobral and Jonassen, with two sledges and five dogs, he set out on 30 September. By 8 October Robertson Island had been reached, a nunatak clearly of volcanic origin but long inactive. Nordenskjöld concluded that Larsen had been mistaken in 1893 when he reported signs of recent volcanism. From Robertson Island an expanse of solid ice could be seen separating them from the mainland. Nordenskjöld was now faced by a choice between keeping to the seaward side of this ice shelf, where he would be able to obtain penguins and seals to feed his dogs but would be unable to examine the mainland, or traveling to the mainland across the ice shelf, where there would be no hope of supplies. He chose the latter. As the party continued south, it became increasingly apparent that Oscar II Coast formed the east coast of the Antarctic Peninsula rather than a separate island, and on 18 October Nordenskjöld’s party made the first landing on the peninsula’s east coast at Borchgrevink Nunatak. At 65°57’S, 62°17’W, this was the farthest south reached. With supplies close to exhaustion and the weather increasingly stormy, Nordenskjöld made his way back to the hut, which was reached on 4 November. The three men had traveled 400 miles in thirty-three days.

*Antarctic*’s imminent return was anticipated, and preparations were made to evacuate Snow Hill. By January 1903, however, Snow Hill was again surrounded by heavy ice, and it was clear that they would have to stay for another winter, one for which Nordenskjöld had not planned. With the men having eaten freely the previous year, the remaining supplies were now inadequate, and they had to be augmented by killing seals, penguins, and skuas.

The second winter was less severe than the first, the meteorological records obtained revealing interesting comparisons
between the two. Making the best of his enforced stay, Nordenskjöld planned another long sLEDging journey, this time north. On 4 October, he set out with Jonassen, soon discovering James Ross Island to be separated from the Antarctica Peninsula by the ice-covered Prince Gustav Channel. Having sLEDged much of the way around this island, Nordenskjöld and Jonassen were on their way back when on 12 October they were surprised to encounter three men, who, after a period of initial mystification turned, out to be J. G. Andersson, Duse, and Toralf Grunden. This party had sLEDged south on their way to Snow Hill, having been forced to winter in a crude stone hut at Hope Bay (see Andersson, Gunnar).

A day of remarkable reunions occurred on 8 November 1903. First, Nordenskjöld’s party of five reached Snow Hill. Next, Bodman and Åkerlund returned from Seymour Island, accompanied by two Argentine naval officers—Lieutenants Julián Irízar and Jorge Yalour—whose government had sent them to search for Nordenskjöld’s expedition, of which nothing had been heard for nearly a year (see Irízar, Julián). Although Nordenskjöld had been previously concerned about what might have happened to his ship, he now realized that Antarctic had not only been unable to reach Snow Hill but also failed to reach safe waters in South America or the Falklands. Presumably, therefore, it had sunk. And, if so, where was the crew? He agreed with Irízar that the search should start immediately and that Snow Hill should be abandoned with all possible speed. Fortunately, before they could depart, on that very same evening Antarctic’s captain, Larsen, arrived with five of the crew and news of where the other fourteen men were to be found. (For a full account of what had happened to those with Larsen, see the entry under his name.)

Apart from one expedition to West Greenland in 1909, Nordenskjöld participated in no further polar expeditions. Undertaken without government support, his one Antarctic expedition left him burdened with debts and in need of further funding to support publication of its important scientific results. Appointed in 1905 to the chair of geography at the University of Gothenburg, a post he retained until his death, he was to enjoy a distinguished academic career. But his one attempt to return to Antarctica came to nothing when World War I interrupted promising negotiations for a joint Swedish-British expedition to the Antarctic Peninsula.

See also: Amdrup, Georg (1900); Andersson, Gunnar (1902–1903); Antarctic Peninsula, East Coast; Antarctic Sound; Bruce, William Speirs (1902–1904); Bull, Henrik; Drygalski, Erich von; Dumont d’Urville, Jules; Gerlache, Adrien de; Hope Bay; Irízar, Julián; Larsen, Carl Anton (1902–1903); Nordenskjöld, Adolf; Ross, James Clark (1839–1843); Scott, Robert Falcon (1901–1904); Seymour Island; Snow Hill Island

References and further reading:

Norse Arctic Exploration

With the possible exception of the Phoenicians, the Norse—or Vikings—were the first people sufficiently confident in their mastery of the sea to abandon coastal sailing and voyage across the open ocean. The fact that they were able to do this is to be attributed primarily to the excellence of their ships—clinker-built, shallow-draught vessels powered by oars and square sails. Capable of sailing up to 11 knots and of averaging 7 knots over long distances, these were fully evolved by A.D. 793, the date of the first raid on the English monastery of Lindisfarne, which is generally regarded as marking the beginning of the Viking Age. Equipped with such ships, the Norse were to pioneer exploration westward across the North Atlantic, reaching first the Faeroe Islands (825), then Iceland (860), Greenland (982), and finally continental North America (1001). In each case, discovery began with accidental sightings, which then provoked deliberate search with colonization in mind.

From Ohthere’s account of his travels (see entry), we know that some Norse sailors abandoned the traditional method of hugging the coastline. Those who sailed across the North Atlantic did so by following a chosen latitude, which they checked by ensuring that the altitude of the noonday sun remained constant. Although chance appears to have played a part, observing the flight of birds is likely to have proved particularly helpful in indicating the direction in which new land lay. Indeed, as they sailed west, the Norse seamen were never more than a couple of days away from land; if they became lost, except in the foulest of weather, they were usually able to follow birds back to land.

Leaving aside sub-Arctic Iceland and the Faeroe Islands, where they were almost certainly anticipated by Irish monks, Norse seamen in the Arctic were the first Europeans to reach Greenland—first seen by Gunnbjörn Úlfsson around 877 and first systematically explored by Erik the Red during 982–985—and Baffin Island—first seen by Bjarni Herjólfsen around 986 and first landed on by Leif Eriksson around 1001. Despite their warlike reputation, the Norse were primarily pastoralists and traders. Apart from a few sheltered valleys in West Greenland, the Arctic had little to offer pastoralists; but traders particularly prized walrus tusks and hides (the tusks for the carving of ornamental and religious ivories, the hides for the manufacture of rope for the ships). Polar-bear skins, narwhal horns, and white falcons were other luxury goods obtainable only in the Arctic. Off West Greenland, the main hunting ground Norsetur lay north of the Norse settlements in the vicinity of Disko Bay, but it is probable that they hunted progressively farther north in search of the best specimens. The most northerly we can prove they reached is the island of Kingitarsuag (72°57′N), where runes inscribed on a stone record the presence there of three Norse on 25 April 1333. Given that this is very early in the year to have been so far north, it is likely that this hunting expedition had wintered
probably first seen in 1617 by the English whaler John Ellis. Covered by ice caps up to 1,000 meters thick. The island was north-south with an area of 5,486 square miles. The interior is

Archipelago, measuring 108 miles east-west and 80 miles

27°30'E, this is the second-largest island in the Svalbard

Arctic, from Norway as well as Iceland. It is from the latter that "Svalbard" (the Cold Coast) was reported as being discovered in 1194, lying some four sailing days to its north. Although some have argued that this was the west coast of Spitsbergen, and others northeast Greenland, it is much more likely to have been Jan Mayen, which is about the right distance from Iceland, and its high volcanic peak would be visible from a considerable distance.

See also: Baffin Island; Ellesmere Island; Erik the Red; Eriksson, Leif; Greenland; Greenland, West; Jan Mayen; Oththere

References and further reading:


North East Land (Svalbard)

Located between 79°15 and 80°30'N and between 18° and 27°30'E, this is the second-largest island in the Svalbard Archipelago, measuring 108 miles east-west and 80 miles north-south with an area of 5,486 square miles. The interior is covered by ice caps up to 1,000 meters thick. The island was probably first seen in 1617 by the English whaler John Ellis from Barents Island and named by him "Sir Thomas Smith Island" for the governor of the Muscovy Company. In 1707, Cornelius Giles on a Dutch whaling and exploring expedition possibly completed the first circumnavigation, though it is uncertain whether he first sailed through Hinlopen Strait. Certainly he sailed north of the island through seas unusually clear of ice, then south along the east coast, from where he sighted White Island, and then into Hinlopen Strait. The official Norwegian name is Nordaustlandet.

Otto Torell’s expedition of 1861 conducted the first scientific surveys of the western and northern coasts. Landings made at this time are among the earliest recorded for the island, which was previously thought to be divided into two by a channel between Murchison and Wahlenberg Bays. Torell also explored the north coast to Cape Platen, naming the region Prince Oscar’s Land for the future king of Sweden and Norway, Oscar II. A party of Norwegian walrus hunters followed up Torell’s discoveries to hunt off the east coast in 1864. Unable to return the way they had come along the north coast, they were forced to abandon their vessels and to take to open boats, in which they rowed around the east and south coasts before heading north through Hinlopen Strait and back to safety, completing the first circumnavigation since Giles. In 1871, knowledge of the north coast was extended farther east to Cape Leigh Smith by Benjamin Leigh Smith, who also mapped the west coast to Waygat Island, from where he saw and named Cape Mohn, the island’s southernmost point.

The interior remained uninvestigated until 1873 when Adolf Erik Nordenskiöld achieved the first crossing, from near Cape Bruun to Wahlenberg Bay. Other expeditions visiting the island in the nineteenth century include the Swedish Preliminary Arc of Meridian Expedition in 1898, and the Swedish-Russian Arc of Meridian Expedition, which established a station on Celsiusberget on the west coast and ventured briefly onto the ice cap in 1899. In August 1912, Herbert Schröder-Stranz disembarked on the sea ice some miles offshore between North Cape and Cape Platen. He and his three companions were never seen again, and following an extensive search of the north coast by Theodor Lerner in 1913, it was generally concluded that he had failed to get ashore. In 1937 and 1938, however, finds in Dove Bay indicated that he had landed here, probably continuing onto the ice cap in an attempt to reach the west coast.

Norwegian sovereignty of North East Land was recognized in 1920 under the terms of the Spitsbergen Treaty. Apart from Adolf Hoel’s aerial survey of 1938, however, Norway’s contribution to the scientific study of the island in the years between the two world wars was limited to a joint expedition with Sweden in 1931. During this period, much significant work was conducted by expeditions organized by Oxford University. The existence of three ice caps rather than one was established by George Binney’s second Oxford University expedition in 1924, which also achieved the first east-west crossing, sled-
ing from Isis Point to Wahlenberg Bay. The interior was next explored in 1931 by Hans W:son Ahlmann’s Swedish-Norwegian expedition. In addition to conducting an ambitious scientific program at his base in Murchison Bay, Ahlmann made the surprising discovery of an ice-free valley joining Rijps and Wahlenberg Bays, which separated the western and eastern ice caps. The most extended exploration of the island to date was conducted by Sandy Glen’s third Oxford University expedition in 1935–1936, during which two ice stations were established on the western ice cap, the first trigonometrical survey was made of the north coast, and a sledging journey was completed around the island by Glen and Andrew Croft. (For a full description of this expedition, see Glen, Sandy.) During the International Geophysical Year (1957–1958), a Swedish-Finnish-Swiss expedition led by Gösta H. Liljequist maintained stations in Murchison Bay and at Station West-Ice near the summit of the western ice cap.

During World War II, Germany operated the secret meteorological station Wettertrupp Haudegen between 1944 and 1945 in Wordie Bay. Led by Dr. Wilhelm Dege, this was one of the largest Arctic stations, with eleven staff members, and was the last to close several months after the end of the war.

See also: Glen, Sandy; Hoel, Adolf; International Geophysical Year; Nordenskiöld, Adolf Erik (1872–1873); Schröder-Stranz, Herbert; Smith, Benjamin Leigh (1871); Svalbard; Torell, Otto; Whaling and Arctic Exploration

References and further reading:
Barr, W. 1986. Wettertrupp Haudegen: the last German Arctic weather station of World War II. *Polar Record*, 23(143), 143–158, and (144), 323–333.

## North Pole

There is something particularly ultimate about the North Pole, underscored by the fact that the Pole itself lies on ever-shifting ice over a point in the Arctic Ocean 4,087 meters deep. The Geographic North Pole—to distinguish it from the Geomagnetic, Magnetic, and Relative Inaccessibility Poles—lies at the northern end of the Earth’s axis of rotation. From there, all directions lie south, and a year consists of one day and one night. There is thus just one sunrise and one sunset, with the day extending six months from 20 March to 20 September. The Pole has as many hours of sunlight as the equator or any other part of the Earth, but the low incidence of the sun’s rays reduces the ability to warm, with much more heat being absorbed by the atmosphere. One can tell when it is summer at the Pole by the unchanging altitude of the Sun and the consequently unchanging length of shadows. In winter, the best indicator is the presence of the Pole Star—Polaris—directly overhead.


Generations of explorers have sought the North Pole, at least as far back as the sixteenth century. Their motives have varied. Early explorers believed that across the Pole lay a shortcut to the trading riches of the Far East. Later, they sought undiscovered land. As a succession of record farthest norths inched toward the Pole, the Pole itself increasingly came to represent an ultimate—a point beyond which no man could go. Whoever reached it first knew that his name would be preserved forever as the first to have done so. No man was more obsessed with this dream than Robert Peary. The race to be first there involved explorers from Great Britain, Russia, Sweden, the United States, Norway, and Italy, and citizens from many other countries have sought the Pole since. They initially sailed in ships in hopes of finding an open polar sea to ease their passage, but when it became clear that the Pole was surrounded by a thick belt of ice, man-hauling, reindeer, ponies, dogs, snowmobiles, and most recently high-tech kites were pressed into service as explorers slogged toward their objective—aided by whatever method and technology appeared best at the time. Balloons, airships, and airplanes presented an alternative for those who believed that traveling by air was a better way. Through time, opinions have also changed as to the best point of departure. Early expeditions set out from Spitsbergen, where vessels could routinely reach as far north as 80°N. Unfortunately, at that location the pack drifts south at a speed of several miles per day with the Transpolar Current. North
Greenland, the Seven Islands, Ellesmere Island, Franz Josef Land, the De Long Islands, and Severnaya Zemlya have also been tried as points of departure, with the Ward Hunt Ice Shelf (north Ellesmere Island) and Arctic Cape (Severnaya Zemlya) being the preferred options for modern adventurers. Table 14, under Explorer, lists the entries in this encyclopedia that provide accounts of expeditions attempting to reach the North Pole.

Who reached the Pole first remains the most debated issue in polar exploration. It was first claimed by Frederick Cook on 21 April 1908. Robert Peary stated that he had reached it on 6 April 1909. Neither claim has been conclusively disproved, and both claimants have their defenders. But insofar as an informed consensus can be identified, it would be against both claims. Richard Byrd’s claim to have made the first aircraft flight to the Pole on 9 May 1926 is similarly controversial, and recent evidence suggests that in fact he turned back about 100 miles south of the Pole, though again Byrd also has his defenders. If neither Cook, Peary, nor Byrd is to be believed, then the first to see the Pole were those with Roald Amundsen aboard the airship Norge on 12 May 1926. The first to stand at the Pole was the scientist Pavel A. Gordiyenko, he being the first to disembark from three Soviet twin-engine IL-2s making the first landing at the Pole on 23 April 1948. The leading plane was captained by the polar veteran Ivan I. Cherevichnyy, and the expedition was led by Aleksandr Kuznetsov (Pala 1999). Ralph Plaisted’s snowmobile expedition appears to have been the first to reach the Pole over the ice on 19 April 1968. Wally Herbert was the first there by

<table>
<thead>
<tr>
<th>Date</th>
<th>Explorer</th>
<th>Means</th>
<th>From</th>
</tr>
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<tbody>
<tr>
<td>1607</td>
<td>Hudson</td>
<td>Ship</td>
<td>Spitsbergen</td>
</tr>
<tr>
<td>1765</td>
<td>Chichagov</td>
<td>Ship</td>
<td>Spitsbergen</td>
</tr>
<tr>
<td>1766</td>
<td>Chichagov</td>
<td>Ship</td>
<td>Spitsbergen</td>
</tr>
<tr>
<td>1773</td>
<td>Phipps</td>
<td>Ship</td>
<td>Spitsbergen</td>
</tr>
<tr>
<td>1818</td>
<td>Buchan</td>
<td>Ship</td>
<td>Spitsbergen</td>
</tr>
<tr>
<td>1827</td>
<td>Parry</td>
<td>Man-hauling and reindeer</td>
<td>Spitsbergen</td>
</tr>
<tr>
<td>1872–1873</td>
<td>A. E. Nordenskiöld</td>
<td>Reindeer</td>
<td>Seven Islands</td>
</tr>
<tr>
<td>1875–1876</td>
<td>Nares</td>
<td>Man-hauling</td>
<td>Ellesmere Island</td>
</tr>
<tr>
<td>1879–1881</td>
<td>De Long</td>
<td>Ship</td>
<td>Bering Strait</td>
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<td>1893–1896</td>
<td>Nansen</td>
<td>Ship</td>
<td>New Siberian Islands</td>
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<td>1894</td>
<td>Wellman</td>
<td>Dogs</td>
<td>Seven Islands</td>
</tr>
<tr>
<td>1897</td>
<td>Andrée</td>
<td>Balloon</td>
<td>Spitsbergen</td>
</tr>
<tr>
<td>1898–1899</td>
<td>Wellman</td>
<td>Dogs</td>
<td>Franz Josef Land</td>
</tr>
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<td>1899–1900</td>
<td>Abruzzi, Luigi Duke of</td>
<td>Dogs</td>
<td>Franz Josef Land</td>
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<tr>
<td>1900</td>
<td>Peary</td>
<td>Dogs</td>
<td>North Greenland</td>
</tr>
<tr>
<td>1901–1902</td>
<td>Baldwin</td>
<td>Dogs and ponies</td>
<td>Franz Josef Land</td>
</tr>
<tr>
<td>1902</td>
<td>Peary</td>
<td>Dogs</td>
<td>Ellesmere Island</td>
</tr>
<tr>
<td>1903–1905</td>
<td>Fiala</td>
<td>Dogs and ponies</td>
<td>Franz Josef Land</td>
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<tr>
<td>1906</td>
<td>Wellman</td>
<td>Airship</td>
<td>Spitsbergen</td>
</tr>
<tr>
<td>1907</td>
<td>Wellman</td>
<td>Airship</td>
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</tr>
<tr>
<td>1907–1909</td>
<td>F. A. Cook</td>
<td>Dogs</td>
<td>Axel Heiberg Island</td>
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<td>1908–1909</td>
<td>Peary</td>
<td>Dogs</td>
<td>Ellesmere Island</td>
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<tr>
<td>1909</td>
<td>Wellman</td>
<td>Airship</td>
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<tr>
<td>1912–1914</td>
<td>Sedov</td>
<td>Dogs</td>
<td>Franz Josef Land</td>
</tr>
<tr>
<td>1925</td>
<td>Amundsen and Ellsworth</td>
<td>Airplane</td>
<td>Spitsbergen</td>
</tr>
<tr>
<td>1926</td>
<td>Byrd</td>
<td>Airplane</td>
<td>Spitsbergen</td>
</tr>
<tr>
<td>1926</td>
<td>Amundsen, Ellsworth,</td>
<td>Airship</td>
<td>Spitsbergen and Nobile</td>
</tr>
<tr>
<td>1958</td>
<td>W. Anderson</td>
<td>Submarine</td>
<td>Bering Strait</td>
</tr>
<tr>
<td>1967</td>
<td>Plaisted</td>
<td>Snowmobile</td>
<td>Ellesmere Island</td>
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<tr>
<td>1968</td>
<td>Plaisted</td>
<td>Snowmobile</td>
<td>Ellesmere Island</td>
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<tr>
<td>1968–1969</td>
<td>Herbert</td>
<td>Dogs</td>
<td>Point Barrow, Alaska</td>
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<tr>
<td>1986</td>
<td>Steger</td>
<td>Dogs</td>
<td>Ellesmere Island</td>
</tr>
<tr>
<td>1990</td>
<td>Ousland</td>
<td>Unsupported</td>
<td>Ellesmere Island</td>
</tr>
<tr>
<td>1994</td>
<td>Ousland</td>
<td>Unsupported</td>
<td>Severnaya Zemlya</td>
</tr>
<tr>
<td>2000</td>
<td>Hempleman-Adams</td>
<td>Balloon</td>
<td>Spitsbergen</td>
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Table 15  North Pole Firsts

<table>
<thead>
<tr>
<th>Date</th>
<th>Expedition</th>
<th>Achievement</th>
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<tbody>
<tr>
<td>1908</td>
<td>Cook</td>
<td>First to the Pole (claimed)</td>
</tr>
<tr>
<td>1909</td>
<td>Peary</td>
<td>First to the Pole (claimed)</td>
</tr>
<tr>
<td>1926</td>
<td>Byrd</td>
<td>First aircraft (claimed)</td>
</tr>
<tr>
<td>1926</td>
<td>Amundsen, Ellsworth, and Nobile</td>
<td>First airship</td>
</tr>
<tr>
<td>1948</td>
<td>Cherevichiy</td>
<td>First airplane landing</td>
</tr>
<tr>
<td>1958</td>
<td>W. Anderson</td>
<td>First submarine</td>
</tr>
<tr>
<td>1958</td>
<td>Calvert</td>
<td>First submarine to surface at the Pole</td>
</tr>
<tr>
<td>1968</td>
<td>Prasted</td>
<td>First verified surface expedition at the Pole</td>
</tr>
<tr>
<td>1969</td>
<td>Herbert</td>
<td>First verified dog-powered expedition</td>
</tr>
<tr>
<td>1977</td>
<td>Arktaka</td>
<td>First ship</td>
</tr>
<tr>
<td>1978</td>
<td>Uemura</td>
<td>First solo</td>
</tr>
<tr>
<td>1979</td>
<td>Shparo</td>
<td>First to the Pole from Eurasia</td>
</tr>
<tr>
<td>1988</td>
<td>Shparo</td>
<td>First to the Pole from Novaya Zemlya</td>
</tr>
<tr>
<td>1990</td>
<td>Ousland and Kagge</td>
<td>First unsupported (disputed)</td>
</tr>
<tr>
<td>1994</td>
<td>Ousland</td>
<td>First solo, unsupported</td>
</tr>
<tr>
<td>1995</td>
<td>Weber and Malakhov</td>
<td>First unsupported to and from the Pole</td>
</tr>
<tr>
<td>2000</td>
<td>Hempleman-Adams</td>
<td>First balloon</td>
</tr>
<tr>
<td>2003</td>
<td>Hadow</td>
<td>First unsupported solo journey from North America</td>
</tr>
</tbody>
</table>

Note: For firsts involving the Arctic Ocean via the North Pole, see the entry for Arctic Ocean.

dogsled on 6 April 1969. Table 15 contains a list of some of the more significant North Pole achievements.

See also: Adventurers; Amundsen, Roald (1926); Anderson, William; Byrd, Richard (1926); Cook, Frederick (1907–1909); Farthest North; Geomagnetic Poles; Hempleman-Adams, David; Herbert, Wally; Magnetic Poles; Open Polar Sea; Ousland, Borge; Peary, Robert (1908–1909); Plaisted, Ralph (1968); Poles of Inaccessibility; South Pole; Unsupported Expeditions

References and further reading:

Northbrook Island (Franz Josef Land)
Located at 80°00’N, 51°00’E, Northbrook Island, one of the most southerly islands in Franz Josef Land, is famous for Cape Flora, visited by many expeditions and most notably the site of Fridtjof Nansen's meeting with Frederick Jackson on 17 June 1896. This encounter is described in detail under the Jackson entry.

The largely ice-covered island was discovered by Benjamin Leigh Smith in August 1880 and named for Sir Francis Baring, Lord Northbrook (1796–1866), first lord of the Admiralty and former president of the Royal Geographical Society. The official Russian name is Ostrov Nortbruk. Cape Flora was also named by Smith, who was struck by its unusual profusion of plant life. Smith returned there the following year, anchoring his vessel Eira offshore while waiting for the ice to break up to the east. On 21 August 1881, Eira sank after being pinned by pack ice brought in on the tide. Although Smith had just erected a hut on nearby Bell Island, he was unable to reach it across an ice-choked channel 12 miles wide, and he was forced instead to winter at Cape Flora in a hut built of turf and stones roofed over by sailcloth. Smith's party of twenty-five men remained there until 21 June 1882, when they set out in four boats for Novaya Zemlya.

Jackson's expedition landed at Cape Flora on 8 September 1894. He too had intended to establish his winter quarters on Bell Island but found the sheltered anchorage there full of ice, and so he constructed his winter quarters (Elm-wood) here instead. The eight-man wintering party was accommodated in a traditional Russian log cabin; other buildings included four octagonal wood-and-canvas storage huts, a doghouse, and a stable for ponies. On finally departing on 6 August 1897, Jackson left behind a large stock of supplies. Largely as a result, Cape Flora was to become known as the one place in Franz Josef Land where shelter and food could be found, the latter not limited to Jackson's supplies but also including walrus and polar bears, which frequent this locality in large numbers.

The first to make use of Jackson's stores was Walter Wellman, who landed at Cape Flora on 28 July 1898 to remove one of the octagonal huts and much of the supplies. Wellman had hoped that the Swedish balloonist Salomon Andrée might have made his way here following his attempt to reach the Pole. It was one of the very few places where it was still possible that Andrée and his companions might be found alive. Next was Luigi, Duke of the Abruzzi, who landed on 21 July 1899 and hoped that the Swedish balloonist Salomon Andrée might have made his way here following his attempt to reach the Pole. It was one of the very few places where it was still possible that Andrée and his companions might be found alive. Next was Luigi, Duke of the Abruzzi, who landed on 21 July 1899 and spent five days here before heading north to Rudolf Island. He left some stores behind in case of emergency and returned again on 31 August 1900 in the hope of finding a missing three-man sledging party consisting of Lieutenant Francesco Querini, Henrik Alfred Støkken, and Felice Ollier. A stone pillar was erected in their memory in 1901 by Støkken's father, the captain of Capella, who searched in vain for his son and his companions. In the same year, a party from the icebreaker Yermak landed at Cape Flora on 27 July during the first Russian visit to Franz Josef Land.
Following the loss of his ship and the failure of his first two attempts to reach the North Pole from Rudolf Island in 1904, Anthony Fiala led south those of his men who wished to return home. On 16 May, he reached Cape Flora, where he planned to leave them, to be picked up by the supply ship *Frithjof*. Unfortunately, *Frithjof* was unable to reach Franz Josef Land, and as a result twenty-five men were forced to winter in Jackson's log cabin and a portable hut left by the Duke of the Abruzzi. During the hard winter, they ran short of food and fuel but were able to replenish coal stocks when a coal seam was discovered 200 meters above Elmwood, from which they mined about 20 tons of coal. They were finally relieved on 30 July 1905 by *Terra Nova*, a powerful Scottish whaler that was to be the expedition vessel during Robert Falcon Scott's second Antarctic expedition.

Unlike Nansen, who hit upon Cape Flora by chance, Valerian Al'banov was to make for it deliberately when Georgiy Brusilov's ship *St. Anna* was beset some 70 miles north of Franz Josef Land. After an epic journey across the ice, initially with thirteen companions, he and sailor Aleksandr Konrad alone finally reached Northbrook Island on 22 July 1914. Two others had come with them as far as Bell Island but were then swept out to sea by strong winds, a fate that Al'banov and Konrad were lucky to escape. They were making preparations to winter in one of Jackson's huts when, on 1 August, a ship was seen anchoring offshore. This was *St. Foka* of Georgiy Sedov's expedition, almost completely out of fuel and intending to raid Jackson's base for timber and other materials to burn. Shortly after *St. Foka*'s departure, I. P. Anufriyev reached Northbrook Island in *Hertha*. He had been sent to search for Sedov and now found Al'banov's note stating that there were possibly four survivors from Brusilov's expedition nearby who had been unable to reach Cape Flora. Anufriyev searched Bell Island as well as along the southern shore of George Land but found no trace of them. Just in case they were able to reach Cape Flora later, he left food behind for them.

On 26 August 1925, Cape Flora was visited by a man more generally associated with the Antarctic. Frank Worsley, captain of Sir Ernest Shackleton's *Endurance*, demonstrated his mastery of sailing ships by managing to reach Franz Josef Land in the schooner *Hobby*, the first vessel to reach the archipelago in *Hertha*. He had been sent to search for Sedov and now found Al'banov's note stating that there were possibly four survivors from Brusilov's expedition nearby who had been unable to reach Cape Flora. Anufriyev searched Bell Island as well as along the southern shore of George Land but found no trace of them. Just in case they were able to reach Cape Flora later, he left food behind for them.

During the search for survivors from Umberto Nobile's *Italia* expedition, Hjalmar Riiser-Larsen anchored off Cape Flora in *Hobby*, bringing ashore materials to rebuild Jackson's huts, which were then in a highly dilapidated condition. He was prevented from attempting any repair work when a heavy swell arose, forcing him to anchor instead in Eira Harbor. Two years later the condition of the huts was again inspected by Gunnar Horn in *Bratvaag*, during a visit designed to demonstrate continuing Norwegian interest in islands controversially annexed in 1926 by the Soviet Union.

Some way distant from any of the scientific and military stations, Northbrook Island was less frequently visited during the Soviet era, though one non-Soviet expedition to stop here was the Swedish-Norwegian expedition of Hans W:son Ahlmann in *Quest* in 1931. In 1996, a memorial post and plaque were erected by members of an expedition organized to commemorate the meeting between Nansen and Jackson. Little now remains of Smith's and Jackson's huts apart from their foundations, with the former being eroded by the sea.

See also: Abruzzi, Luigi Duke of; Andrée, Salomon; Brusilov, Georgiy; Eckener, Hugo; Fiala, Anthony; Jackson, Frederick (1894–1897); Nansen, Fridtjof (1893–1896); Nobile, Umberto; Riiser-Larsen, Hjalmar; Scott, Robert Falcon; Sedov, Georgiy; Shackleton, Ernest (1914–1916); Smith, Benjamin Leigh; Wellman, Walter (1898–1899)

References and further reading:

Northern Sea Route

See Northeast Passage

Northeast Passage

“The passage to Cathay by the Northeast . . . is without doubt very short and easy. . . . I have oftentimes marvelled that being so happily begun it hath been left off, and the course changed to the West, after more than half of the voyage was discovered.”


Western European Navigators Search for a Route to Cathay, 1553–1676

Mercator's optimism was shared by enough of his contemporaries that a series of expeditions was organized from England, the Netherlands, and Denmark. One advantage of the Northeast Passage over the rival Northwest Passage was its existing use by trading ships, which initially visited ports in northern Norway and then continued on to Russia once contact had been established in 1553 by Richard Chancellor. Mercator and his fellows believed that Cathay and the Far East were best reached up the Ob' River, not far beyond Vaygach Island. Although numerous expeditions got as far as Vaygach, few succeeded in entering the Kara Sea. By the end of the sixteenth century, it was known that there were four ways into this sea: through Yugor or Kara Straits on either side of Vaygach; through Matochkin Strait; or around the northern tip of Novaya Zemlya. Those rare expeditions managing to reach the Kara Sea had disappointed Mercator by turning back soon afterward. Such failure was all the more surprising because it was known that the Russian Pomors had long undertaken trading voyages to the Ob'.

The marriage of Queen Mary of England (1553–1558) to King Philip II of Spain deterred London merchants from seek-
ing Cathay through the hemisphere designated as Spanish by the Treaty of Tordesillas (1494); instead they preferred to investigate the Northeast Passage. Political considerations were equally significant in later developments. The cessation of English interest in the Northeast Passage after 1581 is sometimes attributed mistakenly to the failure of the expedition led by Arthur Pet. The real reason, however, was the crisis in relations between Russia and England in 1582–1583, when Queen Elizabeth I refused Tsar Ivan IV’s demand for an offensive and defensive alliance. This resulted in the tsar removing all special privileges previously granted to the English and declaring Russia’s ports open to ships of all nations. Most specifically with regard to exploration, English ships were now forbidden from trading farther east than the White Sea.

Control of shipping routes through the Baltic Sea by the Hanseatic League had led the Dutch to explore trading possibilities along the Northeast Passage. When the English lost favored status, the Dutch moved rapidly to replace them, soon afterward resuming the search for a navigable route to Cathay. The Russians, however, were also expanding west. In 1582, the cossack Yermak Timofeyevich crossed the Urals into Siberia, and in 1600 the trading settlement Mangazeya was established near the estuary of the Ob’. Concerned lest the lucrative trade in Siberian furs become monopolized by Western Europeans, Tsar Mikhail Fedorovich issued decrees in 1616 banning all foreign shipping east of the White Sea and in 1619 all shipping east of the Pechora River. After that, only Archangel remained open to foreign ships. Although never totally effective, the ban was extended in 1672 and remained nominally in place until 1753. Table 16 lists significant Western European voyages during the sixteenth and seventeenth centuries.

Russia Explores the Northeast Passage, 1686–1743

The ban on shipping was designed to ensure that Siberian furs were transported along inland waterways and overland, where they were more easily taxed. The discovery of a seventeenth-century vessel high on the east coast of the Taymyr Peninsula proves that shipping continued to make use of the Northeast Passage and may even have succeeded in rounding Cape Chelyuskin (see Tolstoukhov, Ivan). Although not lifting the prohibition, Tsar Peter I clearly had a different perspective on the significance of the Northeast Passage, particularly with regard to its strategic value as a link between European Russia and its Arctic and Far East territories. An expedition organized from Archangel in 1720–1721 appears to have been the first to have succeeded in reaching the Ob’, though little else about it is known. The results of the Great Northern Expedition were discouraging (see Bering, Vitus). The Arctic coast was shown to extend far north of where it was previously thought to be and presented an even greater obstacle to shipping. Through the remainder of the eighteenth and much of the nineteenth centuries, sections of the Northeast Passage were used by local shipping, particularly west of Vaygach. It was not until the early twentieth century that the Russian state again attempted to explore its potential as a long-distance route.

The Northern Sea Route Becomes a Reality, 1860–

The great rivers of Siberia—the Ob’, Yenisey, and Lena—flow north to the Arctic Ocean. To transport Siberian furs, grain, gold, and timber overland involves crossing a succession of difficult watersheds. How much easier it would be to ship them downstream and along the coast, and then, through the same route, bring in the luxury goods from western Russia! This was the dream of Mikhail Sidorov, who organized two expeditions in 1862 and 1869 in a vain attempt to resume use of the Northeast Passage. The British trader Joseph Wiggins was more successful in 1874, when he reached the Ob’ and Yenisey Estuaries to initiate commercial exploitation of the Kara Sea route. Wiggins continued to make trading voyages

<table>
<thead>
<tr>
<th>Date</th>
<th>Explorer</th>
<th>Route</th>
<th>Chief sponsor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1553–1554</td>
<td>Willoughby</td>
<td>Barents Sea to Novaya Zemlya</td>
<td>London merchants</td>
</tr>
<tr>
<td>1553–1554</td>
<td>Chancellor</td>
<td>Barents and White seas</td>
<td>London merchants</td>
</tr>
<tr>
<td>1556–1557</td>
<td>Borough</td>
<td>Novaya Zemlya and Vaygach Island</td>
<td>Muscovy Company</td>
</tr>
<tr>
<td>1580–1581</td>
<td>Pet</td>
<td>Vaygach Island</td>
<td>Muscovy Company</td>
</tr>
<tr>
<td>1584–1585</td>
<td>Brunel</td>
<td>Matochkin Shar, Novaya Zemlya</td>
<td>Dutch merchants</td>
</tr>
<tr>
<td>1594</td>
<td>Barents</td>
<td>Novaya Zemlya and Vaygach Island</td>
<td>Dutch merchants</td>
</tr>
<tr>
<td>1595</td>
<td>Barents</td>
<td>Vaygach Island</td>
<td>Dutch merchants</td>
</tr>
<tr>
<td>1596–1597</td>
<td>Barents</td>
<td>Spitsbergen and Novaya Zemlya</td>
<td>Amsterdam merchants</td>
</tr>
<tr>
<td>1608</td>
<td>Hudson</td>
<td>Novaya Zemlya</td>
<td>Dutch East India Company</td>
</tr>
<tr>
<td>1610</td>
<td>Munk</td>
<td>Novaya Zemlya and Vaygach Island</td>
<td>Christian IV</td>
</tr>
<tr>
<td>1625</td>
<td>Bosman</td>
<td>Vaygach Island</td>
<td>Noordsche Compagnie</td>
</tr>
<tr>
<td>1653</td>
<td>Unknown</td>
<td>Novaya Zemlya and Vaygach Island</td>
<td>Danish merchants</td>
</tr>
<tr>
<td>1664</td>
<td>Vlamingh</td>
<td>Novaya Zemlya</td>
<td>Dutch merchants</td>
</tr>
<tr>
<td>1676</td>
<td>Wood</td>
<td>Novaya Zemlya</td>
<td>British Admiralty</td>
</tr>
</tbody>
</table>
until 1896. Adolf Erik Nordenskiöld’s first transit of the Northeast Passage in 1878–1880 was important as much for focusing international attention on the seaway as for demonstrating that it was navigable throughout its length. The Kara Sea route became increasingly important in late imperial times, and at the same time American vessels developed a growing trade with northern Chukotka in the far east. Not until 1914–1915 was the next transit made by Boris Vil’kitskiy with the icebreakers Taymyr and Vaygach, as part of a major endeavor by the Imperial Russian Navy to render the Northeast Passage navigable for strategic purposes.

Developing the Northern Sea Route became the central objective of the Soviet Union’s policy for its Arctic regions from 1932 when the Chief Administration of the Northern Sea Route was established with sweeping powers under the leadership of Otto Shmidt. Accounts of his transits in 1932 in Sibiryakov and in 1933–1934 in Chelyushkin are given in the entry for his name. It was in order to provide better information on weather and sea ice conditions for shipping using the Northern Sea Route that numerous stations were opened across northern Russia as well as at the North Pole, when ignorance of conditions in the central Arctic was found to be inhibiting full development of the seaway (see Papanin, Ivan).

Table 17 lists the entries in this encyclopedia that describe attempted and successful transits of the Northeast Passage since 1870.

### Table 17 Northeast Passage: Successful and Attempted Transits, 1870–1936

<table>
<thead>
<tr>
<th>Date</th>
<th>Explorer(s)</th>
<th>Achievement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1872–1874</td>
<td>Payer and Weyprecht</td>
<td></td>
</tr>
<tr>
<td>1878–1880</td>
<td>A. E. Nordenskiöld</td>
<td>First transit</td>
</tr>
<tr>
<td>1912–1913</td>
<td>Brusilov</td>
<td></td>
</tr>
<tr>
<td>1914–1915</td>
<td>Vil’kitskiy</td>
<td>First east-west transit</td>
</tr>
<tr>
<td>1918–1920</td>
<td>Amundsen</td>
<td>Second transit</td>
</tr>
<tr>
<td>1932</td>
<td>Shmidt</td>
<td>First single-season transit</td>
</tr>
<tr>
<td>1933–1934</td>
<td>Shmidt</td>
<td></td>
</tr>
</tbody>
</table>

**Northwest Passage**

Belief in the existence of a circular world ocean extending to the north and south of known lands underpinned the confidence of sixteenth-century cartographers and navigators that navigable seaways were to be found to the northeast and northwest linking Europe with the Far East. Two similar passages had been discovered in the Southern Hemisphere to the southeast and southwest and were now controlled by the Portuguese and Spanish, respectively. Of the four possible alternatives, the Northwest Passage would be the shortest for English ships. The fact that England was at the end of the trading chain for luxury goods from the Far East, and thus obliged to pay the highest prices, was another factor making the search for the Northwest Passage a particularly English affair. Between 1576 and 1632, the era of most intense exploration, the only non-English expedition was the Danish expedition of Jens Munk in 1619–1620—and even that had an English pilot.

Three periods may be identified in the search for the Northwest Passage. Between 1497 and 1632, the search was for a trading route. In the eighteenth century, nongeographical motives were more significant: James Knight hoped that mineral resources would be found nearby, while the voyages of Christopher Middleton and William Moor resulted from a campaign against the Hudson’s Bay Company (HBC). From 1818 onward, political and scientific factors became more important: it was now a matter of national prestige that Great Britain was not anticipated by Russia.

### The Route to Cathay, 1497–1632

An initial concern was whether Spain and Portugal would seek to uphold their claims established under the Treaty of Tordesillas of 1494. Spain never sought to do so, though when Queen Mary of England was married to the King Philip II of Spain, it was hardly coincidental that merchants would be found nearby, while the voyages of Christopher Middleton and William Moor resulted from a campaign against the Hudson’s Bay Company (HBC). From 1818 onward, political and scientific factors became more important: it was now a matter of national prestige that Great Britain was not anticipated by Russia.

it might be more easily located from the Pacific. Thus according to some scholars, part of Martin Frobisher's mission in 1578–1579 was to locate the eastern entrance, while Francis Drake simultaneously investigated its outlet in the Pacific. Drake sailed to 48°N before giving up the attempt. John Davis made three voyages to find the eastern entrance before concluding that it was most likely to be found only in the far north through the strait later named for him. He subsequently joined the attempted circumnavigation by Thomas Cavendish (1591–1593) with the aim of searching from the Pacific. In the event, he was unable to get beyond Magellan Strait. Drake's search was not resumed by any English vessel until the third voyage of James Cook (1776–1780).

After Davis, English expeditions concentrated on Hudson Strait and Hudson Bay until 1615, when William Baffin made an exhaustive search of Davis Strait, identifying three openings to the west but not being persuaded that any of them led into a northwest passage. In 1601, the East India Company sent its first ships around the Cape of Good Hope, which Portugal—since 1580 ruled over by the king of Spain—was unable to patrol as effectively as before. The period of exploration concludes in 1631 with the twin failures of Luke Foxe and Thomas James to find the Northwest Passage through Hudson Bay.

### Table 18  Northwest Passage Early Voyages, 1497–1632

<table>
<thead>
<tr>
<th>Date</th>
<th>Explorer(s)</th>
<th>Route</th>
<th>Chief sponsor(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1497</td>
<td>J. Cabot</td>
<td>Atlantic Ocean</td>
<td>Henry VII</td>
</tr>
<tr>
<td>1498</td>
<td>J. Cabot</td>
<td>Atlantic Ocean</td>
<td>Henry VII</td>
</tr>
<tr>
<td>1500</td>
<td>G. Corte-Real</td>
<td>Atlantic Ocean</td>
<td>Manoel I</td>
</tr>
<tr>
<td>1501</td>
<td>G. Corte-Real</td>
<td>Atlantic Ocean</td>
<td>Manoel I</td>
</tr>
<tr>
<td>1508–1509</td>
<td>S. Cabot</td>
<td>Hudson Strait?</td>
<td>Henry VII</td>
</tr>
<tr>
<td>1576</td>
<td>Frobisher</td>
<td>Frobisher Bay, Baffin Island</td>
<td>Michael Lok</td>
</tr>
<tr>
<td>1577</td>
<td>Frobisher</td>
<td>Frobisher Bay</td>
<td>Company of Cathay</td>
</tr>
<tr>
<td>1578</td>
<td>Frobisher</td>
<td>Frobisher Bay</td>
<td>Company of Cathay</td>
</tr>
<tr>
<td>1585</td>
<td>Davis</td>
<td>Cumberland Sound, Baffin Island</td>
<td>William Sanderson</td>
</tr>
<tr>
<td>1586</td>
<td>Davis</td>
<td>Davis Strait</td>
<td>William Sanderson</td>
</tr>
<tr>
<td>1587</td>
<td>Davis</td>
<td>Davis Strait</td>
<td>William Sanderson</td>
</tr>
<tr>
<td>1602</td>
<td>Weymouth</td>
<td>Davis Strait and Hudson Strait</td>
<td>East India Co.</td>
</tr>
<tr>
<td>1606</td>
<td>John Knight</td>
<td>Unable to enter Hudson Strait</td>
<td>Muscovy and East India Cos.</td>
</tr>
<tr>
<td>1609</td>
<td>Hudson</td>
<td>Hudson River</td>
<td>Dutch East India Co.</td>
</tr>
<tr>
<td>1610–1611</td>
<td>Hudson</td>
<td>Hudson Bay</td>
<td>Sir Thomas Smith, Sir Dudley, Diggles, John Wolstenholme</td>
</tr>
<tr>
<td>1625</td>
<td>Hawkeridge</td>
<td>Hudson Bay</td>
<td>East India Co.</td>
</tr>
<tr>
<td>1630</td>
<td>Foxe</td>
<td>Hudson Bay and Foxe Basin</td>
<td>Charles I</td>
</tr>
<tr>
<td>1631–1632</td>
<td>James</td>
<td>Hudson Bay</td>
<td>Bristol Society of Merchant Venturers</td>
</tr>
</tbody>
</table>

**Continuing Investigations by the British Admiralty and Hudson's Bay Company, 1719–1795**

When the Hudson's Bay Company was founded in 1670, the terms of its charter included an obligation to search for the Northwest Passage. Exploring expeditions being expensive and yielding dubious return, the HBC naturally preferred to concentrate on fur-trading. However, its rights and privileges were subject to periodic renegotiation, and prior to such discussions the HBC was characteristically more amenable to exploration than at other times. This pattern was to continue until the absorption of Rupert's Land within the Dominion of Canada in 1870. Curiously, given the optimistic conclusions of Davis and Baffin concerning the possibility of more northerly entrances, all eighteenth-century expeditions from the Atlantic sought the Northwest Passage through Hudson Bay, some being organized by the HBC, some by those wishing to demonstrate HBC's failure to conduct exploration (see Middleton, Christopher, and Moor, William), with two being conducted in 1753 by consortia of American merchants.

By far the most significant HBC expedition was Samuel Hearne's overland journey to the mouth of the Coppermine River. As with James Knight in 1719–1721, the HBC's motive in sending him was as much to investigate the potential of reported mineral deposits as to discover the Northwest Passage.
but by becoming the first European to reach the Arctic coast of North America in 1771, Hearne proved that only at such high latitudes might the Passage be found, having observed no likely channels farther south. This was critical information for the naval expeditions sent to search for the Pacific entrance, and it enabled James Cook to concentrate his investigations in the vicinity of Alaska in the knowledge that more southerly inlets were unlikely to lead through to the Atlantic. Voyages during this second period are listed in Table 19.

A series of parliamentary acts bears witness to continuing British interest in the Northwest Passage. In 1745, £20,000 was offered for discovery of the Northwest Passage through Hudson Strait. In 1776–1780, James Cook sailed along the Pacific coast of North America and claimed the first of the parliamentary awards. Others—notably John Franklin, Peter Dease, and George Back—surveyed the Arctic continental coast where a belt of open water was found to extend in most summers from Bering Strait to the vicinity of “King William Land.” In 1859, Franklin was charged with linking Parry’s discoveries with those farther south. This he achieved, thus becoming first to discover the Northwest Passage, but only after his ships became beset. Not one man survived, and what Franklin had achieved was not learned until 1859, when a solitary record was found summarizing the progress of his expedition. By this time, two more passages had been found by Robert McClure, east and west of Banks Island. Although McClure was forced

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### Table 19 Northwest Passage, Eighteenth-century Expeditions

<table>
<thead>
<tr>
<th>Date</th>
<th>Explorer(s)</th>
<th>Route</th>
<th>Chief Sponsor(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1719–1721</td>
<td>James Knight</td>
<td>Hudson Bay</td>
<td>Hudson’s Bay Company</td>
</tr>
<tr>
<td>1741–1742</td>
<td>Middleton</td>
<td>Hudson Bay</td>
<td>British Admiralty</td>
</tr>
<tr>
<td>1746–1747</td>
<td>Moor</td>
<td>Hudson Bay</td>
<td>Arthur Dobbs</td>
</tr>
<tr>
<td>1753</td>
<td>Swaine</td>
<td>Hudson Bay and Labrador</td>
<td>Philadelphia merchants</td>
</tr>
<tr>
<td>1753</td>
<td>Taylor</td>
<td>Hudson Bay?</td>
<td>Rhode Island merchants</td>
</tr>
<tr>
<td>1761, 1762</td>
<td>Christopher</td>
<td>Hudson Bay</td>
<td>Hudson’s Bay Company</td>
</tr>
<tr>
<td>1770–1772</td>
<td>Hearne</td>
<td>Overland to Coppermine</td>
<td>Hudson’s Bay Company</td>
</tr>
<tr>
<td>1776–1780</td>
<td>James Cook</td>
<td>Pacific coast of North America</td>
<td>British Admiralty</td>
</tr>
<tr>
<td>1791</td>
<td>Malaspina</td>
<td>Pacific coast of North America</td>
<td>Spanish government</td>
</tr>
<tr>
<td>1791–1792</td>
<td>Duncan</td>
<td>Hudson Bay</td>
<td>Hudson’s Bay Company</td>
</tr>
<tr>
<td>1791–1795</td>
<td>Vancouver</td>
<td>Pacific coast of North America</td>
<td>British Admiralty</td>
</tr>
</tbody>
</table>

### Table 20 Northwest Passage Expeditions, 1815–1859

<table>
<thead>
<tr>
<th>Date</th>
<th>Expedition</th>
<th>Route</th>
<th>Chief Sponsor(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1815–1818</td>
<td>Kotzebue</td>
<td>North of Alaska</td>
<td>Count Rumyantsev</td>
</tr>
<tr>
<td>1818</td>
<td>John Ross</td>
<td>Baffin Bay</td>
<td>British Admiralty</td>
</tr>
<tr>
<td>1819–1820</td>
<td>Parry</td>
<td>Lancaster Sound</td>
<td>British Admiralty</td>
</tr>
<tr>
<td>1819–1821</td>
<td>Vasil’ev</td>
<td>North of Alaska</td>
<td>Russian navy</td>
</tr>
<tr>
<td>1819–1821</td>
<td>Franklin</td>
<td>Arctic coast of North America</td>
<td>British Admiralty</td>
</tr>
<tr>
<td>1821–1823</td>
<td>Parry</td>
<td>Foxe Basin</td>
<td>British Admiralty</td>
</tr>
<tr>
<td>1824</td>
<td>Lyon</td>
<td>Hudson Bay</td>
<td>British Admiralty</td>
</tr>
<tr>
<td>1824–1825</td>
<td>Parry</td>
<td>Prince Regent Inlet</td>
<td>British Admiralty</td>
</tr>
<tr>
<td>1825–1827</td>
<td>Franklin</td>
<td>Arctic coast of North America</td>
<td>British Admiralty</td>
</tr>
<tr>
<td>1825–1828</td>
<td>Beechey</td>
<td>North of Alaska</td>
<td>British Admiralty</td>
</tr>
<tr>
<td>1833–1835</td>
<td>Back</td>
<td>Arctic coast of North America</td>
<td>Private</td>
</tr>
<tr>
<td>1836–1837</td>
<td>Back</td>
<td>Hudson Bay</td>
<td>British Admiralty</td>
</tr>
<tr>
<td>1837–1839</td>
<td>Dease</td>
<td>Arctic coast of North America</td>
<td>Hudson’s Bay Company</td>
</tr>
<tr>
<td>1845–1848</td>
<td>Franklin</td>
<td>Peel Sound</td>
<td>British Admiralty</td>
</tr>
<tr>
<td>1847–1859</td>
<td>Franklin search</td>
<td>Various</td>
<td>British Admiralty and others</td>
</tr>
</tbody>
</table>

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to abandon his ship, he completed the first crossing of the Northwest Passage across the ice to claim the parliamentary award.

1860 to the Present
By 1860, three possible passages had been identified through the maze of islands north of continental America: one each on either side of Banks Island (discovered by McClure), and a third west of King William Island (discovered by Franklin). All three were reportedly difficult, and when Roald Amundsen came to complete the first transit of the Northwest Passage, it was by a fourth route east of King William, through James Ross and Rae Straits. Henry Larsen’s first transit—the second ever—was by a fifth route; like Amundsen he sailed east of King William, but then he went through Bellot Strait rather than Peel Sound. All five routes were entered from the Atlantic via Lancaster Sound, but there was another possible entrance through Fury and Hecla Strait between Foxe Basin and the Gulf of Boothia. Today, the favored deepwater route is through Prince of Wales Strait, between Banks and Victoria Islands. Smaller vessels tend to follow Amundsen’s or Larsen’s routes, through Peel Sound or Bellot Strait.

The great hope of the earlier explorers was that the Northwest Passage would provide a commercial seaway between the Atlantic and Pacific Oceans. Even today, its use for this purpose has been minimal. In 1937 and 1938, furs were exchanged at Fort Ross, Bellot Strait, between the HBC vessels Nascopie, sailing from the Atlantic, and Aklavik from the Pacific. This was the first commercial use. More recently, in 1969 the 155,000-ton tanker SS Manhattan carried a symbolic cargo of one barrel of crude oil during a voyage conducted to assess whether the Northwest Passage could provide an economically viable route from the oilfields of Prudhoe Bay. The oil companies decided instead to construct the Trans-Alaska Pipeline. This may change should temperatures continue to rise in the Canadian Arctic. Recent passages have reported less ice, and should this trend continue the Northwest Passage may at last attract commercial use. Table 21 lists some of the more notable achievements concerning the Northwest Passage.

Together with the North Pole and Northeast Passage, the Northwest Passage has been one of the three great goals of Arctic exploration. In addition to the many explorers referred to in the text and tables, most of whom entries, see also the following: Barrow, John; Bellot Strait; Canada; Franklin Search Expeditions; Great Britain; Hudson’s Bay Company; McClure Strait; Northeast Passage; Peel Sound; Prince of Wales Strait.

Table 21 Northwest Passage Firsts

<table>
<thead>
<tr>
<th>Date</th>
<th>Explorer(s)/Vessel(s)</th>
<th>Achievement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1845–1848</td>
<td>Franklin</td>
<td>First discovery of a Northwest Passage</td>
</tr>
<tr>
<td>1850–1854</td>
<td>McClure</td>
<td>First crossing of the Passage</td>
</tr>
<tr>
<td>1903–1906</td>
<td>Amundsen</td>
<td>First transit by ship</td>
</tr>
<tr>
<td>1940–1942</td>
<td>H. Larsen</td>
<td>First west-east transit</td>
</tr>
<tr>
<td>1944</td>
<td>H. Larsen</td>
<td>First single season transit</td>
</tr>
<tr>
<td>1948</td>
<td>USCGC Edisto and Eastwind</td>
<td>First transit of Fury and Hecla Strait</td>
</tr>
<tr>
<td>1954</td>
<td>USCGC Northwind</td>
<td>First transit of McClure Strait</td>
</tr>
<tr>
<td>1960</td>
<td>USS Seadragon</td>
<td>First transit by submarine</td>
</tr>
<tr>
<td>1969</td>
<td>SS Manhattan</td>
<td>First commercial transit</td>
</tr>
<tr>
<td>1969</td>
<td>USCGC Northwind</td>
<td>First to transit both ways in single season</td>
</tr>
<tr>
<td>1977</td>
<td>De Roos</td>
<td>First yacht and first solo transit</td>
</tr>
</tbody>
</table>


References and further reading:
General accounts


Accounts of some recent notable transits

Norway
Many today would recognize three Norwegians as the most successful of all polar explorers: Fridtjof Nansen, Roald Amundsen, and Otto Sverdrup. Many of their fellow nationals also made highly significant contributions to knowledge of the Arctic and Antarctic. Norway’s long coastline and mountainous interior, reaching north of the Arctic Circle, encouraged generations of Norwegians to look to the sea for their livelihoods. Hunting for seals, walruses, and whales led to early exploration of the Arctic archipelagos east to Novaya Zemlya and beyond. Norway’s climate and terrain also ensured that its inhabitants were familiar with snow and ice, and it was in Telemark, to the west of Oslo, that cross-country skiing was first developed into an efficient means of overland transport. Whereas others struggled to learn about polar travel from the...
Inuit or sometimes not at all, Norwegians were brought up with many of the necessary skills (apart from dog handling). Although geographical and economic factors played a part, so did politics. After centuries of incorporation within the kingdoms of Denmark and Sweden, Norway did not become fully independent until 1905. The renown of its explorers, particularly Nansen, did much to establish national self-esteem. Others sought to emulate them, establishing a tradition that continues today with figures such as Erling Kagge—first to reach the South Pole on a solo journey—and Børge Ousland (see his entry).

It was from the Pomors of the White Sea region that the inhabitants of the northern Norwegian town of Hammerfest first learned that a good living could be made by hunting and trapping in the High Arctic. The Pomors had mounted annual expeditions to Novaya Zemlya and Svalbard for several centuries, and by the 1770s similar expeditions began to be equipped from Hammerfest, though the first recorded wintering did not take place until 1794 on Bear Island. Apart from the isolated visit of geologist Balthasar Keilhau in 1827, Norwegians went to Svalbard to trap arctic foxes and hunt seals, walruses, and polar bears. When the walrus population began to diminish in the 1860s, enterprising individuals such as Erling Carlsen and Edvard H. Johannesen traveled east to Novaya Zemlya and the Kara Sea, which they were responsible for opening up to hunters; and to Franz Josef Land, which was possibly first seen by the whaler hunter Nils Fredrik Rønnbeck around 1865. Thus, when the great expeditions of Nansen, Sverdrup, and Amundsen came to be organized, there already existed a pool of men with extensive experience in the Arctic. And once Carl Anton Larsen established the Southern Ocean whaling industry in 1904, many more soon acquired knowledge of the Antarctic.

Larsen’s pioneering investigations of Antarctica are described in the entry under his name. (For other early expeditions manned primarily by Norwegians, see Bull, Henrik, and Borchgrevink, Carsten.) In Antarctica an issue arose that later led to a systematic program of territorial annexation by Norway. When British claims to the peninsula region and offlying islands were consolidated in 1908 within the Falkland Island Dependencies, those primarily affected were Norwegian whalers, who found themselves obliged to purchase licenses and subjected to regulations as to where and when they might catch whales. Included within the Falkland Island Dependencies, however, were areas discovered by Norwegians. Roald Amundsen’s discoveries were similarly incorporated within the Ross Dependency in 1923. Whereas the Norwegian government was concerned with remaining on good terms with Great Britain, which was generally protective of Norway’s interests, the Norwegian whaling industry became increasingly concerned as license fees rose and regulations on its activities became more restrictive. This was the situation determining the decision of the whaling entrepreneur Lars Christensen to organize a deliberate program of exploration and claim for Norway all discoveries. The resulting campaign led to claims being submitted by Norway to Bouvet Island (1930) and Peter I Island (1931), though neither in fact were new discoveries; and to Queen Maud Land (1939), where very extensive discoveries were made, initially by Hjalmar Riiser-Larsen in 1929–1930, then by other whalers, including Christensen himself. Although recognized immediately by Great Britain, Australia, and New Zealand, Norway’s claim to Queen Maud Land was disputed by Germany, which equipped an expedition led by Alfred Ritscher in 1938–1939 to photograph much of the region from the air and drop metal darts claiming it for Germany as “Neu Schwabenland.”

Similar situations arose in the 1920s and 1930s with regard to East Greenland and Franz Josef Land. Insofar as the two Norse colonies established by Erik the Red in A.D. 986 could be said to have had a connection with any European country, that country was Norway. In 1261, the Norwegian king had declared Greenland a crown colony, Greenland coming under Danish rule only in 1397 with the Union of Kalmar, which brought Denmark, Norway, and Sweden together under the Danish king, Erik VII. When the union with Norway was dissolved in 1814, Greenland remained with Denmark, a source of dissatisfaction to Norwegians, especially considering that even the Danish colonies owed their foundation to the Norwegian Hans Egede. This discontent was to be a factor in Norway’s dispute with Denmark when the Danish trading monopoly was extended to include East Greenland, which had been visited regularly by Norwegian trappers and hunters since 1889. Norway responded by opening meteorological and radio stations at Myggbukta (73°29’N, 21°25’W), Finnsbu (63°24’N, 41°17’W), Torgilsbu (60°32’N, 43°11’W), Storfjord (68°10’N, 31°50’W), and Jonsbu (75°20’N, 20°28’W), to which annual expeditions were mounted by the government scientist Adolf Hoel. Under royal resolutions in 1931 and 1932, Norway formally claimed “Eirik Raude Land” (71°30’N–75°40’N) and the “Southern Coasts” (60°30’–63°40’N). The International Court of Justice at The Hague ruled in 1933 against Norway, though supply expeditions continued to be mounted to Myggbukta and Torgilsbu until 1940, and hunters continued to visit the region under the terms of a 1924 treaty with Denmark giving Norwegians and Danes equal hunting and fishing rights. Myggbukta was reopened in 1946 and was finally closed in 1959, eight years before the 1924 treaty was revoked.

Prior to submission of its own claims, Norway regarded East Greenland as a no-man’s land whose resources might be exploited by citizens of all nations. Until 1920, when the Spitsbergen Treaty assigned conditional sovereignty to Norway, this had been its view of Svalbard as well. Franz Josef Land also was regarded as a no-man’s land, long since visited by Norwegian hunters and trappers and possibly discovered by the Norwegian Rønnbeck. When this archipelago was controversially included within the sector claimed by the Soviet Union in
1926, the two countries found themselves engaged in a race to open the first meteorological station. The Norwegian expedition—sponsored by Lars Christensen—was unable to reach land through heavy ice in 1929, but a Soviet icebreaker succeeded in erecting a station on Hooker Island. All non-Soviet access was banned the following year, but this was pointedly ignored by Norway, which sent Bratvaag under Gunnar Horn to demonstrate its continuing interest.

Norway is the only country today to claim territories in both the Arctic and the Antarctic. Since 1948, research has been coordinated by the Norwegian Polar Institute (NPI). The first major postwar venture was the Norwegian-British-Swedish expedition to Queen Maud Land led by John Gaæver. During the International Geophysical Year (1957–1958), Norwegian Station operated on Princess Martha Coast, where a comprehensive scientific program was undertaken together with topographic surveys of the nearby mountain ranges. Despite being one of the twelve original signatories to the Antarctic Treaty in 1959, Norway maintained no stations in Antarctica between 1960, when Norway Station was transferred to South Africa, and 1989–1990, when the summer station Troll was opened, again on Princess Martha Coast. This has since operated triennially, usually in combination with the nearby Swedish and Finnish stations as a combined Nordenskiöld Base, with the logistics provided by a joint Nordic expedition. Elsewhere in the Antarctic, NPI has organized several expeditions to Bouvet Island. In the Arctic, NPI scientists have worked in Franz Josef Land, but most research has naturally been conducted in Svalbard.

See also: Amundsen, Roald; Borchgrevink, Carsten; Bouvet Island; Bull, Henrik; Christensen, Lars; Egede, Hans; Franz Josef Land; Gaæver, John; Greenland, East; Hoel, Adolf; International Geophysical Year; Larsen, Carl Anton; Nansen, Fridjof; Ousland, Børge; Peter I Island; Pomor Contribution to Arctic Exploration; Princess Martha Coast; Queen Maud Land; Riiser-Larsen, Hjalmar; Svalbard; Sverdrup, Otto

References and further reading:

Novaya Zemlya (Russia)

Located in the Russian Arctic between 70°30’ and 77°N and 51°10’ and 70°E, this archipelago consists of a northern and a southern island together with their much smaller off-liers. It represents a structural continuation of the Ural Mountains, rising to a highest point of 1,590 meters and extending in an arc 600 miles long between the Barents and Kara Seas. The two main islands are divided by Matochkin Strait, a narrow channel for the most part only 1–1.5 miles wide. The total area is 31,900 square miles. The west coast usually becomes accessible in midsummer as far north as Matochkin Strait and, less frequently, beyond. The east coast is much more difficult to approach, being cut off from the comparatively warm waters of the Gulf Stream.

“New Land,” as its name translates, was known to the Pomor inhabitants of the White Sea region of northern Russia from the early middle ages. In 1032, Uleb is said to have sailed as far east as the “Iron Gates,” the location of which is unclear, though possibly Kara Gate, which is sometimes referred to by this name. Certainly, by the beginning of the fourteenth century expeditions were regularly sponsored by the grand dukes of Moscow to obtain walrus tusks and hide, polar bear furs, salted geese, and other products. By the middle of the sixteenth century, hunting voyages were organized on an annual basis, and encounters with Pomors are frequently referred to in the accounts of exploring expeditions.

The first sighting by a western European was made by Sir Hugh Willoughby in 1553, though the island was not actually reached until three years later by Stephen Borough. Sixteenth-century cartographers were divided in their view as to how Novaya Zemlya should be depicted. Some of those who viewed the Arctic as consisting of four islands divided by four rivers showed Novaya Zemlya as one of the islands, with the Barents Sea as a dividing river. Others believed that it formed the southern portion of a giant peninsula extending far to the north and west of Eurasia and terminating in Greenland. Peter Plancius represented it as separate from the four polar islands in 1592, his concept leading directly to the attempt by Willem Barents to sail around its northern tip in 1596–1597. On his first and third voyages, Barents charted the entire length of the western coast. His wintering at Icy Haven (76°15’N) was the first by an exploring expedition. His attempt to reach the northeast passage, though parties of Pomors and Nentsy may have wintered previously.

The existence of Matochkin Strait was certainly known to Western explorers and cartographers by the earliest years of the seventeenth century, as proved by its appearance on a map drawn by the Dutchman Isaac Massa and published in 1612, where it is named “Matteiof Yar.” Since it offered an alternative route into the Kara Sea, it would have been of the greatest interest to anyone seeking the Northeast Passage. Samuel Purchas (1905, vol. 3, 804–806) preserves a letter concerning the activities of the English trader Anthony Marsh in the 1580s, which appears to suggest that by then the strait was known to the English. The letter refers to it as “Mattushan Yar,” a name most likely derived from “Matthews Land,” which was possibly the early name for Novaya Zemlya’s northern island. This, in turn, suggests that the strait and northern island may have been discovered by a Pomor named Matvey. According to some commentators, Olivier Brunel sailed through Matochkin Strait in 1584, in which case the discovery attributed in the Marsh letter to the English should probably belong instead to this Dutchman.

Ignorance concerning the Arctic was such that from the middle of the seventeenth century through at least 1760 some Russian geographers believed that Novaya Zemlya extended
east to form an elongated band stretching as far as the Chukotka Peninsula. This view was put forward to explain the many sightings of land off the coast of Arctic Russia. Only later was it appreciated that these were either unconnected island groups, or else reports of land that was nonexistent, conditions in the high Arctic being such as to frequently suggest islands where none exist.

Whereas many expeditions reached the west coast, the east coast remained unvisited until 1760–1762, when a hunting and exploring expedition led by Savva Loshkin cruised north from Kara Strait to spend two winters here, returning the third year along the west coast to complete the first circumnavigation. In 1766, the hunter Yakov Chiratkin sailed through Matochkin Strait from west to east. This is the first documented transit, though probably not the first by a hunter. Sent to investigate Chiratkin’s report, the Russian naval officer Fedor Rozmyslov sailed through Matochkin Strait two years later and made the first accurate survey.

Several expeditions were dispatched in the early nineteenth century to improve charts of the coastline. Dense ice offshore and an outbreak of scurvy prevented Andrey Lazarev from accomplishing much in 1819. Fedor Petrovic Litke was more successful between 1821 and 1824 on four voyages organized by the Russian Admiralty to investigate the potential of Matochkin Strait as a navigable route from European Russia to the Kara Sea and Siberia. In addition to compiling the first accurate charts of this strait, Litke conducted a detailed survey of the west coast. Despite making several attempts, he was unable to reach the east coast. This was the first scientific expedition to the island; Litke also made hydrographic, astronomical, and other observations. For an account of how much of the east coast was finally charted for the first time in the 1830s by Petr Pakhtusov, see the entry under his name. There also will be found a description of how the survey was continued after his death by August Tsivol’ka and Stepan Moiseyev. Pakhtusov and his successors were unable to explore north of 74°24’N. This coastline was mapped for the first time by members of Georgiy Sedov’s expedition in 1913 while wintering at Foka Bay. Vladimir Vize’s four-man party reached the east coast by sledging across an ice cap, which they discovered occupied much of the island’s interior. This was the first crossing of the northern island so far north; the first crossing of this island had been made five years earlier by Vladimir Rusanov during a French expedition led by Charles Bénard.
(The first documented crossing of the southern island was made in 1882 by Dr. L. F. Grinevitskiy and the Nentsy Khanets and Prokopiy Vylko.)

Norwegian hunters began visiting Novaya Zemlya from 1869 onward. The walrus population of Svalbard was declining, and Erling Carlsen and Edvard Johansen were persuaded to come here instead. Johansen circumnavigated the island the following year, only the second time that this had been achieved. Hunters such as these regarded the islands as a no-man’s land rather than as part of Russia. The Russian response was to relocate several Nentsy families to Malyye Karmakuly (72°13’N, 52°25’E) in 1877. A relief station for shipwrecked sailors was also established here, consisting of a house, bathhouse, lookout post, and lifeboat. Sovereignty remained an issue well into the Soviet era, and Norwegian and other expeditions continued to visit until the islands were formally closed to non-Russians following the 1926 decree stating the Soviet Union’s claim to the sector between 32°4’35”E and 168°49’30”W.

Novaya Zemlya has an important place in the history of polar aviation. The first successful flights anywhere in the Arctic were made by Jan Nagórski in 1914 during the search for Sedov’s missing expedition. The first scientific station was opened at Malyye Karmakuly during the first International Polar Year (1882–1883), under the command of K. P. Andreyev, a Russian naval lieutenant. The station was reopened in 1896 and has remained open ever since, being the longest-operating station in the Russian Arctic. The Northern Scientific-Commercial Expedition of Rudolf Samoylovich began a program of systematic research in 1921. This was subsequently inherited by the Arctic Institute at Leningrad, which was also involved in the scientific programs conducted at polar stations maintained at the following locations: Matochkin Strait (73°10’N, 56°15’E), established 1923; Cape Zhelaniya (76°34’N, 69°00’E), established 1931; Russian Harbor (76°08’N, 63°05’E), established 1932; Cape Stolbovoy (73°10’N, 54°01’E), established 1935; Cape Vykhodnov (73°08’N, 56°27’E), established 1936; Blagopoluchiy Bay (75°40’N, 63°36’E), established 1936; and Cape Menshikov (70°38’N, 57°35’E), established 1953. Blagopoluchiy Bay was destroyed by gunfire from a German submarine in 1943. Most of the other stations closed in the 1990s. They are now historic sites and have since 1988 been the subject of ongoing survey and inventory by the Integrated Marine Arctic Expedition led by Dr. Petr Boyarsky (1988 and 1991 to the present).

See also: Barents, Willem; Borough, Stephen; Brunel, Olivier; Cartography of the Arctic; Eckener, Hugo; International Polar Years (1882–1883); Pakhtusov, Petr; Pomor Contribution to Arctic Exploration; Samoylovich, Rudolf; Sedov, Georgiy; Willoughby, Hugh

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Oates Land (Antarctica)

Oates Land forms that part of East Antarctica lying between 155° and 164°E, with George V Land to the west and Victoria Land to the south. The easternmost parts were discovered during Robert Falcon Scott’s second expedition on 22 February 1911 by Lieutenant Harry Pennell, captain of Terra Nova, and were named for Captain Laurence Edward Grace Oates (1880–1912), one of four dying with Scott during his return from the South Pole in 1912.

Compared to adjacent Victoria Land, which is one of the most intensively explored regions in all Antarctica, Oates Land has attracted less attention. Indeed, much of it was first seen only in January 1947 during photographic flights flown from Western Group during Operation Highjump. East of 160°E, Oates Land falls within the sector claimed by New Zealand as the Ross Dependency. To the west, it forms part of the sector claimed by Australia. As a consequence, expeditions from New Zealand as well as Australia have visited Oates Land, but the most significant long-term investigations have been conducted from the bases Leningradskaya and Lillie-Marleen, established by the Soviet Union and West Germany, respectively. Opened in February 1971, Leningradskaya (69°30’S, 159°23’E) was closed after the 35th Soviet Antarctic Expedition (1989–1991). This was an all-year station with a comprehensive scientific program. In 1979–1980, the West German summer station Lillie-Marleen (71°12’S, 154°31’E) was established at the foot of Lillie Glacier in support of the extensive geophysical research program of the German Antarctic North Victoria Land Expedition, or GANOVEX, which continued until 1992–1993.

See also: Australian Antarctic Territory; Germany; Operation Highjump; Ross Dependency; Russia; Scott, Robert Falcon (1910–1912)

Ohthere (Ninth Century)

Ohthere (or Ottar, as his name was probably rendered in Old Norse) is arguably the earliest explorer of the Arctic known to us, though this claim depends on how far north the Greek Pytheas is accepted as having reached around 325 B.C. We know about Ohthere’s voyage only because the English king Alfred the Great (A.D. 849–899) took the trouble to note down his description of the far north when Ohthere visited Wessex around 890. Alfred was a scholarly king and was involved in translating into Old English the History of the world by the fifth-century author Orosius. This work included a geographical introduction that, while well-informed for Mediterranean countries, was woefully ignorant for northern Europe. Alfred decided to meet this lack by copying into his translation Ohthere’s account together with that of another widely traveled trader, Wulfstan, who provided information on lands bordering the Baltic Sea.

Whether or not Ohthere was correct in his belief that he was the first of the Norse to explore this region, it is probable that others soon followed, particularly to hunt for walrus, their tusks and hide being prized commodities. Fine ivories were carved from the tusks and strong ropes made from the hides.

See also: Barents Sea; Norse Arctic Exploration; Pytheas

References and further reading:

An Early Norse Voyage to the White Sea, Circa A.D. 880

Ohthere was a wealthy landowner and trader who lived in northern Norway, farther north than any other Norseman and south only of the nomadic Laplanders (today’s Saami or Lapps), probably near the present-day city of Tromsø. Motivated by curiosity but probably also by the desire to investigate opportunities for trade, he decided to sail north beyond where even the Norse whalers had reached. Following the coast closely and landing each night to break his journey, he sailed north for six days until the land turned sharply to the east. Waiting for the wind to shift slightly north of west, he then sailed east for four days until the land turned south. There he waited for wind from the north before sailing south for five days until he reached a big river, beyond which the land was populated by a people he called the Bjarmalenders (probably the Karelians). Although some scholars have suggested that he sailed across the White Sea—for this is where he was—to reach the great River Dvina, Ohthere is quite explicit in stating that his course always followed close to the coast. In that case, the large river would be either the Varzuga or the Kandalaksha. His voyage had thus taken him up the coast of northern Norway, east past the North Cape, along the Kola Peninsula, and south into the White Sea.

Open Polar Sea

Until the final decades of the nineteenth century, it was possible to believe that the polar oceans, though certainly fringed by ice, might be open and amenable to navigation closer to the Pole. This optimistic belief inspired many expeditions, and it is probably true to say that until Fridtjof Nansen deliberately froze Fram into the ice in 1893 in an attempt to drift across the North Pole, all voyages attempting to achieve high latitudes in
the Arctic Ocean were inspired by the hope that in the right year and the right place it might prove possible to penetrate the encircling pack to find open water close to the Pole.

In 1527, Robert Thorne, an English merchant based in Seville, wrote to Henry VIII, king of England, advocating exploration of sea routes to the Far East across the North Pole and by other northern routes. With his letter he enclosed a map showing the route across the Pole as open sea. He argued that the distance across the Pole was not only shorter than other routes but also that it could be sailed through in continuous daylight. As for those who conceived that “passing the seventh clime, the sea is all ice, and the cold so much that none can suffer it,” Thorne replied that in his view “there is no land uninhabitable, nor Sea innavigable” (Hakluyt 1903, vol. 2, 178). Thorne’s views were consistent with speculation dating back to the ancient Greeks that above a certain latitude exposure to continuous solar radiation for several months on end might result in temperatures being elevated seasonally above those of adjacent lower latitudes. Thorne could also have found encouragement in the view held by the Flemish cartographer Gerard Mercator (1512–1594), among others, that sea ice formed only close to land and was broken up in the open sea. Belief in an open polar sea, however, was far from universal, and on his 1595 world map Mercator depicted the polar route as blocked by four large islands surrounding the North Pole. This tradition of four islands in the far north ultimately derived from the purported travels of Nicholas of Lynn and from reaching open water in 1594 only by an unwilling crew. Whereas Engel’s views were also to be influential on the course of eighteenth-century Antarctic exploration, misleading at least two explorers—Marc-Joseph Marion Dufresne (1771–1773) and Yves Kerguelen-Trémarec (1771–1772, 1773–1774)—into thinking that just because large quantities of ice were observed they must be in close vicinity to extensive land rather than isolated islands. The repeated mistaken “discovery” of Terra Australis Incognita was here the obverse of belief in the open polar sea.

John Barrow (1764–1848), second secretary of the British Admiralty from 1804–1845 and the most influential figure in British polar exploration in the first half of the nineteenth century, was a firm believer in the open polar sea. He wrote that “a sea of more than two thousand miles in diameter and in constant motion, is not likely to be frozen over at any time” (Barrow 1817, 222). It was very much at Barrow’s instigation that two expeditions were sent to the High Arctic in 1818: David Buchan to attempt to reach the Pole from the vicinity of Spitsbergen, and John Ross to revive the British search for the Northwest Passage. Neither found any evidence of an open sea, and when another attempt on the Pole was made in 1827, its leader, Edward Parry, was equipped with specially designed boat sledges in expectation that open water would be reached only across a belt of ice impenetrable to a sailing vessel. Belief in the open polar sea, however, remained widespread and received further support from the discovery in the 1820s of a large area of permanently ice-free water off the northeast coast of Siberia by Ferdinand von Wrangel and Peter Anjou. James Weddell’s achievement of 74°15’S in the Weddell Sea (1823) followed by James Clark Ross’s farthest south of 78°10’S in the Ross Sea (1842) suggested that in the Southern Ocean as well open water was to be found at higher latitudes once through the encircling pack.

When Sir John Franklin’s expedition disappeared in the late 1840s, some considered it likely that he had found a way through into the open polar sea, from which he had then been unable to escape. After several unsuccessful attempts had been made to reach open water through Wellington Channel (Franklin’s presumed route), between 1853 and 1855 Elisha Kent Kane decided to try through Smith Sound instead. Here, William Morton famously reported sighting the open polar sea in 1854 in Kennedy Channel, which Isaac Hayes (1860–1861), Charles Francis Hall (1871–1873), and George Nares (1875–1876) all then attempted to reach without success.
Although the repeated failures to reach open water north of Smith Sound convinced many that the Arctic Ocean was essentially ice-covered, others theorized that warm ocean currents would create “thermometric gateways” through which the polar sea might be reached. Clearly, no such gateway was to be found through Smith Sound. Two other possible routes had been proposed by the German geographer August Petermann (1822–1878), who suggested that between Spitsbergen and Novaya Zemlya the warmth of the Gulf Stream would result in a reduced thickness of the encircling belt of thick pack ice, and by the American Silas Bent (1820–1887), who considered that a northern branch of the Kuro Siwo might open up a similar gateway through Bering Strait. These ideas were to be tested and found wanting by the expeditions of Karl Koldewey (1868, 1869–1870), Julius Payer (1872–1874), and George De Long (1879–1881). Not until Nansen’s epic voyage in Fram (1893–1896) was it to be proved beyond doubt that any areas of open water in the Arctic Ocean were of strictly local extent.

See also: Anjou, Peter; Barents, Willem; Barrow, John; Buchan, David; Chichagov; Vasily; De Long, George; Franklin, John (1845–1848); Hall, Charles Francis (1871–1873); Hayes, Isaac; Hudson, Henry (1607, 1608); Kane, Elisha Kent; Kerguelen-Trémarec, Yves; Koldewey, Karl; Marion Dufresne, Marc-Joseph; Nansen, Fridtjof (1893–1896); Nares, George (1875–1876); Nicholas of Lynn; Parry, Edward (1827); Payer, Julius von; Phipps, Constantine; Ross, James Clark (1839–1843); Ross, John (1818); Terra Australis Incognita; Weddell, James; Wood, John; Wrangel, Ferdinand von

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Operation Deep Freeze
Initially organized to provide logistical support for U.S. activities during the International Geophysical Year, Operation Deep Freeze was to continue until the late 1990s. For more than forty years, scientists of the U.S. Antarctic Program were transported to Antarctica on ships and airplanes of the U.S. Navy, whose Seabees were also responsible for building the stations, including those deep in the interior at Byrd and the South Pole.

Deep Freeze 1, 1955–1956
Although Admiral Richard Byrd was given the essentially symbolic title of officer in charge, executive authority was assigned to Admiral George Dufek as commander of Task Force 43. Dufek was a veteran of two previous expeditions to Antarctica: the United States Antarctic Service Expedition (1939–1941) and Operation Highjump (1946–1947). Deep Freeze was to continue the work of both. In particular, it was to establish permanent U.S. bases on the continent, something first attempted by the Antarctic Service Expedition but thwarted by the outbreak of World War II. Highjump had obtained air photographs of 60 percent of the coastline, indicating several promising sites for stations. Ground surveys of these sites had been completed by Operation Windmill (1947–1948). Thus, by the time preparations were begun for the International Geophysical Year (IGY, 1957–1958), the United States had a clear idea of where it wanted to locate its IGY stations. Just to make sure, the icebreaker USS Atka was sent to make a final inspection in 1954–1955. The windswept sea ice of McMurdo Sound was confirmed as the best location for air operations. At the Bay of Whales, however, where Little America V was to be erected close to its four predecessors, Atka’s captain, Glen Jacobsen, found that a major calving event had left the bay surrounded by steep cliffs, which would prevent cargo ships from unloading. Another location would have to be found, and Jacobsen suggested Kainan Bay, also on the Ross Ice Shelf.

Deep Freeze 1 was a major operation involving 1,800 men, three icebreakers (USS Glacier, USS Edisto, and USCGC Eastwind), three cargo ships (USS Arneb, USS Wyandot, and USNS Greenville Victory), one tanker (USS Nespelen), and nineteen airplanes. At 8,640 tons and with 21,000-horsepower engines, Glacier was the newest and most powerful icebreaker in the Atlantic Fleet. Glacier and Edisto sailed from Boston on 30 October 1955; Eastwind followed a month later, having shortly before returned from the Arctic. Nespelen left Norfolk on 6 November; the three cargo ships departed a week later. The first planes flew from New Zealand to McMurdo on 20 December. The task force itself arrived on 26 December.

Dufek’s immediate aim was to establish beachheads for the major assault to be mounted by Deep Freeze 2 the following year. Little America V was opened in Kainan Bay on 4 January 1956. Farther west, fast ice extending 40 miles offshore impeded unloading in McMurdo Sound. The first fatality occurred when tractor driver Dick Williams plunged through the ice while attempting to cross a tidal crack. To avoid risking further deaths, the tractor operations were halted and the cargo transferred instead to the icebreakers for transporting closer inshore, where the tractors could again take over. Meanwhile, flights were made south over the Pole to inspect conditions there, as well as west to Wilkes Land, where another station was to be constructed the following year. Meanwhile, Commander Jack Bursey, a veteran of many expeditions dating back to 1928, led two Sno-Cats and a Weasel across the ice from Little America with the aim of establishing a safe trail to the planned location for Byrd Station at 80°S, 120°W. Bursey got halfway—380 miles—before being forced to abandon the attempt in a heavily crevassed area. With the bay ice threatening to break up, Dufek decided to risk three last flights, including one on 13 January to the Weddell Sea when the Pensacola Mountains were
discovered. Five days later, the two Skymasters and two Nep-
tunes took off on their eleven-hour flight back to New Zealand.

Preparations were being made for the task force’s own
departure, when a Twin Otter was reported missing on 3 Feb-
uary. Sent to bring back Bursey’s trail party, Lieutenant Com-
mander Glen Lathrop had five men on board when contact was
lost during his return flight to Little America. The long-range
airplanes were now sorely missed as a desperate search effort
was mounted in deteriorating conditions; the missing men
were found six days later. Through February the ships left one
by one, the last to go being Glacier after cutting a path through
to Discovery Inlet, where two gasoline supply vessels were
moored through the winter. At the suggestion of the chaplain,
the McMurdo base was now named the Williams Air Operat-
ing Facility in honor of the tractor driver who had perished.

Deep Freeze 2, 1956–1957

The major objectives for Deep Freeze 2 were to establish five
more stations for U.S. IGY scientists. This second phase,
involving 3,400 men and twelve ships, was to be even larger
than its predecessor. Dufek continued in overall command,
with Captain Gerald Ketchum leading the Ross Sea Task Group
and Captain Edwin MacDonald the Weddell Sea Task Group.
Consisting of six supply vessels and three icebreakers—
Glacier, Atka, and USCGC Northwind—the Ross Sea Task
Group was to relieve the two existing stations and establish
four more: two on the coast at Cape Adare and in the Windmill
Hills region of the Budd Coast, and two deep in the interior on
the Rockefeller Plateau and at the South Pole. The Weddell Sea
Task Group, consisting of Wyandot and the icebreaker USS
Staten Island, was to establish Ellsworth station as far west on
the Filchner-Ronne Ice Shelf as possible, preferably on the east
coast of the Antarctic Peninsula.

Although none of the stations would be easy to construct,
the stiffest challenges would be presented by the two inland
stations. More than 500 tons of equipment would have to be
transported by tractor some 700 miles over a winding trail
across numerous crevasses to Byrd. An even greater load
would have to be flown 780 miles from McMurdo Sound to the
South Pole. Flights made during Deep Freeze 1 suggested that
the snow at the Pole was too soft to support a wheeled land-
ing, meaning it had to be made instead on skis. Once the first
planes had begun to fly in from New Zealand on 17 October,
the first task was to erect a support base on Beardmore Glacier. There, planes would refuel on their way to the South Pole. It would also serve as a relief base should anything go wrong with the polar flight. On 28 October, Glacier arrived. The same day, Beardmore Base was established by two Skytrains. Three days later, a Grasshopper weather station dropped at the Pole indicated promising conditions, and all was in place for three planes to take off from McMurdo: a Skymaster to act as pathfinder, a Douglas R-4D Skytrain to make the landing, and a Globemaster to carry emergency supplies, including a Weasel, fuel, and sleds. Shortly after reaching the polar plateau, the Skymaster developed engine trouble and had to return. Once over the Pole, the pilot, Lieutenant Commander Conrad Shinn, made three passes at 140, 70, and 35 meters to assess surface conditions before setting the Skytrain down on hard snow at 8:34 a.m. While Shinn kept the engines running, Dufek and five colleagues spent forty-nine minutes inspecting conditions in temperatures of −68°C (−89°F). With the skis firmly frozen to the surface, it took all their fifteen JATO (jet-assisted takeoff) bottles to get back into the air.

The building of South Pole Station began one month later. Eighty-four flights would be required to drop 760 tons of building materials and equipment. At McMurdo, Dufek was still reliant on the bay ice landing strip, which would probably begin to break up later in the year, so it was essential that the airlift be accomplished as rapidly as possible. Ten tons of supplies were dropped from each plane, with up to three flights a day being completed when the weather held. Some problems were experienced early on, with lines sometimes becoming entangled during drops. Sergeant Richard Patton volunteered to investigate by making the first parachute jump at the Pole on 26 November. The station was completed in February 1957 and operating by March. Lieutenant John Tuck Jr. was left in charge of the nine-man naval support unit, which would remain through the winter along with nine scientists led by Dr. Paul Siple.

Meanwhile, arrangements for establishing Byrd Station were coordinated by Commander Paul Frazier. Crevasses were systematically hunted down using helicopters and electronic crevasse detectors fitted to a Weasel. Once found, the deceptive snow bridges were dynamited and the crevasses filled in. Laying the trail proved difficult, but by 5 December all was ready for the first tractor train to leave Little America. Good progress was also made elsewhere, though Ellsworth Station had to be established on the Filchner Ice Shelf rather than farther west when MacDonald found the heavy ice of the southwest Weddell Sea impenetrable. Thus, by the conclusion of Deep Freeze 2, seven American stations were operating on the Antarctic continent, five of them new: South Pole, Byrd, and Ellsworth; Cape Hallett on the coast of Victoria Land; and Wilkes on the Budd Coast.

Initially planned for the few years on either side of the IGY, Operation Deep Freeze continued until 1998 when logistical support for the U.S. Antarctic Program was transferred to private contractors. Later operations were primarily concerned with relief and resupply, though they also erected additional facilities at existing bases and built several new stations in the 1960s. Of the IGY stations, Ellsworth and Wilkes were kept open only during the IGY, being transferred in 1959 to Argentina and Australia, respectively. Little America V was closed the same year. Cape Hallett was operated jointly with New Zealand before closing in 1964. The large scientific and logistics center at McMurdo replaced the more limited Williams Air Operating Facility in 1961. Eights (formerly Sky-Hi) operated between 1962 and 1965 in Ellsworth Land. Two new stations were established in 1965: Palmer on Anvers Island west of the Antarctic Peninsula, and Plateau deep in the interior of Queen Maud Land at 79°15’S, 40°30’E. Although Palmer remains open and is the main center for the U.S. Antarctic Program’s marine biological program, Plateau was closed in 1969, as was Byrd in 1972. Between 1969 and 1991, Siple Station operated in Ellsworth Land. Stations in the continental interior are enormously expensive to run and are generally kept open for limited periods only. The one exception has been Amundsen-Scott (formerly South Pole Station), for its political significance as well as its unique advantages for scientific research, particularly astronomy and upper atmospheric physics.

See also: Anvers Island; Byrd, Richard; Ellsworth Land; Filchner-Ronne Ice Shelf; International Geophysical Year; Marie Byrd Land; Operation Highjump; Operation Windmill; Queen Maud Land; Ronne, Finn (1957–1958); Ross Ice Shelf; Ross Island; Siple, Paul; South Pole; United States; Victoria Land; Wilkes Land

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Operation Highjump

Operation Highjump was by far the largest expedition ever to visit Antarctica. Indeed, it was bigger than all previous expeditions put together. Although primarily a U.S. naval exercise, many significant discoveries were made, and knowledge of the continent was greatly extended, by the massive air photographic campaign.

Wartime Technology Is Employed in an Assault on Antarctica, 1946–1947

On 26 August 1946, Fleet Admiral Chester W. Nimitz, chief of naval operations, gave orders for the establishment of the U.S. Navy Antarctic Developments Project, soon to be known by the code name “Operation Highjump.” In an exercise primarily designed to train personnel and test equipment in the most rigorous conditions on Earth—though also to strengthen the
basis for U.S. territorial claims should they ever be made—there was great confidence that the same technical know-how that had enabled the Allies to win the war should now be sufficient to conquer the intractable Antarctic continent. For the first time, icebreakers, helicopters, and submarines would be used in a fleet of thirteen vessels carrying 4,700 men and equipped with thirty-three aircraft and assorted land vehicles, including eight Weasels, ten D-6 Caterpillar tractors, Caterpillar tractors, Jeeps, and tracked landing vehicles. It was anticipated that radar, among other innovations, could be used to assist pilots to find their way back through fog and overcast weather, and a magnetic airborne submarine detector would provide useful indications of the nature of geology flown over, even when buried under ice.

Just seven weeks after its establishment, Task Force 68 was ready to depart with eight ships sailing on 2 December from four different ports on the Atlantic and Pacific Coasts of the United States, with the remainder following soon after or already at sea. Rear Admiral Richard Cruzen, a veteran of the United States Antarctic Service Expedition (1939–1941), was appointed task force commanding officer, with Rear Admiral Richard Byrd officer in charge of the expedition as a whole.

The plan was to attack Antarctica on three fronts. While two naval task groups—each consisting of a seaplane tender, tanker, and destroyer—would encircle the continent, the Central Group would operate from the Bay of Whales with skiequipped airplanes. Consisting of an icebreaker (USCGC Northwind), two supply ships (USS Merrick and USS Yancey), a communications ship (USS Mount Olympus), and a submarine (USS Sennett), Central Group reached its appointed rendezvous off Scott Island on 30 December. In what was clearly a bad ice year, Northwind took more than two weeks to smash a passage through 300 miles of pack ice surrounding the Ross Sea, with all of the vessels apart from the icebreaker experiencing damage as their thin-skinned steel hulls struck projecting ice. The submarine Sennett was the worst affected, as ice threatened to pile up on its deck, slowing its progress so that it could not keep up with the rest of the convoy. Eventually, Northwind had to return to tow Sennett back through 65 miles of ice to open water near Scott Island, where it was released to serve as a weather station. Not until 15 January 1947 was the Bay of Whales reached; it was found to be filled by ice 2–3 meters thick, taking Northwind three days to break it up before the other ships could begin unloading.

Selecting a site just over 2 miles north of Little America III, the base used by the U.S. Antarctic Service Expedition in 1940, Central Group spent the next seven weeks setting up Little America IV. There, for the first time on Antarctica, an airstrip was constructed for the six twin-engine Douglas R4D transport planes brought south with Byrd in the aircraft carrier USS Philippine Sea. With the aid of four JATO (jet-assisted takeoff) bottles strapped to their sides, these large aircraft managed to get into the air using only 120 meters of the carrier's flight deck in a previously untested operation. They were the largest planes to date to take off from a carrier, their wingspan being so great that they could only use that part of the flight deck forward of the superstructure. Byrd was on the first plane to leave on 29 January, Philippine Sea then lying in an embayment in the pack ice some 700 miles from Little America. During the next four weeks, these six planes flew a total of 22,700 miles, principally south over the Ross Ice Shelf to the Transantarctic Mountains and east over Marie Byrd Land, in the process discovering several major new mountain ranges and photographing about 100,000 square miles on each mission. On 15 February, Byrd flew to the South Pole and 90 miles beyond. Apart from lack of oxygen and extreme cold—the plane's heating system failed—this flight was uneventful in comparison with Byrd's first South Pole flight in 1929. The one significant land operation was the journey by a tractor party to the Rockefeller Mountains, where a weather station and an emergency fuel dump were established. With Admiral Cruzen on board, the icebreaker USS Burton Island arrived at the Bay of Whales on 22 February to evacuate Little America IV. The following day, Byrd was ready to depart, having first placed in safe storage the planes and other heavy equipment to be left behind for possible future use.

Meanwhile, the Western and Eastern Groups had been making their way around the continent in opposite directions. Led by Lieutenant Commander George Dufek, another veteran of the U.S. Antarctic Service Expedition, Eastern Group consisted of the seaplane tender USS Pine Island, the destroyer USS Brownson, and the tanker USS Canisteo. Aboard Pine Island were three PBM Martin Mariner seaplanes, a twin-engine seaplane, and two helicopters.

With operations beginning from the vicinity of Peter I Island, the first flights on 29 December 1946 were made in initially good weather. Detailed photographs of Thurston Island and the adjacent Eighty East Coast were taken in a region first explored by Byrd in 1940. With one PBM—George I—still in the air, the weather became overcast. Radio contact was lost with George I, whose copilot, Lieutenant William H. Kearns Jr., found himself flying in whiteout conditions and unable to distinguish between the snow below and the overcast sky above. Unsure of his elevation and believing himself near land, Kearns decided to turn back, colliding with the ice as he inclined his wings into the turn. The plane exploded; two died instantly and one soon after. The six survivors, including Pine Island's commander, Captain Henry Howard Caldwell, were too shocked to make preparations for survival until a day and a half later. Two tents were then erected, where the men remained for thirteen days in conditions preventing any possibility of search flights. The survivors were finally located on 11 January 1947, making their way with difficulty the next day to open water where George 3 had managed to land. They returned safely to Pine Island.

For the next ten days conditions were impossible for flying
as the Eastern Group headed farther west to investigate the coastline of the Amundsen Sea, a region previously seen only from a distance and not reliably charted. On 19 January, Dufek was lucky to survive a helicopter crash when scouting for open water from which the seaplanes could take off. By 26 January, the coastline had been photographed from 95°30’ to 127°30’W, and Pine Island was able to head once more eastward, first to Peter I Island, and then toward Charcot Island and Marguerite Bay, where further photographic flights were made along the west coast of Alexander Island. Orders were now received from Admiral Cruzen to proceed to the Weddell Sea, where heavy pack ice was again encountered with little possibility of undertaking further flights. Operations ceased on 3 March, when Eastern Group headed north for Brazil.

Western Group’s composition was similar to Eastern Group, consisting of the seaplane tender USS Carrickuck, the destroyer USS Henderson, and the tanker USS Cacapon. Like Pine Island, Carrickuck carried three PBM Martin Mariner seaplanes, a twin-engine seaplane, and two helicopters. The task group was led by Lieutenant Commander Charles Bond, charged with working westward around the continent, starting from the vicinity of the Balleny Islands, with the intention of photographing as much of the coast as possible of the sector known to Americans as Wilkes Land, and to Australians and British as the Australian Antarctic Territory. Some 1,500 miles of coastline had been controversially charted in 1840 by the U.S. Exploring Expedition led by Charles Wilkes. Since other expeditions had later found sea where Wilkes had charted land, his claim to priority in discovering this coast had been disputed, conditions had later found sea where Wilkes had charted land, his claim to priority in discovering this coast had been disputed, with opinion dividing largely along national lines. Had the United States decided to reverse its 1924 policy of not making or recognizing territorial claims in Antarctica, this clearly was one area of potential dispute, and Highjump’s air photographs would strengthen any U.S. claim.

On 11 February, Lieutenant Commander David E. Bunker, flying the PBM Baker 1, discovered at 66°18’S, 100°45’E an ice-free area comparable to the Dry Valleys of Victoria Land. It covered about 20 square miles and included a number of lakes. Two days later, Bunker was able to land on one of the larger lakes to obtain a water sample. This episode was to arouse considerable popular interest when the phrase “Shangri-la” was ill-advisedly included in a U.S. Navy press release, which also mistakenly reported that vegetation had been found. Although the coastline had been extensively photographed from the air, it was not until 17 February that the crew aboard Carrickuck actually got to see land, when a close approach was made to Kemp Land. Reaching its farthest west on 22 February at 67°42’S, 34°15’E off Queen Maud Land, Bond then headed back east, undertaking air survey flights whenever conditions permitted until 1 March, when he received orders to make for Australia.

What were the achievements of this vast expedition? The fact that its objectives were primarily military rather than scientific is made clear by the presence of only sixteen military and twenty-four civilian scientists and observers among the total 4,700 men involved. Nor was provision ever made to work up results for publication. And without ground control, astronomical fixes, or precise methods of air navigation, the 70,000 air photographs could not be used for mapping purposes. Regardless, the expedition undoubtedly resulted in an enormous extension of knowledge of Antarctica. Some 1.5 million square miles had been photographed, including 60 percent of Antarctica’s coastline. Of the latter, it is estimated that 25 percent of the area photographed was of coastline never before seen and 40 percent of coastline seen but previously incorrectly charted. The need to establish ground control for the photographs led directly to the organization of Operation Windmill the following year.

Operation Highjump II was planned for 1949–1950 but ran afoul of Washington politics, President Harry Truman being then involved in an unrelated dispute with Byrd’s brother, Senator Harry E. Byrd, chairman of the powerful Finance Committee. Truman memorably remarked, “One Byrd is enough in Washington,” and Highjump II was canceled.

See also: Byrd, Richard; Kemp Land; Marie Byrd Land; Operation Windmill; Queen Maud Land; Ross Ice Shelf; Siple, Paul; Submarines; Transantarctic Mountains; United States; Wilkes, Charles; Wilkes Land

References and further reading:

Operation Tabarin
The origins of the British Antarctic Survey lie in a covert military operation conducted during World War II. Because the operation was going to take place in the dark through the long Antarctic winter, it was thought appropriate to name it after the Parisian nightclub Bal Tabarin.

Establishment of British Bases Are Established at Deception and Port Lockroy, 1943–1944
A small number of German raiders—warships disguised as merchant vessels—had created havoc in shipping in the Southern Ocean for much of World War II. Thousands of tons of ships were sunk, and one raider—Pinguin—was responsible for capturing an entire Norwegian whaling fleet. These ships found secret anchorages on the sub-Antarctic islands, where they also found stores of oil and coal in the abandoned whaling stations. The British government was especially concerned that German raiders should not make use of the excellent harbor at Deception Island, or of anchorages along the adjacent Antarctic Peninsula. From those locations they
might be able to prey upon ships passing through Drake Passage, the vital strait connecting the Atlantic and Pacific Oceans south of Tierra del Fuego. This area was particularly sensitive because the Atlantic coastline immediately to the north of Drake Passage was controlled by Argentina, a neutral country that nevertheless maintained good relations with Germany. Furthermore, Argentina had used the opportunity of Britain’s engagement in the war to dispute its claims to the Antarctic Peninsula and offshore islands, a sector also claimed by Chile. There were thus several reasons compelling the British government to give high priority to sending an expedition to an area remote from the main zones of conflict.

This was to be a secret operation, and over a period of months stores and equipment essential for a polar expedition were brought together. Suitably qualified civilians were identified and withdrawn from their wartime assignments. Lieutenant Commander James W. S. Marr was chosen to lead the expedition. He had considerable experience in the Antarctic, as a young man having been selected to represent the Boy Scouts during Sir Ernest Shackleton’s last expedition and, more recently, having worked as a biologist for the Discovery Investigations. The 250-ton Norwegian sealer Veslekarl, renamed Bransfield in honor of the British naval officer who had discovered the Antarctic Peninsula in 1820, was chartered to take the expedition south. Unfortunately it proved unusable when an old leak was revealed as it lay heavily loaded in the water. Instead, men and stores had to be relocated to the troopship HMS Highland Monarch, which reached Port Stanley in the Falkland Islands on 26 January 1944. From there, the expedition was taken to Deception Island in two ships: RRS William Scoresby, one of two research vessels used by the Discovery Investigations during peacetime but now employed as a minesweeper in the South Atlantic; and Fitzroy, chartered from the Falkland Islands Company. So secret was the expedition that only after leaving the Falklands did Marr disclose to his men the destination and intended mission.

The expedition was unarmored, and it was therefore with some trepidation that Deception was approached on 3 February. There, if anywhere, a German raider might lurk, though the British warship HMS Queen of Bermuda had visited the island in March 1941 to destroy coal dumps and puncture oil tanks to prevent possible use by the enemy. Instead of German occupation, they found a flag and other symbols denoting claims to Argentine sovereignty left by Primero de Mayo in February 1943. Deception was to be the site of Base B. Dr. W. R. Flett was now left behind as base leader with four colleagues to establish themselves in accommodations provided by the abandoned whaling station. William Scoresby and Fitzroy next headed for Hope Bay, the preferred site for the main base on the Antarctic mainland. Although William Scoresby was able to make its way through the ice in Antarctic Sound to Hope Bay, Fitzroy was forced to withdraw; without its stores and components for the hut, the base could not be established. Another site for Base A would have to be found. Marr reluctantly selected Port Lockroy off Wiencke Island when Fitzroy began to run short of coal. Despite its excellent sheltered harbor and spectacular location, Port Lockroy was not ideal, sited as it was far down the Antarctic Peninsula and on an island; this would substantially restrict surveying and scientific work. Again, an Argentine flag and cylinder containing documents claiming sovereignty were discovered, also left by Primero de Mayo in 1943.

Since this was supposed to be a covert mission, it came as something of a surprise when the BBC Overseas Service for North America carried news of Operation Tabarin on 24 April 1944. Despite this report, the expedition continued to work under conditions of strict secrecy, with all radio communications being encrypted. Two times each day, weather reports were submitted by both stations to the Naval Meteorological Station at Port Stanley, but in other respects their duties differed. One of Base B’s chief roles was to keep watch for enemy and neutral ships. Other tasks included daily observations of the sea ice in Bransfield Strait throughout the winter and the study of upper air currents through the use of balloons. Base A had been given the task of extending the survey work begun by John Rymill’s British Graham Land Expedition. During the winter, a start was made on local mapping. As conditions improved in the spring, a four-man party consisting of Marr, “Taff” Davies, Captain Andrew Taylor, and Dr. Ivan Mackenzie Lamb man-hauled sledges over Thunder Glacier, where they survived an avalanche, to the east coast of Wiencke Island to conduct further surveying and to collect geological and botanical specimens.

Sledging Campaigns Begin from the New British Base at Hope Bay, 1944–1945

The primary objectives for the second year were to relieve the two existing bases, some of whose staff would remain another year (while others would be replaced by new recruits) and to build three new stations: at Hope Bay, where ice had thwarted the attempt the previous year; in Marguerite Bay, farther south on the peninsula; and on Coronation Island in the South Orkneys. Three ships were to be used, the third being the 550-ton wooden-hull Eagle. On 27 January 1945, Base B at Deception was relieved by Fitzroy and William Scoresby. Fitzroy then sailed down the peninsula to relieve Base A on 3 February before heading 400 miles east to leave building materials at Cape Geddes on Coronation Island, where Base C was to be constructed by the crew of William Scoresby. Eagle sailed from Deception through Antarctic Sound to Hope Bay, where construction of Base D began on 13 February. Captain Andrew Taylor was left there with twelve men and twenty-five huskies and placed in overall command of Operation Tabarin when poor health forced Marr to return to England. Marr’s withdrawal led to the abandonment of plans to build a fifth station in Marguerite Bay. Eagle was returning to Hope Bay with more cargo when a violent storm arose, during which it
Operation Windmill

This U.S. naval exercise was the successor of the massive Operation Highjump. It was a convincing demonstration of the effectiveness of helicopters for landing parties in Antarctica, and it returned with results that usefully supplemented those of its giant predecessor.

Helicopters Prove Indispensable to Operation Highjump's Successor, 1947–1948

The U.S. Navy Antarctic Developments Project (Operation Highjump, 1946–1947) had been a great success in meeting its major objectives. Yet because no attempt had been made to establish ground control for its 70,000 aerial photographs, the photos could not be used for mapping purposes. In addition to continuing Highjump's cold-weather testing of personnel and equipment, the U.S. Navy Second Antarctic Developments Project was organized by the Chief of Naval Operations on 15 September 1947 precisely to provide the missing ground survey data for thirty designated major features, including Highjump's most newsworthy discovery, the Burger Hills Oasis.

The expedition was to be carried out by Task Force 39, led by Commander Gerald L. Ketchum, who had captained the icebreaker USS Burton Island during Highjump. The task force consisted of two icebreakers, Burton Island and USS Edisto, both equipped with helicopters: a Sikorsky HO3S-1 and a Bell HTL-1 on Burton Island, and a Sikorsky HO3S-1 on Edisto. In addition, Edisto carried a Grumman J2F-6 amphibian airplane. The heavy use of helicopters during this expedition led to its afterward being nicknamed "Windmill." Four Weasels were to provide land transport, with a total of 500 men participating.

On 1 November, Edisto, captained by Commander Edwin A. MacDonald. The two ships met up at American Samoa on 2 December, from where they proceeded south toward Scott Island. Encountering very heavy pack ice, they abandoned on 16 December the attempt to reach that island, still some 40 miles north. The two ships reversed course out of the ice and followed the northern ice limit westward to the Davis Sea, which was reached on 25 December. The Davis Sea, between Shackleton and West Ice Shelves off Queen Mary and Wilhelm II Lands, is an area where open water is often found in a region where the pack is otherwise generally dense. Ketchum's task was to land survey parties at as many of the designated points as he could manage heading back eastward along that part of Antarctica known to Americans as Wilkes Land, and to British Commonwealth countries as the Australian Antarctic Territory. Ever since this region was first seen by the American Charles Wilkes, the United States had a potential claim to it, and compilation of the first accurate maps depicting it would greatly strengthen the U.S. claim should one ever be put forward.

Over a period of twenty-three days, survey parties were landed by helicopter at nine points along the 600-mile coastline, including the Haswell Islands (discovered in 1912 by

— Antarctic Survey, see the entry for the latter.
— Dependencies Survey and how it eventually became the British same territory. For the story of the Falkland Islands Depen-
— particularly in light of the Argentine and Chilean claims to the
— the start had been to set up stations for continuous occupancy,
— supplies continued to come from naval stores, and the major-
— island was discovered and significant improvements made to
— Hope Bay was to become the great sledging center of the
— Falkland Island Dependencies Survey (the new name for
— Operation Tabarin following the end of World War II; see
— with fourteen dogs down the east coast of the Antarctic Peninsula to the
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References and further reading:
members of Douglas Mawson's Australasian Antarctic Expedition; see Wild, Frank), Bnger Hills (discovered in 1947 during Operation Highjump), and the Windmill Hills (named after this expedition for its landing there on 19 January 1948). At all three locations, scientific stations were to be built during the International Geophysical Year (IGY, 1957–1958): the Soviet stations Mirnny and Oazis (later the Polish station Dobrowolski) on the Haswell Islands and Bunger Hills, respectively, and the American (subsequently Australian) station Wilkes in the Windmill Hills.

Task Force 39 next headed east, north of the pack ice, and then south into the Ross Sea where a brief visit was made on 29 January to McMurdo Sound, soon also to be the site of IGY stations at McMurdo and Scott Base. Two days later, Ketchum was at the Bay of Whales to check the condition of Little America IV, which had been constructed by Highjump. He now transferred to Edisto, which was to investigate the possibility of penetrating the pack ice in the northeast region of the Ross Sea, something that no previous ship had achieved. Even this powerful icebreaker, however, could not break through the very heavy pack, and Edisto had to work its way north and northwest before managing to follow a northeastally course. Rejoined by Burton Island on 6 February, the two ships attempted to make a close approach to the towering Mount Siple at 73°15’S, 126°06’W but found the Amundsen Sea impenetrable. Peter I Island was the next objective, and there a landing was made—only the third ever—by men from Edisto. Learning that Finn Ronne’s expedition was still cut off by ice and in danger of having to spend another winter in Marguerite Bay, the two icebreakers broke a path through to Stonington Island on 20 February and towed Ronne’s Port of Beaumont to safety. RRS John Biscoe, the supply ship of the Falkland Islands Dependencies Survey, arrived at Marguerite Bay at the same time and was therefore able to resupply the British Base E on Stonington Island, which it would otherwise have been unable to do. Its work completed, Task Force 39 headed north along the west coast of South America to Callao, Peru, where the two ships separated, Edisto returning to Norfolk on 28 March 1948, and Burton Island to San Pedro on 1 April.

See also: Amundsen Sea; Australian Antarctic Territory; British Antarctic Survey; International Geophysical Year; Marguerite Bay; Operation Highjump; Peter I Island; Queen Mary Land; Ronne, Finn (1947–1948); United States; Wild, Frank (1912–1913); Wilhelm II Land; Wilkes, Charles; Wilkes Land

References and further reading:

Ousland, Børge (1962–)
The Norwegian adventurer Børge Ousland specializes in unsupported polar journeys, the most recent of them unaccompanied. What constitutes an “unsupported” expedition is controversial (see Unsupported Expeditions), but by any definition Ousland can claim the first unsupported solo expedition to the North Pole, as well as the first solo crossings of Antarctica and the Arctic Ocean.

Unsupported to the North Pole, 1990
Børge Ousland’s first expedition was to Greenland in 1986, where as one member of a three-man team he crossed the ice sheet from Ammassalik to Ummannaq in thirty-seven days. Four years later, accompanied by Geir Randby and Erling Kagge, he set out from Ellesmere Island in an attempt to complete the first unsupported expedition to the North Pole. In order to take with them all that they would need, their sleds weighed 120 kilograms. Nine days out, Randby’s sled broke through the ice; he dislocated one of his vertebrae when he strained to drag it free. Before he could be airlifted out, Ousland and Kagge spent four days waiting as their floe drifted frustratingly southward. For the expedition to continue to count as unsupported, Randby was required to take with him all his equipment and supplies, even though this left the others with very little fuel. North of 85°N, the going became easier, and after fifty-eight days they finally arrived at the Pole on 4 May. Ousland’s and Kagge’s claim to have completed the first unsupported expedition was disputed by Sir Ranulph Fiennes, leader of a rival British expedition, on the grounds that the party’s third member had been unable to complete the trip and that any contact with an airplane constituted support.

In 1993, 100 years after Fridtjof Nansen’s great Fram expedition, Ousland and Agnar Berg attempted to re-create a journey planned but fortunately not undertaken by the great Norwegian explorer. This was to ski from Franz Josef Land to Svalbard. Setting out from Jackson Island, Nansen’s winter quarters in 1895–1896, Ousland and Berg were west of Alexandria Land two weeks later when they found themselves cut off on an ice floe and drifting south into the Barents Sea. There was no option but to abandon the expedition and summon a helicopter.

The First Unsupported Solo Expedition to the North Pole, 1994
In 1993, Erling Kagge had completed the first unsupported solo journey to the South Pole. Inspired by his achievement, Ousland determined to do the same at the North Pole. On 2 March 1994, he set out from Arctic Cape, Severnaya Zemlya, dragging a 130-kilogram sled. Traveling nine hours or more each day, he reached the Pole on 23 April, covering the 606 miles in fifty-three days. Although two previous explorers had reached the Pole on solo expeditions—Naomi Uemura in 1978 and Jean-Louis Etienne in 1986—neither qualified as unsupported, since Uemura had been assisted by a dog team and both had been resupplied by airdrops.
First across Antarctica Alone, 1996–1997

Ousland’s next aim was to complete the first unsupported solo crossing of Antarctica. Setting out from Berkner Island on the Weddell Sea coast, he was forced to give up on 3 January 1996 shortly after reaching the South Pole due to badly frostbitten feet. Although unsuccessful on this expedition, he did become the first man to travel unaccompanied to both Poles.

Having got sufficiently far to demonstrate that an unsupported solo crossing was possible, when Ousland decided to try again he not surprisingly found that he had competition in the form of the British explorer Fiennes and the Pole Marek Kaminski. All three aimed to travel from the vicinity of Berkner Island and across to Ross Island via the Pole. Fiennes was the first away, a half-day before Ousland and Kaminski, who both set out on 15 November 1996. Although he had cut his load to the minimum possible, Ousland’s sled still weighed 180 kilograms at the beginning of his journey, lightening by about 1 kilogram a day as food and fuel were consumed. Traveling eleven hours each day, he soon left the other two behind (Kaminski, after he lost his parasail and nearly his life in an accident; and Fiennes, who was forced to drop out because of kidney stones). Ousland had with him two parasails of varying sizes, and with their aid he was able to average 27 miles each day, reaching the Pole on 19 December after just thirty-five days. No previous expedition had reached there so quickly. North from the Pole, he followed in the footsteps of his fellow Norwegian Roald Amundsen, down the Axel Heiberg Glacier to reach Scott Base, Ross Island, on 17 January 1997. The journey of 1,764 miles had taken him sixty-four days and was the longest to date made on skis. It was certainly the first solo crossing of Antarctica, and many would also accept it as the first unsupported crossing. That, however, depends on whether or not the use of a parasail disqualifies an expedition from being unsupported, as well as whether the 1992–1993 crossing by Fiennes and Mike Stroud from Berkner Island to the Ross Ice Shelf is viewed as a continental crossing.

First across the Arctic Ocean Alone, 2001

It took Ousland four years before he was ready to attempt the most ambitious of his expeditions: an unsupported solo crossing of the Arctic Ocean via the North Pole. Although Antarctica poses many difficulties, particularly those associated with traveling at high altitudes in intense cold, the Arctic Ocean holds even greater dangers. Not only is it necessary to travel across ice, which at any time may be revealed to consist of a mere coating of snow over water; there is also the threat of polar bears as well as the sheer intractability of the ice surface, with open leads alternating with pressure ridges over extensive areas. During his 1994 expedition Ousland had used a sled-boat; this time he took his inspiration from polar bears, which, when faced by open water, simply swim. Deciding that he would do the same, he commissioned a dry-suit of watertight polyurethane to fit snugly over his ski boots and mittens while still allowing sufficient freedom of movement to swim. In this way he was to cross twenty-three leads, including one 150 meters wide.

On 3 March 2001, Ousland set out once more from Severnaya Zemlya. Carrying food sufficient for three months, his sled initially weighed 170 kilograms, barely less than on his Antarctic crossing. This time it was too much, and after spending a day trying to repair the sled when its runners worked loose, he decided to call for a replacement, which was flown out nine days later by helicopter. This meant that his expedition no longer counted as unsupported, but the alternative was to give up. Despite his problems, Ousland still made remarkably good speed to the Pole, which he reached on 23 April after just fifty-two days, one day quicker than his own very quick time in 1994. Given that he had been dragging much heavier loads, this was truly remarkable, a testament to his innovative strategy of crossing leads by swimming them. Continuing past the Pole, with the aid of his parasail he had his best travel day on 30 April, managing 45 miles. On 23 May, he reached the north coast of Ellesmere Island, traveling 1,240 miles in eighty-two days and having lost 17.3 percent of his body weight, which was now down to 80.29 kilograms.

In three extraordinary expeditions, Ousland accomplished alone and without outside support what many had previously assumed could be achieved only by large teams supplied by multiple airdrops and assisted either by dogs or vehicles. Furthermore, these objectives were generally achieved in record time. How was this possible? Although modern expedition clothing and equipment—especially the parasail—clearly confer considerable benefits on today’s adventurers, Ousland’s uniquely successful career can be attributed to painstaking planning and detailed attention to the motivational aspects of traveling alone. He is a worthy successor to Nansen and Amundsen.

See also: Adventurers; Amundsen, Roald; Arctic Ocean; Fiennes, Ranulph; Nansen, Fridtjof (1893–1896); North Pole; South Pole; Unsupported Expeditions

References and further reading:

Ovtsyn, Dmitriy
(fl. 1730s–1750s)

Although the estuaries of the great rivers Ob’ and Yenisey may not seem far apart on a map of northern Russia, the first attempt to chart the coast between them faced great difficulties before it could be successfully completed.
From the Ob'to the Yenisey along the Arctic Coast,
1734–1738

Lieutenant Dmitry Leon'tyevich Ovtsyn was chosen to com-
mmand the detachment responsible for compiling an accurate
survey of this section of Russia’s Arctic coast, which was to be
surveyed in its entirety by the Great Northern Expedition,
1733–1743, under the overall command of Vitus Bering.

The Yenisey was probably first reached by Russians ca.
1500. Soon after the foundation of Mangazeya in 1600 on a
tributary of the lower Ob', soldiers were sent from here to sub-
due the local native peoples and construct the fort of
Turukhansk at the confluence of the Yenisey and the Turukhan.
Turukhansk was to become an important trading station,
specialy so after the abandonment of Mangazeya in 1672. No
vessel had sailed from the west to the mouth of the Yenisey.
The customary route from that direction involved a portage across
the base of the Yamal Peninsula to the Gulf of Ob', and from
there to the Yenisey overland and by river across the Gydan-
skiy Peninsula.

On 14 May 1734 Ovtsyn set out from Tobol'sk, over 600
miles upstream from the Gulf of Ob', in Tobol', a two-masted
sloop of shallow draft whose construction he had overseen the
previous year. Tobol' was crewed by fifty-six men, including
navigator Dmitriy Sterlegov, two geodesists with primary
responsibility for survey work, a prospector to investigate
mineral deposits, a doctor, and a monk. On 11 June Tobol'
reached Obdorsk, an all but deserted Russian settlement where
Ovtsyn had hoped to take on guides. None could be found. Now
entering the Gulf of Ob', a broad expanse of water about 450
miles long, slow progress was made north as parties were
landed at frequent intervals to survey the eastern shore, the
western shore being left to the detachment led by Stepan
Murav'ev, who was to cover the Arctic coast from Archangel
to the Ob'. Having reached 70°04'N on 5 August, Tobol'lost its
rudder on a shoal and was lucky not to be blown into the ice.
Ovtsyn convened a council of his officers who agreed that the
best course of action was to return to winter at Obdorsk where
Tobol'could be repaired.

After the Ob' froze over in mid-October, parties erected
navigational markers along the coast while Ovtsyn himself
headed back to St. Petersburg to report progress to the Admi-
ralty College. The winter was harsh and not until 29 May 1735
was Tobol'able to depart from Obdorsk. It was soon appar-
ent that the ice was much worse than in the previous year and
it was with considerable difficulty that Ovtsyn was able to
work his way north to 68°40'N on 10 July. He remained here
for seven days waiting for the ice to break up but with scurvy
now rampant among his crew, again he convened a council of
his officers and agreed to turn back, this time to Tobol'sk
where there was better chance of his sick recuperating and
his vessel undergoing extensive refitting. During the winter,
Ovtsyn traveled once more back to St. Petersburg despite
himself having only recently recovered from scurvy. The
Admiralty College agreed to his proposition that a second
vessel be built to ensure that the expedition could carry suf-
ficient stores to winter in the far north should this prove nec-
 essary. He was also informed that neither he nor his staff
should expect to be allowed to return to their homes until
their survey was completed.

With insufficient time to complete work on the new ves-
sel, Ovtsyn set out again on 23 May 1736, Fedor Minin now
serving as pilot. This time there was less ice and by 5 August
Tobol'succeeded in reaching 72°40'N, where the Gulf of Ob'
meets the sea. Most frustratingly, it proved impossible to
work it any way farther north, and with ice stretching shore-
to-shore across the Gulf’s entrance, Ovtsyn once again had
to turn back to winter at Obdorsk. From there, he was to
make a brief fateful journey to the next settlement south,
Berezovo, from where he dispatched a report on the season’s
activities. The journey was fateful for him personally because
during it he made contact with Prince Ivan Dolgorukiy and
his sister Ekaterina, whom he had known in St. Petersburg.
The prince had been exiled to Berezovo following his attempt
to make his sister tsarina on the death of Tsar Peter II in 1730,
on the grounds that she was Peter’s fiancée. The conditions
of their exile were strict, and not even their guards were
allowed to talk to them. Ekaterina, however, considered her-
sel to have been insulted by a junior customs official, and
Ovtsyn sided with her, giving the man a beating. Probably
thinking little more of the matter, Ovtsyn returned to
Obdorsk where Murav’ev’s survey party had arrived, allowing
the maps of the two detachments to be compared and
integrated. Parties were now sent along the east coast of the
Gulf of Ob'to set up navigational markers to its northernmost
point, and to the Yenisey, which was to be followed north until
the first party was met.

At Tobol'sk, the second vessel Ob' Pochtal'on was ready
and sailed down the Ob'to reach Obdorsk on 5 June 1737. At
last, Ovtsyn was to experience a year of little ice, and although
northward progress was slowed by contrary winds and fog,
heavy ice was not encountered until 74°N on 7 August. There,
he was sufficiently far north to be able to work his way south-
east through the islands north of the Gydanskiy Peninsula into
the Yenisey estuary. Within sight of completing his task, Ovt-
syn's objective was to reach Turukhansk before the river froze.
In the event, he fell just short and was forced to winter where
he could.

Following the breakup of the river ice, in the spring of 1738
Tobol'sailed south to Yeniseysk, from where Ovtsyn planned
to travel overland to St. Petersburg. On his way there, however,
he was arrested by secret police for conspiring with a state
criminal. Despite winning the approbation of the Admiralty
College for the successful completion of his mission, he was
court-martialed and reduced to the rank of able seaman. In
this capacity, he was sent to join Bering in Kamchatka, partic-
ipating in his voyage to America. He was later to have his rank
reinstated and to retire in 1757 as a senior naval officer. Prince Dolgorukiy was less fortunate, being tortured and executed not long after the incident involving Ovtsyn.

See also: Bering, Vitus (1733–1743); Minin, Fedor; Murav’yev, Stepan; Northeast Passage; Russia

References and further reading:
Pakhtusov, Petr  
(1800–1835)  
Ice conditions off the east coast of the Russian Arctic archipelago of Novaya Zemlya—“New Land”—meant that it was almost inaccessible to sailing vessels. Not until the 1830s were substantial sections of it charted during two expeditions led by the Russian naval officer Petr Kuz’mich Pakhtusov.

Novaya Zemlya was possibly first visited by Europeans as early as the eleventh century. In 1594 and 1596, Willem Barents mapped the west coast to a reasonable degree of accuracy before rounding Cape Nassau and wintering on the northeast coast at “Ice Haven.” By the first decades of the nineteenth century, despite this history of early exploration, the archipelago remained comparatively unknown, with its west coast imperfectly charted and its east coast largely unexplored. Between 1821 and 1824, the Russian naval officer Fedor Petrovich Litke led four expeditions, during which he conducted the first accurate survey of the west coast and investigated the potential of Matochkin Strait—a narrow channel separating the northern and southern islands—as a navigable route for shipping between European Russia and the Kara Sea. Despite making several attempts, he was unable to reach the east coast. Litke had been severely hampered by ice and weather conditions, but in 1826 Russian walrus-hunting expeditions reported unusually little ice off the western and southern coasts of Novaya Zemlya. One hunter, Peter Karepanov, sailed 60 miles north of Matochkin Strait without meeting ice. Another passed through the Kara Gate—between Novaya Zemlya and Vaygach Island—into the Kara Sea, where he sailed 100 miles without sighting ice. These reports encouraged Russian authorities to believe that ice conditions off the island might not always be as bad as experienced by Litke and that in certain favorable years the east coast too might be investigated.

Charting Novaya Zemlya’s Inaccessible East Coast, 1832–1833  
Perhaps surprisingly, the challenge was initially taken up not by the Russian Admiralty but by a government official, P. Klokov, who had responsibility for the development and exploitation of forests. Obtaining financial backing from Brandt and Son, a trading concern based in Archangel, in 1832 Klokov organized three expeditions to Novaya Zemlya. The White Sea port of Archangel stood to benefit to a considerable extent should Matochkin Strait prove navigable. Shipping using the Northeast Passage currently had to negotiate the shallow, ice-strewn straits on either side of Vaygach Island in order to reach the Kara Sea. These straits were open for just a few weeks each summer and were restricted to smaller vessels. If a better route could be found, Siberia’s furs, timber, and minerals could be ferried north to the Arctic Ocean down the Ob’, Yenisey, and Lena River systems and then transported west to Archangel and beyond by means of the Northeast Passage. The first of Klokov’s expeditions was led by Vasily Andreyevich Krotov, who was to attempt to sail through Matochkin Strait in Yenisey. Ivan Gvozdarev was to take building materials to the western entrance of Matochkin Strait, where a station was to be constructed to assist vessels forced to winter there. Lieutenant Petr Pakhtusov’s task was to survey the east coast as far north as Matochkin Strait.

Pakhtusov had served as an assistant during Ivan Nikiforovich Ivanov’s hydrographic expeditions of 1824 and 1826–1828, which had surveyed the Arctic coast from the mouth of the Pechora River east toward Archangel and west toward the Ob’. Sailing in Novaya Zemlya, he left Archangel on 1 August 1832 in company with Krotov, the two separating six days later upon exiting the White Sea. Nothing more was to be heard of Krotov until Pakhtusov discovered the wreck of Yenisey two years later near the western entrance to Matochkin Strait. With Gvozdarev unable to reach the strait in a bad ice year, only Pakhtusov was to enjoy any measure of success.

By 10 August, Pakhtusov was off southern Novaya Zemlya, where he was prevented from reaching the east coast by impenetrable ice blocking Kara Gate. Matochkin Strait was the alternative route but unreachable beyond heavy ice off the west coast. Rather than returning with nothing accomplished, he decided to risk wintering in an abandoned hunter’s hut close to the southeastern tip of the island. Provisions were barely adequate for wintering, and the hut needed considerable repair before it could be made even marginally habitable. But remaining on the island meant that good use could be made of the spring, when sledding would be easier along the coastal sea ice. This indeed proved to be the case, though during the harsh winter several crew members died of scurvy. On 8 April 1833, the sledding journeys began, first to chart the southern coastline and off-lying islands, then to work progressively north along the east coast. As early summer succeeded spring, the sea became sufficiently open for boat journeys to be made, during which numerous new features were named until, on 13 August, the eastern entrance to Matochkin Strait was reached. The only previous survey of this channel had been made in 1768–1769 by Fedor Rozmyslov, and Pakhtusov was now able to confirm its essential accuracy. Knowing nothing of what had happened to Krotov and Gvozdarev, he searched for messages from them but found none. Although much more could be accomplished by remaining another winter, Pakhtusov’s pro-
visions were by now almost exhausted, and he decided that he must head for home. He sailed through Matochkin Strait to reach the Russian mainland near the Pechora, where a severe storm forced him to winter his vessel. From there, he traveled overland to Archangel on sledges pulled by reindeer.

**Surveys Continue along Novaya Zemlya’s East Coast, 1834–1835**

Pakhtusov's results were sufficiently encouraging for the hydrographic department of Russia's naval ministry to organize a second expedition. Sailing in *Krotov*, Pakhtusov was now to be accompanied by August Karlovich Tsivol’ka in *Kazakov*, the two vessels being named for the captain and second-in-command of *Yenisey*, which was presumed lost, having failed to return in 1832. Departing from Archangel on 24 July 1834, they arrived at the western entrance of Matochkin Strait on 26 August, entering the strait three days later. Initially delayed by contrary winds, when they reached the eastern entrance it was found to be completely blocked by ice, forcing Pakhtusov to withdraw to winter quarters at the western entrance on 29 September. A hut was built there from driftwood and an uncomfortable winter was endured, with scurvy again breaking out among the crew.

Following the return of the sun, Pakhtusov made an overland survey of Matochkin Strait between 18 and 25 March 1835 before heading south along the east coast to improve upon the accuracy of charts made during his previous expedition. Meanwhile, Tsivol’ka led a five-man sledging party to survey the east coast farther north. In very difficult conditions, he achieved a farthest north on 24 April some 100 miles north of Matochkin Strait on a peninsula that he named for the composer Friedrich von Flotow. By 6 May both parties had returned to their vessels, where preparations were made for the survey to be continued by sea. First constructing a boat for work close inshore, Pakhtusov’s plan was to attempt the first circumnavigation of the north island, his aim being to complete and the north and northeast coasts remained uncharted. This was to be Pakhtusov’s last expedition. Although still a relatively young man, he was exhausted by his exertions during two arduous expeditions. He would fall ill and die just one month after arriving back on the mainland.

The survey of Novaya Zemlya, however, was not yet complete, and the north and northeast coasts remained uncharted. After first returning to the island in 1837 with a scientific expedition led by Dr. Karl Ernst von Baer, Tsivol’ka in 1838–1839 was appointed leader of an expedition organized by the hydrographic department to finish the survey. On 15 June 1838, he sailed from Archangel in *Novaya Zemlya*, accompanied by Spitsbergen, captained by Stepan Andreyevich Moisseyev. Tsivol’ka was no more successful than Pakhtusov in attempting to sail around the northern tip and was forced instead to winter on the west coast near 74°N. Again scurvy broke out; one of the nine casualties was Tsivol’ka himself. Although Moisseyev now took command and significantly extended the survey of the west coast, he too was unable to reach the inaccessible north and northeast coasts, sections of which were not to be charted until 1913 by Georgiy Sedov.

See also: Barents, Willem; Northeast Passage; Novaya Zemlya; Sedov, Georgiy

**References and further reading:**


**Pakistan**

Pakistan, controversially, is the only country to pursue Antarctic research without first ratifying the Antarctic Treaty. Along with certain other countries (Malaysia being the most prominent), Pakistan views the Antarctic Treaty System, under which Antarctica has been administered since 1961, as operated by a cartel of rich countries largely for their own benefit. Instead, Pakistan advocates administration by the United Nations (UN) on behalf of all UN member countries. Pakistan is at present the only country taking this view to conduct research in Antarctica, but it does collaborate with other national research programs; it joined the Scientific Committee for Antarctic Research as an associate member in 1992.

Pakistan’s Antarctic research program is conducted by the Polar Research Cell within the National Institute of Oceanography in Karachi. It was initiated by Operation Sea Mob, led by Wasim Ahmed to Princess Ragnhild Coast, where the summer station Jinnah was opened on 25 January 1991. In addition to the scientific research conducted at and in the vicinity of this station, automatic weather stations have been deployed in the northern Sør-Rondane Mountains and at “Allama Iqbal,” 30 miles south of Jinnah.
See also: Princess Ragnhild Coast

References and further reading:

Palmer Archipelago (Antarctic Peninsula)
These islands lie off the west coast of the Antarctic Peninsula, from which they are separated by Gerlache Strait. The major islands (from north to south) are Tower, Trinity, Hoseason, Liège, Brabant, Anvers, and Wiencke. They are named for the American sealer Nathaniel Palmer, who reached the vicinity of Trinity Island on 16 November 1820. On two other voyages in January and November 1821, he may well have explored the islands and straits farther south. For accounts of the exploration of this archipelago, whose northern and western coasts were certainly known to sealers from the 1820s, see the entries for the islands listed below.

The Argentine meteorological station Melchior (64°20’S, 62°59’W) was established on Gamma Island in the Melchior Islands, Dallmann Bay, between Anvers and Brabant Islands. Opening on 31 March 1947, it was the first Argentine station in the vicinity of the Antarctic Peninsula. Melchior closed in 1969 but since 1997 has been maintained as an occasional summer station.

See also: Anvers Island; Argentina; Brabant Island; Gerlache Strait; Hoseason Island; Liège Island; Palmer, Nathaniel; Trinity Island; Wiencke Island

Palmer Land
See Antarctic Peninsula

Palmer, Nathaniel (1799–1877)
For many years, the American sealer Nathaniel Palmer was widely believed to have made the first sighting of Antarctica on 16 November 1820. Although we now know that he was preceded by Fabian von Bellingshausen (27 January 1820) and Edward Bransfield (30 January 1820), Palmer is still credited with a number of other discoveries, including being the first to find the fine harbors of Deception Island (which he may also have been first to visit), Half Moon Island, and Yankee Harbor; codiscoverer (with George Powell) of the South Orkney Islands; and, most intriguing, to have possibly sailed along the Antarctic Peninsula as far as 66°S—or 68°S—to Marguerite Bay.

Born in Stonington, Connecticut, Nathaniel Brown Palmer first went to sea at age twelve in ships running the British blockades between New York and Portland during the War of 1812 between the United States and Great Britain. In 1819, after a period working in the New England coastal trade, he was appointed second mate by James Sheffield on Hersilia’s voyage to the South Atlantic, searching for new sealing grounds. While ashore on the Falkland Islands, where he had been left behind to obtain fresh meat from the wild cattle, Palmer heard of William Smith’s discovery of the South Shetland Islands from the mate of Espírito Santo. On Sheffield’s return after searching for the mythical Aurora Islands, Hersilia was reprovisioned and course was set for the South Shetlands, which were reached in January 1820. Hersilia was the only American sealer participating in the 1819–1820 season. Its return to Stonington on 21 May, with 8,868 sealskins, confirmed rumors that rich sealing grounds had been found; this stimulated frenzied activity in the New England ports as sealing fleets were hurriedly fitted out for the long voyage south.

Early Explorations of the South Shetland Islands and Antarctic Peninsula, 1820–1821
Hersilia’s sealskins sold for more than $22,000. Palmer invested his share of the profits in purchasing part ownership in Express and Hero, the latter a 44-ton sloop in which he now sailed as captain with four others as crew, in a fleet consisting of five vessels commanded by Benjamin Pendleton. A “shallop” such as Hero was particularly useful
for an expedition of this kind. A very small vessel of shallow
draft, it could safely ferry men, supplies, and sealskins
between the beaches and the larger ships at anchor in one of
the more sheltered bays. Such a vessel was also useful in
scouting out better harbors and beaches with fur seals. It was
in this last role that Palmer made his name.

The Stonington fleet anchored at New Plymouth, at the
west tip of Livingston Island, all five ships being there by 13
November when Hero and Express arrived. This anchorage is
open to gales from the northwest, and Pendleton was clearly
unhappy with his fleet’s exposed position. He was also aware
of the many other American and British ships coming to the
islands to seal. On 15 November, therefore, Palmer was dis-
patched on an exploratory voyage with instructions to look for
better harbors and new fur seal beaches. Palmer’s log sur-
vives, so we know exactly where he went. It has the appear-
ance of being written up after—rather than during—the voy-
age, being in a uniform hand with entries running
continuously across the page, irrespective of drawn columns
in which hours of the day, speed, course, and the like should
have been marked. It is probable that it was copied afterward
from rough notes made at the time.

Palmer sailed directly for Deception Island, where he was
almost certainly the first to find and penetrate the excellent
harbor, which fills the flooded caldera forming the island’s
interior. Assuming that this island is named for its deceptive
nature (whether because its interior is largely water rather than
land, or because its harbor entrance is deceptively difficult to
find), Palmer’s log is puzzling in that he writes “got underweigh
on a cruise stood over for Deception.” Although this might be
held to imply that the island was already called Deception and
thus had been visited previously and its harbor found, more
probably all is explained by the mode of composition of
Palmer’s log, written up after his discoveries had caused the
island to be so named. Certainly, his account of entering the
harbor gives no impression that it had ever been seen before.
After he spent another day at Deception, Palmer’s log reports
on 16 November that he “got over under the Land,” a cryptic
description of his voyage across Bransfield Strait (“got over”)
and approach to the Antarctic Peninsula (“under the Land”).
Here he “Discovered—a strait—Tending SSW & NNE—it was
Literally filled with Ice and the shore inaccessible we thought
it not Prudent to venture in we Bore away to the Northward &
saw 2 small Islands and the shore everywhere Perpendicular”,
(see Palmer’s log, quoted in Hinks 1940, 422). This passage
records Palmer’s discovery of the Orléans Channel between
Trinity Island and the mainland, which he records as blocked
by ice, his inability to land, and his subsequent bearing away
to the north and passage back to the South Shetlands. On 17
and 18 November, Palmer explored McFarlane Strait, between
Livingston and Greenwich Islands, where he found two fine
harbors at Half Moon Island and Yankee Harbor. By 20 Novem-
ber, Palmer was back with the Stonington fleet to report his
discoveries to Pendleton, who promptly decided to move the
fleet to Yankee Harbor.

Palmer undertook another exploratory voyage in January
1821, but it is not clear where he went: By this time only very
brief notes are recorded in his log, with only five entries for the
period concerned (14–18 January). Knowledge that a voyage
took place, combined with Palmer’s much later recorded state-
ment that he reached 68°S, as well as other evidence relating to
Pendleton himself and another sealer (Daniel Clark) hav-
ing reached latitudes as high as 66°S, were sufficient for the
French explorer Jean-Baptiste Charcot to credit American
sealers with discovery of Marguerite Bay, otherwise his own
discovery. Charcot, however, was not known as “the gentleman
of the Poles” for nothing and was perhaps more generous than
most would be prepared to be today. Palmer’s voyage to 66°S
or thereabouts remains a fascinating possibility—but not yet
a proven one.

It was on 6 February, shortly after his return from this voy-
age, that Palmer found himself in thick fog off Deception. When
the fog lifted, he found himself between two large ships. These
were the Vostok and Mirny of Russia’s imperial navy. Palmer
was summoned on board to meet the commander, Belling-
hausen. Accounts of what took place vary and no doubt have
been subject to embellishment, but according to American
sources Palmer offered to pilot Bellinghausen into a safe har-
bor (Deception Island) and described his discovery of an
immense extent of land to the south, on which Bellinghausen
congratulated him and suggested the name “Palmer Land.”
Bellinghausen’s own account is confined to what Palmer told
him of the sealers and the numbers of sealskins obtained. If
Palmer had reported significant discoveries, one might have
expected some mention by Bellinghausen, though he was not
one to accept hearsay evidence for geographical discovery.

Discovery of the South Orkney Islands, 1821–1822
The following season, Palmer captained the 80-ton sloop
James Monroe in a Stonington fleet of six vessels, again under
Pendleton’s overall command, though this time anchored at
Deception Island. Few fur seals were found, and Palmer was
sent on long exploratory cruises, probably along the Antarctic
Peninsula, and certainly to Elephant and Clarence Islands. It
was while off Elephant Island that Palmer fell in with the
British sealer George Powell, and the two decided on a voyage
to the east during which they discovered the South Orkney
Islands on 6 January 1822 (see Powell, George). No log sur-
vives for Palmer’s voyage, but contemporary newspaper
accounts imply that from Deception Palmer sailed across to
the peninsula and then northward, skirting land first and
then the edge of the pack ice (on a course similar to Edward
Bransfield’s) in 1820 before he met Powell at Elephant Island.

The discovery of the South Orkneys was Palmer’s last sig-
nificant contribution to the exploration of Antarctica, though
he did undertake one more voyage to the South Shetlands in
1829–1831 (see Pendleton, Benjamin). Unlike many other sealing explorers, Palmer prospered in later life as a businessman, shipowner, and member of the prestigious New York Yacht Club. He died in 1877.

See also: Antarctic Peninsula; Bransfield, Edward (1819–1820); Deception Island; Marguerite Bay; Pendleton, Benjamin; Powell, George; Sealing and Antarctic Exploration; Sheffield, James; South Orkney Islands; South Shetland Islands

References and further reading:

Papanin, Ivan
(1894–1986)
Development of its vast Arctic hinterland was a central goal of Joseph Stalin's Soviet Union during the 1930s. The method was classically one of stick and carrot: While political dissidents and others running afoul of Stalin's regime were sent to forced labor camps scattered across the northern territories, the general public's attention was diverted with newspaper articles and films about the inspiring achievements of aviators, seamen, and scientists in the far north. Most spectacular of all was the establishment on an ice floe, within just a few miles of the Pole, of the station North Pole 1 (NP-1).

Stalin's Scientists Conquer the North Pole, 1937–1938
Soviet heroes should be men of the people, and Ivan Dmitriyevich Papanin was no exception. Born in Sebastopol in the Crimea, the son of a bargeman, he was prevented from completing his education by the need to earn a living. During World War I, he served in the imperial navy's Black Sea fleet before deserting at the outbreak of the October Revolution in 1917 and joining a Red partisan unit. Subsequently employed by the People's Commissariat of Posts and Telegraphs, he was assigned to the Aldan goldfields in eastern Siberia, where he acquired a taste for remote places. In 1931, he was selected as the commissariat's representative on the icebreaker Malygin, which was to exchange mail with the German airship Graf Zeppelin (see Eckener, Hugo), the arranged rendezvous being Hooker Island in the high Arctic archipelago Franz Josef Land. No sooner had he returned from this assignment than Papanin used such influence as he had to return to Hooker Island as leader of the station at Tikhaya Bay during the Second International Polar Year (1932–1933). Among his colleagues was Yevgeney Konstantinovich Federov, with whom he was next sent to construct a station at Cape Chelyuskin at the northern tip of the Taymyr Peninsula.

Papanin was now working for the Chief Administration of the Northern Sea Route (Glavseomorput', or GUSMP), headed by Professor Otto Yul'yevich Shmidt. Although sometimes presented as if first conceived by Papanin, the idea of establishing a station on the Arctic Ocean pack was proposed as early as 1931 by the deputy director of the Arctic Institute, Vladimir Vize, who was to have led the expedition until sidelined by poor health. Initially doubtful as to its practicability, Shmidt took up the scheme after noting how well airplanes coped with landing and taking off from sea ice during the rescue of crew and passengers from the Chelyushkin (see Shmidt, Otto). Clearly, airplanes had the capacity to establish and supply an ice station. In addition to constituting a propaganda coup of the first magnitude, a station at the North Pole could supply meteorological information to usefully supplement that available from the network of stations Shmidt had been building across the Soviet Arctic in support of shipping using the Northern Sea Route. Information from NP-1 would also be particularly helpful to the program of planned transpolar flights, and if something went wrong with those, the scientists there could provide invaluable support to a search operation.

Full government backing was obtained in February 1936. Soon afterward, aviator Mikhail Vodop'yanov identified Rudolf Island, Franz Josef Land, as the most suitable forward base, observing that the island's ice cap would provide a natural aerodrome. Papanin was given responsibility for bringing the construction party in the icebreaker Rusanov, then returning to Moscow to complete preparations while twenty-four men remained through the winter to ensure that station and air facilities were ready for the expedition's arrival the following spring.

Besides Papanin and Federov (geophysicist and meteorologist, respectively), NP-1 was to be staffed by Peter Petrovich Shirshov (hydrologist and marine biologist) and Ernst Theodorovich Krenkel (radio operator). On 22 March 1937, this quartet set off from Moscow in four converted Tupolev TB-3 bombers accompanied by two twin-engine reconnaissance aircraft. Bad weather forced them to land three times before conditions finally allowed them to reach Rudolf Island on 12 April. Once they were there, the bad weather continued, and it was not until 5 May that Pyotr Golovin was able to make the first reconnaissance flight, returning with the good news that ice conditions close to the Pole looked suitable for landing. Another period of waiting followed until 21 May, when Mikhail Vodop'yanov took off in a Tupolev bomber with Shmidt and Papanin's four-man team on board. During a ten-hour flight, a suitable floe of 2.5 miles by 1.2 miles was located at 89°24'N, 78°40'W. After erecting five tents for shelter, their first priority was to construct the radio station. During the next two weeks a succession of flights was made from Rudolf Island; on 6 June all was ready and the station declared formally open.

Accommodation was provided by a black tent, 3.7 by 2.5 by 2 meters, consisting of a silk inner layer—somewhat incongruously sown by elderly nuns—enveloped successively by layers of rubberized cloth and tarpaulin. Including its aluminum frame, the tent weighed just 36 kilograms, being
designed like the rest of the equipment for lightness to facilitate the airlift. Each day Krenkel transmitted the station's meteorological observations, while his colleagues busied themselves in their various studies. On 19 June, the sound of engines overhead was heard. Valeriy Chkalov was on his way to another propaganda triumph—the first transpolar flight—but in the foggy conditions he could not see the station, nor they him.

The plan was to occupy the station for eighteen months, but it was soon clear that NP-1 was drifting south much faster than anticipated. During October, it crossed 85°N, and by January 1938 it was just south of 80°N in Fram Strait, with the drift increasing in speed. Before the end of this month, Papanin and his colleagues were south of 75°N and somewhat alarmed to see signs of the floe beginning to break up in the warmer water. As the icebreakers Taymyr and Murman from Murmansk and Yermak from Leningrad were dispatched to relieve the men, V6, the Soviets' most advanced airship—designed by the polar explorer Umberto Nobile—received permission to head for NP-1, only to crash near the White Sea on 5 February with no survivors. By mid-February, the icebreakers were closing in on NP-1, and Papanin was instructed to level a landing strip. On 16 February, G. P. Vlasov landed. Ironically, he had been searching not for them but for another pilot, Ivan Cherevichnyy, who had gone missing. Papanin refused to be evacuated until Cherevichnyy had been found. The floe was down to 30 meters on 19 February before it was finally reached by a boat party. Cherevichnyy was safe, and Papanin's team was brought

by large crowds on their arrival on 15 March, and a series of official events followed during which they were prominently displayed, filmed, and bedecked with awards.

By the time it was evacuated on 19 February, NP-1 had drifted more than 1,000 miles in 274 days and was off the east coast of Greenland at 70°03'N, 20°00'E. Much had been learned about the central Arctic Ocean and Greenland Sea, not least the direction and strength of surface currents, the geographical distribution of terrestrial magnetism, and the topography of the ocean floor. The existence of currents of warm water at the Pole was also demonstrated, originating in the Atlantic and entering the Arctic Ocean between Greenland and Spitsbergen. Perhaps surprisingly, the meteorological observations showed the weather of the "cold polar cap" to be considerably less stormy than that experienced along the Arctic coast, presumably an effect of the extensive ice cover.

As a twice-over Hero of the Soviet Union—the second time for his role in the relief of the icebreaker Sedov (see Badigin, Konstantin)—Papanin was the public face of Soviet polar exploration for many years. Upon Shmidt's fall from favor in 1939, which Papanin did much to engineer, he was appointed head of the Chief Administration of the Northern Sea Route, a post he retained until 1946. He was later appointed first deputy director of the Institute of Oceanology (1948–1951) and head of the Marine Expedition Department (1951–1986). In this latter capacity, he was to be centrally involved in the planning of the first Soviet Antarctic expedition in 1955.

See also: Badigin, Konstantin; Chkalov, Valeriy; Drifting Ice Stations; Eckener, Hugo; Franz Josef Land; Hooker Island; North Pole; Northeast Passage; Rudolf Island; Russia; Shmidt, Otto

References and further reading:

Parry, Edward (1790–1855)
The British naval officer Edward Parry led four expeditions to the Arctic. During the first three he opened up the Canadian Arctic Archipelago to European exploration by discovering possible entrances to the Northwest Passage in Lancaster Sound, Prince Regent Inlet, and Fury and Hecla Strait. During the fourth he reached closer to the North Pole than anyone had before. The procedures he established for wintering at high latitudes set the pattern for British polar expeditions into the next century.

The Entrance to the Northwest Passage Found in Lancaster Sound, 1819–1820
Lieutenant William Edward Parry had been in command of the brig HMS Alexander with John Ross in 1818. Afterward he found himself in an awkward position when the second secretary of the Admiralty, John Barrow, quoted from his personal journal in a highly critical review of Ross's voyage. The particular point at issue was whether an entrance to the Northwest Passage might be found through Lancaster Sound, Prince Regent Inlet, and Fury and Hecla Strait. During the fourth he reached closer to the North Pole than anyone had before. The procedures he established for wintering at high latitudes set the pattern for British polar expeditions into the next century.

HMS Alexander (1809–1855)
Parry embarked from London on 4 May 1819 in the 375-ton bomb-vessel HMS Hecla. Many on board had participated in the two Arctic naval expeditions the
previous year (see Ross, John, and Buchan, David), including lieutenants Frederick William Beechey and Henry Parkyns Hoppner, midshipman James Clark Ross, and the astronomer Captain Edward Sabine. Eager to reach Lancaster Sound much earlier in the summer than Ross had managed in 1818, Parry decided to risk a course cutting through the “Middle Ice,” which occupies the body of Davis Strait and Baffin Bay, rather than follow the much longer route used by whalers that hugged the west coast of Greenland. Parry’s gamble paid off, and by 30 July he had reached the entrance to Lancaster Sound. It did not take him long to prove that Ross had turned back prematurely and that “Croker’s Mountains” did not exist. Initially sailing west close to the southern coast of Devon Island, Parry saw a wide opening to the south on 6 August, whereupon he crossed the sound to discover Prince Regent Inlet, a broad channel 30 miles wide. This looked exceedingly promising, leading southward toward the presumed alignment of the mainland, which was believed to run east-west more or less at 70°N on the basis of sightings of the Arctic coast by Samuel Hearne, James Cook, and Alexander Mackenzie. Having sailed 120 miles, however, Parry was forced to turn about due to ice off Cape Kater. Naming the westerly extension of Lancaster Sound beyond Prince Regent Inlet Barrow Strait for John Barrow, Parry continued west, again following close to the northern shore, where he successively discovered and named Cornwallis, Bathurst, Byam Martin, and Melville Islands, a group collectively known today as the Parry Islands, though he called them the “North Georgian Islands.” On 4 September, he was at 110°W. A parliamentary reward of £5,000 for partial discovery of the Northwest Passage was now his, but he was to be disappointed in his hope of sailing through the Passage in one season when heavy fields of ice of a thickness not previously encountered barred his way in McClure Strait. Parry had come prepared to winter and now turned back to Winter Harbour, Melville Island, where a suitably sheltered anchorage had been noted.

In this first deliberate wintering in the High Arctic by a British naval expedition, Parry had ensured that all necessary arrangements were made, not neglecting likely effects on the morale of his crew; for many, the long, dark winter would be a period of unrelieved tedium unless occupations could be designed for them. Literacy schools for seamen, a theater, musical entertainments (including an organ—now preserved in the Scott Polar Research Institute), and a newspaper (the *North Georgia Gazette*) edited by Sabine ensured that all were kept busy. A plentiful supply of local game, primarily caribou
and muskoxen, added fresh meat to the large quantities of tinned food on board. Although consideration had been given to insulating Hecla and Griper with roofs of padded cloth, the boilers proved inadequate to prevent the buildup of condensation in the men's cabins, and a hundred buckets of ice had to be chipped away at the end of the winter.

With Hecla and Griper still imprisoned in ice, Parry set out across Melville Island on 1 June 1820 with a twelve-man party pulling a handcart. After exploring the southern shore of Hecla and Griper Bay, he had returned by 15 June to devote himself to freeing his vessels. Not until 1 August were they able to escape to partially open water. Again, Parry resumed his attempt to complete the Northwest Passage through McClure Strait but could reach no farther than 113°46'W off Cape Dundas, the southwestern tip of Melville Island, where he encountered the multiyear ice of the central Arctic Ocean, 13–16 meters thick and completely impenetrable. In the distance, land could be seen to the southwest. This Parry named “Banks Land” (now Banks Island). With no prospect of getting farther west, Hecla and Griper were turned about and slowly extracted from the ice to head back east, this time following the southern shores of Barrow Strait and Lancaster Sound, where the north coast of Somerset Island was charted and Admiralty Inlet discovered. Exiting Lancaster Sound, Parry sailed south off the east coast of Baffin Island to reach London in mid-November.

This was one of the most successful of all Arctic expeditions. Not only had Parry identified Lancaster Sound as a channel offering real possibility of finding a Northwest Passage; he had also opened up the archipelago of islands north of Canada to European exploration. Another achievement was his successful wintering at a very high latitude, in the process establishing procedures that were subsequently followed by many expeditions. On Parry’s return to England, honors were showered upon him, among them election to the Royal Society and promotion to commander.

**An Inuit Map Leads Parry to Fury and Hecla Strait, 1821–1823**

With the multiyear ice of McClure Strait apparently blocking passage through Lancaster Sound, Barrow’s suggestion was that Parry next explore whether a channel might be found in Foxe Basin, a region unvisited by Europeans since its discovery by Luke Foxe in 1631. The west coast of Hudson Bay had been investigated as far north as Repulse Bay. But there was no knowledge of the coast beyond and only hope that an entrance might be found to the Arctic Ocean, given that the discoveries of Hearne, Cook, and Mackenzie all indicated that continental North America ended in an essentially west-east trending coast at around 70°N.

For his second expedition, Parry was to sail in HMS Fury, the sister ship of Hecla, which, unlike the unhandy Griper, proved to be an ideal exploration vessel. Use of two matched vessels meant that masts and gear could be interchanged if necessary. Commander George Francis Lyon was to captain Hecla. Although Lyon himself had no previous experience in the Arctic, a cadre of officers and seamen familiar with its conditions had by now been developed, many on board having sailed previously with Parry, if not also with Ross or Buchan.

On 29 April 1821, Fury and Hecla sailed from London to enter Hudson Strait in late June. Parry now followed the north coast of Southampton Island, previously visited only by Robert Bylot in 1615, to make the first passage of Frozen Strait. Confirming Christopher Middleton’s view that no westward-leading channel was to be found through Repulse Bay, he next coasted north along Melville Peninsula, carefully inspecting each inlet to ensure that there was no possibility of any passage being overlooked, before deciding to winter at Winter Island. This was the most northerly wintering location to date for any expedition in this region. But Parry had few anxieties, his position being located far to the south of where he had wintered in 1819–1820. This wintering was, however, to be significantly different in one respect, taking place in a region much frequented by the Inuit. From 1 February 1822 onward visits were exchanged with a small Inuit community whose igloos were close by. A newly invented coal-burning stove and specially installed heating system led to a great reduction in condensation, and the insulation was much improved by thick layers of cork lining the inside of the vessels. Despite having no interpreter, much was learned from the Inuit, an account of whose language and customs fills many pages of Parry’s published narrative. Much was learned about local geography as well, with several invaluable maps drawn by the Inuk woman Iligluik.

On 2 July, Parry resumed exploration of Melville Peninsula. Iligluik’s maps showed a promising channel farther north, and there indeed Fury and Hecla Strait was discovered close to the large Inuit community at Igloolik. This strait separates Baffin Island from continental North America and leads through to Prince Regent Inlet, which Parry had explored in 1819 until halted by ice. With Fury and Hecla Strait also being blocked by ice, Lyon traveled across the peninsula by dog sled with a party of Inuit to confirm that open water lay beyond. These discoveries were encouraging since they appeared to offer a more southerly and shorter entrance to the Northwest Passage than did Lancaster Sound.

Having found wintering among the Inuit both profitable and diversionary the previous year, Parry chose to base himself close to Igloolik. During the summer, he and Lyon had experimented with kayaking, and they now bought dogs and were taught how to drive them. For the coming year, the key question was whether Fury and Hecla Strait would prove navigable. After a hard winter, this appeared increasingly unlikely as the ice about the vessels remained firm until early August before at last breaking up. By now Parry had concluded that the health of his crew would not stand another winter and that
there was little to be accomplished by further exploration. After first making a brief examination of the strait, where ice was found stretching from one side to the other, Parry set out for home to reach London in October.

Again, Parry returned to the nation's plaudits. True, he had not reached Bering Strait, but he had charted an extensive area of previously unknown land, and there was particular interest in his account of the Inuit. In his absence, he had been promoted to captain, and on 1 December he was appointed acting hydrographer of the navy (with the condition, however, that he should be free to command further Arctic expeditions). His had been the last attempt to find the Northwest Passage through Hudson Strait, marking the end of a search begun by Henry Hudson in 1610. It was, however, far from the last of his Arctic expeditions. During the next one he would attempt to reach the open water seen from the west coast of Melville Peninsula—this time through Prince Regent Inlet.

Grand Plans Come to Naught in Prince Regent Inlet, 1824–1825

Franklin's overland expedition of 1819–1823 had confirmed the suspected east-west trend of the coast of mainland North America near 70°N. This encouraged Barrow to believe that if Prince Regent Inlet could be sailed down to its southernmost limit, then from there it might be possible to follow the American coast westward to Bering Strait. With a proposal to this effect being submitted by Parry, he was again given command of Hecla and Fury, the latter being captained by Commander Hoppper, Lyon having been given charge of an expedition to Repulse Bay. With Franklin leading another overland expedition to the Arctic coast, Barrow's intention was that these three expeditions together should finally resolve the question of this coast's exact alignment, with Parry also completing the first transit of the Northwest Passage. Parry and Franklin were to be met at Bering Strait by Frederick Beechey in HMS Blossom. Only Franklin was to come close to fulfilling Barrow's objectives.

Sailing from London on 8 May 1824, Parry's good fortune during his first voyage was not to be repeated. It took no less than eight weeks to get through the Middle Ice, and much of the time he had to laboriously warp his way through the dense pack, with giant icebergs posing an ever-present threat. The entrance to Lancaster Sound was not reached until 10 September, leaving very little time for exploration. With young ice forming soon afterward in Prince Regent Inlet, Parry managed with considerable difficulty to anchor at Port Bowen, his chosen wintering harbor on the inlet's eastern shore. He remained there from 1 October through to 20 July 1825. While waiting for the ice to break up to the south, Parry decided to search the west coast for an opening. The ice off Somerset Island was even thicker than off Baffin Island to the east, and in early August Fury was driven aground at Fury Point and severely damaged. Without any safe anchorage to effect repairs, Parry had no option but to abandon the ship, transferring Hoppper and his crew to Hecla and sailing his now heavily overburdened vessel back to England, where London was reached in October.

The lateness of his arrival the previous year and the early demise of Fury this season meant that Parry had very little opportunity to discover anything new. It thus remained a tantalizing possibility that Prince Regent Inlet contained the entrance to the Northwest Passage. John Ross would be the next to search for it.

By Sledge-Boat toward the North Pole, 1827

The whaler William Scoresby Jr. had been the first to propose that the North Pole might best be reached by sailing as far north as possible and then sledging across the ice. And upon Franklin's return from Buchan's abortive attempt to sail to the North Pole in 1818, he had submitted a proposal along similar lines to the Admiralty. Barrow had been skeptical at first, and Franklin's proposal was turned down. But Barrow had since reconsidered his views and now prompted Parry to submit a similar proposal, which received somewhat grudging support from the Admiralty.

Whereas Scoresby had proposed that light sledges be pulled by dogs, with the assistance of Inuit drivers, Parry decided instead to rely on reindeer and manpower. Great care was taken in the construction of two 6-meter boats fitted with iron sledge-runners and detachable wheels. Each would provide transportation and sleeping accommodations for fourteen men. These were triumphs of the shipwright's art, every detail carefully calculated to ensure Parry's eventual arrival at the Pole except their weight, which was a massive 660 kilograms.

On this last expedition, Parry was to sail again in Hecla, which had served him well during his three previous voyages. Embarking from London on 25 March 1827, he spent four days at the north Norwegian port of Hammerfest, where eight reindeer were taken aboard. By 14 May, Parry was off northwest Spitsbergen, searching for a suitable anchorage. Although it was later in the year than Scoresby had recommended to ensure good sledging surfaces, it was still earlier than most exploring expeditions; not surprisingly, dense ice was encountered, making the coast all but unapproachable. Yet conditions were ideal for trying out the reindeer, which were now found quite capable of budging the heavily loaded boats, whose wheels and runners sank intrackably deep into the snow. The reindeer were not tried again.

Parry searched for a harbor, and depots of provisions were laid in the Seven Islands on Walden Island on 18 June and on Little Table Island the next day. Neither offered any hope of shelter against wind and ice, and so Parry instead had to return some way south to anchor at Sorge Bay. From there he set out on 21 June with his two sledge-boats, Enterprise and Endeavour, himself commanding Enterprise, with Lieutenant James Clark Ross in charge of Endeavour. Each boat was crewed by twelve men and a midshipman. Initially they sailed through
open water, and landings were made on Low, Walden, and Little Table Islands on the way north. On 24 June, they reached the polar pack. Instead of the level compact plain anticipated by Barrow, Parry found a confused mass of ice floes much dissected by narrow leads. No sooner were the sledge-boats hauled out of the water onto the ice than they had to be launched again across the next lead. Conditions for travel could hardly have been worse, and they were not to get much better. Parry had hoped to make 13 miles a day but instead averaged only 7 miles, which, considering the circumstances, was impressive. After traveling 12 miles in three days, he was horrified to discover that his observations of 20 July showed him to be only 5 miles farther north. It was clear that the ice was drifting south almost as fast as the boats could be moved in the opposite direction. On 23 July, 82°45′N was reached. Continuing on for another four days, they were to reach no farther, as the speed of the drifting ice now exceeded the men’s ability to travel north. It was hopeless. On 27 July, Parry recognized the inevitable and turned back. Although still some 500 miles from the North Pole, he had come closer to it than anyone before, establishing a record that was not broken until 1876 by Albert Markham during an expedition led by George Nares.

Parry was to undertake no more Arctic expeditions. Married shortly before the departure of his last expedition, he sought employment in London and then Australia, where he could be with his family. Knighted in 1829, he remained for many the beau ideal of a naval Arctic explorer: young, handsome, and enterprising. When Sir Clements Markham, president of the Royal Geographical Society, was searching for a leader for his proposed national expedition to Antarctica many years later, Parry was his model and Robert Falcon Scott his choice.

See also: Barrow, John; Beechey, Frederick; Buchan, David; Bylot, Robert; Cook, James; Farthest North; Foxe Basin; Foxe, Luke; Franklin, John; Hearne, Samuel; Hudson, Henry (1610-1611); Inuit Contribution to Polar Exploration; Lancaster Sound; Lyon, George; Mackenzie, Alexander; Markham, Clements; Melville Island; Middleton, Christopher; Nares, George; North Pole; Northwest Passage; Prince Regent Inlet; Ross, John (1818, 1829–1833); Scoresby, William Jr.; Scott, Robert Falcon; Seven Islands

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Parry Islands (Canada)
This southwestern group of the Queen Elizabeth Islands of Arctic Canada consists chiefly of islands discovered by Edward Parry in 1819 and originally named by him the “North Georgian Islands” for King George III. Their current name was first introduced in Parry’s honor in the British Admiralty Chart of the North Polar Sea published in 1835. The group consists of Devon, Cornwallis, Bathurst, Byam Martin, Melville, Eglinton, Emerald, Prince Patrick, Mackenzie King, Brock, Borden, and Lougheed Islands. Parry was responsible for discovering Cornwallis, Bathurst, Byam Martin, and Melville Islands in 1819. Devon Island had been first seen in 1616 by William Baffin and Robert Bylot, with Parry being the first to survey its southern coast. These five are the original “Parry Islands.” Also included within the group are Eglinton, Emerald, and Prince Patrick Islands, discovered in 1853 by sledging parties led by Frederick Mecham and Leopold McClintock during Henry Kellett’s Franklin search expedition; and Brock, Borden, Mackenzie King, and Lougheed Islands, discovered in 1915 and 1916 by Vilhjalmur Stefansson.

Much of this region was first systematically explored by the many British naval expeditions searching for Sir John Franklin between 1848 and 1859.

See also: Baffin, William; Bathurst Island; Borden Island; Brock Island; Byam Martin Island; Cornwallis Island; Devon Island; Eglinton Island; Emerald Island; Franklin Search Expeditions; Kellett, Henry (1852–1854); Lougheed Island; Mackenzie King Island; Melville Island; Parry, Edward (1819–1820); Prince Patrick Island; Queen Elizabeth Islands; Stefansson, Vilhjalmur (1913–1918)

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Paulet Island (Antarctic Peninsula)
Located at 63°35’S, 55°47’W, this small volcanic island off Dundee Island, about 1 mile in diameter, was discovered and charted by James Clark Ross on 30 December 1842. He named it for his friend and brother officer, Captain (later Admiral) Lord George Paulet (1803–1879), who had brought stores to resupply his expedition when in the Falkland Islands the previous winter.

On 12 February 1903, Otto Nordenskjöld’s ship Antarctic sank 25 miles east of Paulet Island. It took sixteen days for the eighteen men led by Antarctic’s captain, Carl Anton Larsen, to reach Paulet. There, they built a hut and survived through the
winter largely on penguin eggs, wisely collected on their arrival, since the penguins left soon afterward, with only one man dying—the young seaman Ole Wennersgaard. On 31 October, Larsen and five others set off in a small rowboat, eventually reaching Snow Hill Island to be reunited with Nordenskjöld on 8 November; their arrival marked the climax of an extraordinary series of meetings on that day. The remaining members of the expedition were picked up by the Argentine relief expedition in Uruguay on 11 November. Paulet was not visited again until the 1946–1947 season, when a landing was made from the supply vessel Trepassy of the Falkland Islands Dependencies Survey to inspect the depot left by Nordenskjöld’s expedition.

See also: British Antarctic Survey; Dundee Island; Larsen, Carl Anton (1902–1903); Nordenskjöld, Otto; Ross, James Clark (1839–1843); Snow Hill Island

Payer, Julius von (1842–1915)

Very few expeditions have the opportunity to discover and explore a completely new land. The Austro-Hungarian expedition of Julius Payer and Karl Weyprecht had set out to find a high-latitude route to the Bering Strait. After being caught up in the ice and drifting helplessly for eleven months, they came upon Franz Josef Land, an archipelago located far north in the Barents Sea between Svalbard and Novaya Zemlya.

Belief in the possibility that a navigable route to the Far East might be found by sailing far north had inspired numerous expeditions as far back as the 1590s. Guided by the cartographer and geographer Peter Plancius, the Dutch navigator Willem Barents had first sought the Northeast Passage, north rather than south of Novaya Zemlya. Just as Plancius was by no means the only language spoken.

During the next eleven months, Tegetthoff drifted with the ice, first north to beyond Novaya Zemlya, then west. Through it with mounting expectations of rounding the island and reaching the Kara Sea. In their wake followed Isbjørn with Wilczek on board to supervise the establishment of a depot on the Barents Islands. On 21 August, Isbjørn turned back, leaving Tegetthoff to force its way through the thickening pack. It was not to go far. That same day, the ice closed up, embedding it in a solid floe. It was at 76°22′N, 62°03′E.

During the next eleven months, Tegetthoff drifted with the ice, first north to beyond Novaya Zemlya, then west. Through the sunless winter, its crew was repeatedly ordered to prepare to abandon ship as again and again Tegetthoff was threatened by intense ice pressure. The Bremerhaven shipwrights, however, had built a sturdy vessel, and on 19 February 1873, for the first time in five months, the sun again lit up its spars. Efforts were now intensified to free it from a floe many meters thick. All efforts were in vain. By late summer another winter of imprisonment looked probable.
They were now at 79°43’N, 59°33’E, and on 30 August, land—a most unexpected sight—was seen some 30 miles away. For this new discovery only one name was possible: “Kaiser Franz-Josefs Land,” for their emperor. For a considerable time, Payer had chafed under Weyprecht’s command. Indeed, at one time Weyprecht had secured his obedience only by threatening to shoot him. With land to be explored at last there was the prospect that Payer too would exercise leadership but with Tegetthoff surrounded in all directions by fragmented ice, he had to restrain himself until 1 November, when he could finally lead a sledging party to the nearest small island, named—for Wilczek. Already, the sun had set for the last time that year, but at least through this winter there was the heartening prospect of further discoveries to be made once the sun returned.

While Payer made preparations for his planned sledging journeys, Weyprecht had reached the unwelcome conclusion that Tegetthoff must be abandoned. As the current had drifted them closer to land, their floe had been subjected to vast pressures, breaking it apart and in the process irreparably damaging Tegetthoff. Even were it to prove possible to work the ship free to open water, it would sink before reaching Novaya Zemlya; instead, they must reach those islands by boat. The attempt, however, could not be begun until May, leaving several weeks for Payer to discover as much as he could.

Payer used his time well. Between 10 and 15 March 1874, he made a preparatory journey to investigate the southern shore of Hall Island. In temperatures descending to −51°C (−60°F), he was lucky to get back alive. On 26 March, he set out on an ambitious attempt to establish just how far north Franz Josef Land extended, sledging up the ice-covered Austrian Sound with seven men and three dogs. By 12 April, he had reached Cape Fligely, the northern tip of Rudolf Island, at 82°05’N. Land and sea are exceptionally difficult to distinguish in the Arctic, especially at this time of year when snow and ice covers both. Far to the north Payer believed that he could see a touch of blue, possibly land, and then, to the northwest, more blue. Suspecting this might be islands or even extensive land-masses stretching toward the North Pole, he named them respectively “Petermann Land” and “King Oscar Land.” Neither, in fact, exists, and at Cape Fligely Payer had traveled as far as land extends in that part of the world. With provisions for just ten days and ever aware that the deadline for Tegetthoff’s abandonment was close, no time remained for further exploration, and Payer had to make his way as rapidly as possible over worsening surfaces to arrive back at the ship on 23
into headwinds that had blown the ice north, nullifying their
never be worked free. For some days, they had been traveling
that there was no hope in returning to the ship, which could
all of W eyprecht’s powers of leadership to convince the others
15 July,
slow progress across the fractured and pinnacled surface when, on
Zemlya. After weeks of effort, they had made desperately slow
they could then sail or row the boats southeast to Novaya
ward the direction of the wind changed to the northwest, and
1872–1874) as well as the International
Geophysical Year (1932–1933) as well as the Interna-
tional Polar Year (1882–1883), the precursor of the Second
International Polar Year (1932–1933) as well as the Interna-
tional Geophysical Year (1957–1958). Weyprecht himself, how-
ever, was to not see his ambitions realized, dying in March
aged only forty-three. Franz Josef Land was next visited by
the British amateur explorer Benjamin Leigh Smith.

See also: Barents Sea; Barents, Willem; Franz Josef Land; International
Geophysical Year; International Polar Years; Koldewey, Karl; Northeast
Passage; Novaya Zemlya; Open Polar Sea; Smith, Benjamin Leigh

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Peary Land (North Greenland)
This northernmost region of Greenland extends for about 200
miles along the Arctic Ocean between Victoria Fjord and the
Greenland Sea. Its northern tip, Cape Morris Jesup (83°33‘N,
33°25‘W), is 440 miles from the North Pole and was first
reached in 1900 by Robert Peary, who named it for Morris
Ketchum Jesup (1830–1908), a merchant banker and leading
sponsor of his expeditions. Some miles offshore, a rock
discovered in 1996 north of Oodaaq Island is now recognized as
the northernmost land in the world at 83°40‘34.8“N. Despite
its location, Peary Land contains the largest area of ice-free
land in Greenland.

James B. Lockwood was the first to enter Peary Land in May
1882. During the expedition led by Adolphus Greely
(1881–1884), he mapped part of the northwest coast as far as
Lockwood Island at 83°24‘N. In 1892, Peary Land was mis-
takenly identified by Peary as a series of islands (“Heilprin
Land,” etc.) separated from the rest of Greenland by “Peary
Channel,” in the belief that Independence Fjord extended west
to join one of the series of fiords previously discovered facing
the Lincoln Sea. When he revisited Independence Fjord in
1895, he was unfortunately unable to investigate this further;
he returned in the belief that his initial impression had been
correct. Peary’s failure to note the land connection north of
Navy Cliff, from where he made his observations, mystified
later expeditions, though the mistake can probably be attrib-
uted to poor visibility. Indeed, as Knud Rasmussen noted, the

Peary Land 509
land connection cannot be seen from Peary's viewpoint. Lud-vig Mylius-Erichsen in 1907 was the first to observe that Navy Cliff is joined to land farther north. Since all three members of Mylius-Erichsen's party died shortly afterward, this fact was not known until independently discovered by Ejnar Mikkelsen, who found a note left by Mylius-Erichsen in 1910, and by Rasmus sen in 1912, Mikkelsen having been unable to communicate what he had learned, cut off in northeast Greenland.

Lockwood's discoveries were extended by Peary, who followed the northwest coast to its northernmost point at Cape Morris Jesup (reached on 13 May 1900) before turning back at Cape Wyckoff. In 1906, Peary briefly visited this region on his way back to Ellesmere Island, having achieved a farthest north in the Arctic Ocean. Three members of Mylius-Erichsen's expedition led by Johan Peter Koch reached Peary Land across the sea ice from Crown Prince Christian Land in 1907 before proceeding on to Capes Wyckoff and Bridgman, thus proving the insularity of Greenland. In 1909, Donald MacMillan was sent by Peary to lay a depot at Cape Morris Jesup, against the possibility that currents in the Arctic Ocean might again bring him to North Greenland on his return from the vicinity of the Pole. In the event, Peary was able to return along his outward route and did not visit Greenland.

After Rasmussen's First Thule Expedition in 1912, knowledge about Peary Land was primarily confined to the northern coast and the southern area, where it abutted Independence Fjord. Since fiords on the west coast clearly led far inland and had not been fully investigated, there yet remained the possibility that one cut through to Independence Fjord, thus making Peary Land an island. This was an issue of some concern to Denmark; if Peary Land was an island, then Danish sovereignty over it could not be assumed. The key figure in proving that it was not an island was Lauge Koch, who accompanied Rasmussen in a detailed survey of the western fiords in 1917 and, four years later, traveled around the coast of Peary Land, mapping as he went. In 1938, he returned to make the first aerial survey. In conditions of perfect visibility, he flew the length of Frederick E. Hyde Fjord before turning back at J. P. Koch Fjord, in the process resolving many issues that had been left unclear from his earlier surveys.

The first expedition to winter in Peary Land was led by Eigil Knuth, who between 1947 and 1950 conducted wide-ranging studies across much of Peary Land from his base in Brønlund Fjord. During this period, and during subsequent expeditions organized by Knuth, much of the interior of southern Peary Land was explored. North of Hyde Fjord, however, the interior remained unvisited until 1953, when the Swiss geologists Erdhart J. Fränkl and Fritz Müller crossed from Friggs Fjord to Sands Fjord and thence to Cape Morris Jesup and back. This region was next visited in 1969, when a British Joint Services Expedition conducted a topographic and geological survey, as well as making the first ascent of Helvetia Tinde (1,920 meters), the highest peak in the Roosevelt Range. Additional first ascents were achieved in this range and the H. E. Benedict Range by American Top of the World Expeditions led by John Jancik in 1996 and 2001.

Undoubtedly, knowledge of Peary Land would be greater than it is today had a major exercise planned by the U.S. military proved successful. Operation Lead Dog was mounted to investigate the possible strategic significance of extensive tracts of ice-free land in northern Greenland, particularly those of Peary Land. In 1958, a long train of tractors and Weasels crossed the Inland Ice from the vicinity of Thule Air Base. Although the crossing went well, the exercise had to be abandoned in 1959 when it proved impossible to find a practicable route down from the ice sheet into Peary Land.

See also: Greely, Adolphus; Greenland, North; Knuth, Eigil; Koch, Lauge; MacMillan, Donald; Mylius-Erichsen, Ludvig (1906–1908); Peary, Robert; Rasmussen, Knud (1912, 1916–1918)

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Peary, Robert (1856–1920)
The American naval officer Robert Peary claimed to have reached the North Pole on 6 April 1909. On previous expeditions he had contributed most significantly to the exploration of northern Greenland, crossing the ice sheet on two occasions and reaching its northernmost point at Cape Morris Jesup. No one did more to establish that Greenland was an island and not part of a polar continent. The Pole, however, was his obsession, and his claimed achievement of it followed a succession of expeditions, during which he gradually refined his techniques for traveling across sea ice, reportedly reaching 87°06′N in 1906—the record farthest north—and then the Pole itself. Not all, however, are prepared to believe Peary's claim; and some believe that in any case he was anticipated by his erstwhile colleague, Dr. Frederick Cook.

Robert Edwin Peary was born in Cresson, Pennsylvania, on 6 May 1856. Graduating in engineering from Bowdoin College in 1877, he signed on with the U.S. Navy four years later as a civil engineer. Driven by desire for fame, he spelled out his personal credo in a private diary as early as 1885. It would be his destiny to be the first man at the North Pole.

A First Trial on the Greenland Ice Sheet, 1886
Peary first visited the Arctic during a short expedition to Greenland. He arranged six months' leave from the navy, and a loan of $500 from his mother enabled him to book passage on the whaler Eagle to Godhavn, where he arrived on 6 June 1886. At this time very little was known about the Greenland ice sheet, and Peary intended to venture onto it as far as he could—to the east coast and back if possible. This would provide an excellent opportunity to test himself and his equipment in Arctic conditions.
Although his original plan was to make a solo journey, which most probably he would not have survived, he was fortunately persuaded to accept the companionship of Christian Maigaard, assistant governor of Ritenbenk. On 28 June, the two set out, heading due east across the ice sheet. Having traveled almost 100 miles and attained an elevation of 2,294 meters, they turned back on 19 July with food for just another six days. Although Peary had reached less far than two Saami on Adolf Erik Nordenskiöld’s expedition of 1883, his was the second-deepest penetration; on the basis of what he had learned, he was now confident of completing a crossing during his next expedition. This, however, could not take place for several years, as his naval duties took him to Nicaragua to survey possible routes for the future Panama Canal. In the meantime, Fridtjof Nansen achieved the first crossing of Greenland in 1888.

Across the Ice Sheet to the North Coast of Greenland, 1891–1892

In April 1886, before setting out on his first expedition, Peary had read a paper to the National Academy of Sciences in Washington, D.C., suggesting two possible routes across Greenland. The first route he would attempt later that year, a west-east crossing of 400 miles across the southern part of the ice sheet. The second was to set out from Whale Sound in northwest Greenland across the ice in an attempt to discover whether Greenland was actually the southern tip of a polar continent extending far to the north—to the North Pole and beyond, according to some—or was but a very large island terminating in an unknown coast beyond the ice sheet. His second expedition was to explore this challenging second route.

Backed by the American Geographical Society, the Philadelphia Academy of Natural Sciences, and the Brooklyn Institute of Arts and Sciences, Peary managed to obtain leave of absence from the navy and departed from Brooklyn, New York, in the 280-ton sealer Kite on 6 June 1891. Controversially, among those selected for his wintering party was his wife, Josephine, whom he had married in 1888. She was to serve as cook and dietitian. The other members were Dr. Frederick Albert Cook (surgeon and ethnologist), Eivind Astrup (ski expert), Langdon Gibson (ornithologist and hunter), John M. Verhoeff (mineralogist and meteorologist), and Peary’s assistant, Matthew Alexander Henson. Henson had been employed by Peary since 1887. He was to accompany him on all of his later expeditions, becoming a more than competent polar traveler on whom Peary was increasingly to rely. A condition of support from the Philadelphia Academy was that a nine-man team of scientists, led by geologist Dr. Angelo Heilprin, join his expedition each summer.

Some days before Kite reached Whale Sound on 23 July, Peary’s leg was broken just above the ankle in a freak accident. He had to be brought ashore strapped to a board. There was no question, however, of not going ahead with the expedition, whose winter quarters—Red Cliff House—was established in McCormick Bay before Kite departed on 30 July. With Peary able to do little until his leg healed, Gibson, Cook, Verhoeff, and Astrup were sent on a boat trip to Herbert, Northumberland, and Hakluyt Islands to hunt and to make contact with the Inuit. Maintaining good relations with the Inuit was essential to Peary’s plans, and they were encouraged to set up their camps near Red Cliff. From them, Peary in particular needed fur clothing, dogs, and instruction in dog handling. For that reason he had chosen a relatively southerly base, close to a well-populated region, rather than farther north, where previous expeditions had wintered. During September the first journeys were made onto the ice sheet to lay depots, the farthest being no more than 30 miles inland.

By February 1892, Peary’s leg was fully recovered, and he was ready to undertake reconnaissance journeys. Assisted by an Inuit dog handler, he and Josephine visited Inuit communities in the vicinity of Whale Sound and Inglefield Gulf between 18 and 24 April to purchase what they needed. All was now ready for the attempt to cross the ice sheet; it began on 3 May as Peary set out with twenty dogs accompanied by Astrup, Cook, and Gibson. Having traveled 150 miles, Cook and Gibson were sent back, leaving Peary and Astrup to continue with thirteen dogs. On 4 July, they found themselves on top of Navy Cliff, well over 1,000 meters high, looking down on Independence Fjord, which appeared to Peary to be prolonged into a channel to the west cutting off Greenland from the land beyond. Convinced that he had proved Greenland’s insularity by discovering its northern coast, Peary turned back to arrive at his winter quarters on 6 August, having traveled 1,250 miles—four times longer than Nansen’s crossing. Kite was already there with the scientific party. As exploration continued along the coast, Verhoeff failed to return. He had repeatedly ignored Peary’s warnings about traveling alone on glaciers and was last seen making his way over a glacier back to Red Cliff House. Six days were spent in a fruitless search before Kite sailed for home on 24 August.

Ice and Meteorites in Northwest Greenland, 1893–1895

On the basis of his achievements during the previous expedition and with the help of influential contacts, Peary now obtained three years’ leave of absence from the navy. Much of the necessary funding he raised himself through public lectures, speaking 165 times in 103 days on an exhausting tour in which the fur-clad Henson and his dog team proved especially popular. Peary planned to extend his previous discoveries by leading eight men across the ice sheet to Independence Fjord. There, they would divide into three parties. Accompanied by two others, he would head north across “Peary Channel” to “Heilprin Land,” traveling as far as the Pole, should it prove practical. Another three-man party would follow the coast southeast to Cape Bismarck, the northernmost point known on Greenland’s east coast, which had been reached by Karl
Koldewey in 1870. Meanwhile, two others would hunt muskoxen to lay in a store of meat for the return journey.

To match his expedition’s more ambitious aims, Peary increased the size of his wintering party from seven to fourteen, though one of them, the nurse Susan J. Cross, was required to serve only as companion and midwife to Josephine, who was heavily pregnant but nevertheless insisted on accompanying her husband. Along with Astrup and Henson, the party was made up by Samuel J. Entrikin (second-in-command), Dr. Edwin E. Vincent (surgeon), Evelyn Briggs Baldwin (meteorologist), George F. Clarke (taxidermist), Frederick W. Stokes (artist), and assistants George H. Carr, James Davidson, Hugh J. Lee, and Walter F. Swain.

Leaving Philadelphia on 26 June 1893, *Falcon* had reached Inglefield Gulf by 3 August; Bowdoin Fjord was selected as the site of Anniversary Lodge, the expedition’s winter quarters. Depot-laying journeys began soon after *Falcon*’s departure on 20 August, though bad weather and an outbreak of food poisoning meant that no depot was more than 30 miles distant when this work was abandoned on 9 November. On 12 September, Josephine gave birth to Marie Ahnighito, whose pure white skin soon caused the Inuit to nickname her “Snow Baby.”

The main journey began on 6 March 1894, Peary setting out with twelve sledges and ninety dogs accompanied by twelve men, including five Inuit. This formidable force did not travel far. In deep cold, which intensified as they ascended the ice sheet, two of the party broke down and had to be taken back as far as possible to examine the state of the depots laid earlier in the year. Worryingly, the 3-meter poles placed to mark their locations were already almost buried under the snow. This boded ill for the coming sledging season, especially if the big depot 128 miles distant from Anniversary Lodge could not be found.

On 1 April 1895, Peary and his two companions set out with sixty-five sledge dogs accompanied by six Inuit. As they journeyed across the ice sheet, they were able to locate only one of the ten depots established on his previous journey, and this was not the major store at 128 miles. To go on now would be to gamble their lives on finding muskoxen in the vicinity of Independence Fjord. The remaining four Inuit were sent back, but Lee and Henson were prepared to take the risk and continue with Peary. It took them five weeks to reach Independence Fjord, and once at that location there was little time to extend Peary’s explorations in 1892, so urgent was the need to hunt muskoxen. Fortunately, some were soon found in numbers, enabling Peary to make a brief visit to Navy Cliff, which appeared to confirm what he had seen in 1892. He was also able to see the termination of the ice sheet. Anyone going on from here toward the Pole would need to find another way north. The return journey began on 1 June. With more than 600 miles to travel and a strictly limited supply of food for his two companions and nine dogs, Peary decided to reserve the meat for the dogs to keep them going as long as possible while the men made do with biscuits. On 23 June, three starving men and one dog reached Anniversary Lodge.

*Four Futile Years on Ellesmere Island, 1898–1902*

Having failed to extend his previous discoveries, Peary brought little for his sponsors other than the two smaller meteorites, which he had managed to collect on his voyage south in *Kite*. They were placed on exhibit in the American Museum of Natural History. In 1896 and 1897, Peary organized further expeditions to collect the largest meteorite, which weighed nearly 100 tons. Eventually receiving $40,000 for the meteorites, he was also to be paid for several Inuit skeletons. When five of the six living Inuit brought by him to New York succumbed to pneumonia, their bodies too were not long afterward placed on display in the Museum (Harper 1986).

By such means and through lecturing, Peary accumulated funds toward his next expedition—an attempt to reach the North Pole from Greenland. Having established his base as close as possible to the Pole, he planned to wait for a favorable year, when reaching it should be straightforward. The key was...
to be in the right place at the right time. The bulk of the financial backing was to be supplied by the Peary Arctic Club, a group of wealthy New Yorkers who had been persuaded to invest $4,000 each by Morris K. Jesup, president of the American Museum of Natural History. Obtaining the necessarily lengthy leave of absence from the navy proved difficult, but this was eventually granted following an appeal to President William McKinley. Peary’s plan depended on his ship being sufficiently powerful to force its way through the ice-choked passages north of Smith Sound to the Arctic Ocean. To that end, the British newspaper magnate Alfred Harmsworth had offered to have new engines installed in Windward, Frederick Jackson’s expedition vessel. Unfortunately, work was delayed by a strike; Peary, running out of time, had to request its departure before the work could be done.

As Windward headed north from New York, Peary departed from Sydney, Nova Scotia, on 7 July 1898 in the supply ship Hope accompanied by two companions, Henson and the surgeon Dr. Thomas S. Dedrick. The two vessels met up at Etah, from where Hope returned home, while Windward picked up several Inuit families and their dogs before attempting to force passage through Kane Basin with its puny 25-horsepower engine. It was eventually to reach Allman Bay, Ellesmere Island, near 79°30’N. Peary had no option but to set up his winter quarters on Cape D’Urville, 250 miles south of Fort Conger, where Adolphus Greely had been based between 1881 and 1883. This was a discouraging start, and Peary’s spirit was not improved on 6 October by a meeting with Otto Sverdrup, whose well-equipped expedition was wintering close by; Sverdrup also nurtured ambitions to explore farther north. Spurred on by this encounter, Peary decided that he must establish himself at Fort Conger as soon as possible, certainly before Sverdrup became so inclined. Following several depot-laying journeys, Peary set out for Fort Conger on 20 December accompanied by Dedrick, Henson, and four Inuit. At this darkest time of the year, the only light was provided by the moon, which for two weeks in every month circled above the horizon. In temperatures descending to −54.44°C (−66°F), the party experienced extreme difficulty in finding Fort Conger, which they finally located in pitch darkness on 6 January 1899. Seven of Peary’s toes were badly frostbitten and had to be amputated. For several months Peary was unable to walk and he had to be pulled back on a sledge to Windward, where all except the little toes on both feet were removed in a further operation. Concerned that he must have something to show for his year’s activity, he insisted on setting out again for Fort Con-
ger on 19 April to bring back the records left there by Greely. When Windward was finally released by the ice in August, it took those records south together with the results of Peary's survey of the local area.

After wintering at Etah, Peary was back at Fort Conger by 28 March 1900. From there, he planned to explore the north coast of Greenland as far as he could and, from its northernmost point, make an attempt on the Pole. On 11 April, he set out across Robeson Channel accompanied by Henson and five Inuit. Along this coast no one had explored beyond Cape Washington, which James Lockwood had approached during Greely’s expedition. By 8 May, Peary was past this point and concluded that his period of leave was drawing to an end, Peary, together with Josephine and Marie Peary on board, had reached Etah, where it was joined by the supply ship Windward, which James Lockwood had approached during Greely’s expedition. By 8 May, Peary was past this point and relieved to see land extending still farther north, culminating in a cape that he named for his most loyal sponsor, Morris K. Jesup. From there, he sledged over the sea ice to reach 83°50’N in a cape that he named for his most loyal sponsor, Morris K. Jesup. From there, he sledged over the sea ice to reach 83°50’N on 16 May. Although far short of Fridtjof Nansen’s record farthest north of 86º13’N in 1895, this was Peary’s first extended journey over sea ice and his first use of supporting parties. Returning to land, he continued east to Cape Wyckoff on 20 May, turning back two days later, having discovered 150 miles of new coastline.

A period of extended inactivity followed. Arriving back at Fort Conger on 10 June, Peary was to undertake no significant journey until 5 April 1901, when a desultory attempt was made to travel north toward the Pole at a time of year when it must have been clear that there was no prospect of getting far, since the sea ice was already breaking up. Indeed, within eight days, Peary had decided that it was a mistake, turning back before he had even reached the Arctic coast. Meanwhile, Windward, with Josephine and Marie Peary on board, had become beset some way farther south in Payer Harbor, during what had been intended as a summer supply voyage. There it had been forced to winter. When Peary finally learned of this, he sledged south to join his wife and daughter on 6 May. On 3 July, Windward broke out of the ice, steaming to Etah, where it was joined by the supply ship Erik on 4 August. Both ships headed south at the end of the month, leaving Peary to winter at Payer Harbor.

Reinvigorated by the time spent with his wife and aware that his period of leave was drawing to an end, Peary, together with Henson and four Inuit, set out on 6 March 1902 to make one last attempt to reach the Pole. After halting briefly at Fort Conger, he continued along the coastal ice to Cape Hecla, heading north to achieve 84º17’N on 21 April. This was 27 nautical miles farther than in 1900 but still 137 miles short of the new record of 86º34’N, achieved that same year by Umberto Cagni on the Duke of Abruzzi’s expedition.

Farthest North, 1905–1906

For Peary’s sponsors, the results of his latest expedition were even more disappointing than those he had reported in 1895. They had backed him to reach the Pole, and he had been outdistanced by the Italians, a nation not previously noted for polar expertise. As for new discoveries, apart from his 1900 Greenland journey, he had little to set against the impressive achievements of Sverdrup’s Norwegians. Despite this, the members of the Peary Arctic Club were persuaded to sponsor another attempt on the Pole, the critical factor being the personal enthusiasm of President Theodore Roosevelt.

Even with new engines fitted in 1902, Windward was clearly inadequate for Peary’s needs. It was essential that he have a ship capable of reaching the Arctic Ocean. For this, powerful engines and reinforced bows were not enough; a rounded hull—modeled on Nansen’s Fram—was needed, enabling the ship to rise up above the ice pressure rather be crushed within it. The Peary Arctic Club guaranteed half of the $50,000 required, if Peary could raise the rest. Roosevelt was launched in March 1905. It was to be captained by Robert Bartlett, one of an extensive clan of Newfoundland sealers and whose relatives Henry, John, and Samuel had all captained vessels on Peary’s previous expeditions. In addition to the ever-present Henson, Peary’s party included surgeon Dr. Louis J. Wolf, secretary and assistant Ross G. Marvin, and the steward Charles Percy.

Departing from New York on 16 July 1905, they reached Etah on 16 August. There, additional coal and other stores were taken on from the supply ship Erik, together with sixty-seven Inuit, many of them women and children, as well as some two hundred dogs. Roosevelt now headed north through Kane Basin, meeting very heavy ice in Robeson and Kennedy Channels but still managing to force its way through to Cape Sheridan, Ellesmere Island, on 5 September. This promising start was followed by near-disaster when eighty dogs died after eating bad whale meat. To feed them and the expedition, Peary was now even more dependent on the fishing and hunting camps established through the winter by the Inuit around Lake Hazen.

On 21 February 1906, Peary began his attempt on the Pole, slogging along the north coast of Ellesmere Island to Cape Hecla, where he met up with his six colleagues and twenty-one Inuit. He divided them to form five supporting parties, and on 28 February the first group set out across the sea ice north from Point Moss. Each party was led by an expedition member, with two or three Inuit and twenty dogs. For much of the way Henson led the first group, his role being to cut a path for the following parties, which transported the bulk of the supplies. Peary’s party was kept fresh for the final push to the Pole and did not leave Point Moss until 6 March. Initially, all went according to plan until 20 March, when Peary caught up with Henson and the other parties at 84º30’N, where they had been halted by a lead more than 400 meters wide. After being held up for six days, they were trapped in their tents by a blizzard three days later. This lasted for six days, while all this time the ice drifted rapidly east. Appreciating that the Pole was now beyond him, Peary sent all parties back, but his and Henson’s, determined to establish at least a new record farthest north.
Just how far he got is subject to dispute. On 21 April, he claimed to have reached 87°06’N, but on the basis of an analysis of inconsistencies between the published account and Peary’s typescript diary, Wally Herbert (1989) doubts that he got so far, though accepting that he most probably did exceed Cagni’s 86°34’N.

The return journey was exceptionally perilous. They had been carried far to the east, and when land was reached it was not Ellesmere Island but Cape Neumayer, Greenland. They were almost out of food, but at least there were muskoxen to be shot. Shortly before landing, Peary met up with the supporting party led by the fireman Charles Clark. Even more desperate for food than Peary’s party, they had been reduced to eating their spare skin boots.

By late May, Peary was back at Roosevelt, remaining just one week before setting out again on 2 June, this time with the intention of exploring the north coast of Ellesmere Island between Yelverton Bay, the farthest point surveyed by Pelham Aldrich in 1876 during George Nares’s expedition, and Landslok, Kleybolte Peninsula, the northern limit of Sverdrup’s discoveries in 1902. By 16 June, he was past Yelverton Bay and exploring undiscovered coastline. Ten days later, having reached the northern tip of Axel Heiberg Island, Peary believed that he could see land in the far distance. This he named “Crocker Land” for George Crocker, one of the most generous members of the Peary Arctic Club. Donald MacMillan was later to prove that no such land existed.

Meanwhile, Bartlett had successfully broken Roosevelt out of the ice and begun the voyage south through Robeson Channel. There, however, it suffered severe damage; it was being patched at Cape Union when Peary came aboard on 30 July. At Etah, Roosevelt was beached to have its rudder repaired. It was still far from seaworthy when it set out for Sydney, being fortunate not to sink on several occasions before finally arriving there on 23 November.

**The North Pole, 1908–1909**

Although he had failed to reach the Pole, Peary’s expedition was regarded as highly successful. His farthest north was 32 nautical miles beyond the previous record, and it now appeared that with the “Peary system”—essentially the use of supporting parties—he had developed a practical method for achieving the Pole. President Roosevelt obtained three years’ leave for Peary from the navy, and the Peary Arctic Club raised much of the necessary funding despite the death of Jesup, the club president. The major cost was the repair of Roosevelt. Fitting it with new boilers proved more time-consuming than anticipated, and as a result Peary had to set back his departure date from 1907 to 1908. This was to prove critical. Frederick Cook, who had accompanied Peary to northwest Greenland in 1891–1892, was known to have gone north on a supposed hunting expedition. Soon rumors were circulating that his actual intention was to make an attempt on the Pole, which by now Peary regarded as his own personal prerogative—especially if it involved use of “his” Inuit and “his” route, as he viewed the passage north of Smith Sound. Before he set out from New York on 6 July 1908, the rumors were confirmed by John Bradley, Cook’s sponsor.

Roosevelt reached Cape York in early August, picking up fifty Inuit along with 246 dogs. Erik’s stores and coal were transferred off Etah, where Cook’s traveling companion, Rudolph Franke, came aboard, desperate to be shipped home. After cross-examining him as to Cook’s movements, Peary took over Cook’s hut at Anoritok, leaving two men behind to guard its contents. From what he had learned, Peary was pretty sure that Cook would not succeed in reaching the Pole, but having heard stories that Cook’s claimed first ascent of Mount McKinley was a fraud, he suspected that Cook might claim reaching the Pole as well.

On 18 August, Roosevelt entered Kane Basin to reach Cape Sheridan on 5 September. During the fall, a large depot was accumulated at Cape Columbia, the planned departure point for the polar journey. Through the winter, the expedition was kept well-supplied with fish and meat by the Inuit, camped again around the shores of Lake Hazen.

On 15 February 1909, Bartlett set out with the first supporting party. His role was to break a trail, aiming at 10 miles each day, on the assumption that this was the farthest the following parties could haul their heavy sledge loads. The other parties were led by George Borup, Ross Marvin, Donald B. MacMillan, and Dr. John W. Goodsell, with Peary heading the last group to depart on 22 February. In all, twenty-four men were to participate, with nineteen sledges pulled by 133 dogs. By 1 March, Peary had traveled the 90 miles to Cape Columbia and was ready to set out toward the Pole. For the first three days all went well, but at the fourth camp Peary caught up with Bartlett at the “Big Lead”—clearly a permanent feature in this region—which he was unable to cross until 11 March. Three days later, Goodsell’s team turned back at 84°29’N. MacMillan headed back the following day. Five days later, it was Borup’s turn at 85°23’N and then, after another six days, Marvin’s. It was now 26 March, and they were at 86°38’N. Bartlett accompanied Peary to 87°47’N, turning back on 1 April. Besides Peary, the Polar party consisted of Henson and four Inuit from Etah—Ootah, Egingwah, Seegloo, and Ooqueah. They had with them five sledges and forty dogs.

What happened following Bartlett’s departure has long been the subject of intense controversy. According to Peary, the Pole was reached on 6 April, and he remained in its vicinity for the next thirty hours to ensure that his calculations were correct, conducting numerous observations with his sextant. Having confirmed that he was indeed at the Pole, he made a very rapid return to Cape Columbia—reached on 23 April—and to Roosevelt two days later. There, Peary was informed that Marvin had died after falling through young ice covering the “Big Lead.” (He had in fact been murdered, as one of the two
Inuit dog drivers with him was later to confess.) On 18 July, Roosevelt steamed south from Cape Sheridan to land the Inuit at Cape York, Peary delaying there as usual to help lay in large stocks of walrus meat for the winter. Only on 6 September was he able to announce his achievement, landing at Indian Harbour, Labrador, to send telegrams to his wife and the Peary Arctic Club before continuing on to Sydney, where he arrived on 21 September.

Did Peary in fact reach the Pole? From Bartlett’s observation on 1 April, we have independent confirmation that by this date Peary had achieved 87°47‘N. Bartlett estimated that from there it would take him eight days to reach the Pole, assuming marches of similar length to those achieved immediately prior to his return. Peary claimed to have reached the Pole in five days. The increase in speed he attributed to the improved going, and indeed other explorers too have reported easier surfaces nearer the Pole (e.g., Will Steger in 1986). Again, we have independent confirmation that a sufficient distance was traveled in the form of Henson’s estimate that they had gone far enough to be at the Pole. Although Henson was not a trained navigator, his corroboration should not be discounted in light of his long experience in ice travel.

Yet the distances claimed by Peary after Bartlett’s departure, and particularly on the return journey, are much greater than those achieved by any other explorer in comparable circumstances—and this has led some to have serious doubts about Peary’s claim. Undoubtedly, Peary’s return journey was rapid, since he reached Roosevelt only three days after Bartlett, despite turning back six days later. Clearly, the less far he traveled beyond Bartlett, the less remarkable his speeds, especially given that Peary himself had to be carried back on the sledges, adding an additional burden for the dogs. At least equally serious grounds for skepticism relate to Peary’s navigation. This is a highly technical subject, and whereas some (e.g., Thomas Davies 1989 and William Molett 1996) argue that his methods were adequate to locate the Pole, others (e.g., Dennis Rawlins 1973 and Wally Herbert 1989) note that no observations were made for longitude on his way north and that therefore he had no means of knowing where precisely he was and, most particularly, no means of knowing the extent to which the drift of the ice was taking him off his course. As with the diary for Peary’s 1905–1906 expedition, Herbert notes discrepancies between Peary’s personal journal and the published account.

He concluded, after detailed analysis, that at best he probably came no closer than 50 miles to the Pole. If so, this would explain Peary’s behavior both at the “Pole” and upon his return to Roosevelt, when he appeared strangely reluctant to announce that the Pole had indeed been reached.

On previous occasions the claimed achievements of explorers were accepted on the basis of their word alone. What was different this time was that Cook too had announced that he had reached the Pole, almost one year before Peary, and Peary had responded by denying his claim and calling upon him to produce evidence to support it. This Cook could not do. But when Peary was also asked to provide proof, it appeared that he himself could not do so. Sufficient proof would have been a well-kept journal, including frequent navigational observations. Peary’s journal, however, included only a few observations for latitude and none for longitude, and the crucial entries for 6–7 April, when he was said to have been at the Pole, were left blank; in fact, Peary’s thoughts on reaching his “life’s goal” were recorded on a detached page, which could have been written at any time. Fortunately for Peary, he had friends whose influence and mastery of the media eventually ensured the hounding of Cook as an imposter and official recognition of Peary’s claim first by the National Geographic Society and then by Congress, which recommended his promotion to rear admiral. Unlike Cook, Peary was to live out his life in distinguished retirement, but he too was never to silence his doubters.

See also: Abruzzi, Luigi Duke of; Axel Heiberg Island; Bartlett, Bob; Cook, Frederick; Ellesmere Island; Farthest North; Greely, Adolphus; Greenland, Inland Ice; Greenland, North; Inuit Contribution to Polar Exploration; Jackson, Frederick (1894–1897); Koldewey, Karl (1869–1870); MacMillan, Donald; Nansen, Fridtjof; Nares, George (1875–1876); Nordenskiöld, Adolf Erik (1883); North Pole; Peary Land; Ross, John (1818); Steger, Will (1986); Sverdrup, Otto (1898–1902)

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Peel Sound (Canada)

This 30-mile-wide channel between Prince of Wales and Somerset Islands leads south 125 miles from Barrow Strait into Franklin Strait. It was named in 1851 by Horatio Austin for Sir Robert Peel (1788–1850), former prime minister of Great Britain. It had in fact been discovered and sailed through five years earlier by Sir John Franklin. The sound is clogged by ice during most years. In 1846, Sir John Franklin found it open, enabling him to sail as far south as about 74°43‘N, where his vessels Erebus and Terror were beset in...
Victoria Strait off King William Island. Three years later, Sir James Clark Ross sledged along the eastern shore as far as 72°38′N. Observing ice extending right across the sound, Ross drew the unfortunate conclusion that it was never sufficiently open to be navigable. This view was shared by William Browne of Austin's expedition, which traveled along the western shore in 1851. Browne indeed suspected that it was frozen to the bottom, with little if any current to help break up the ice even in late summer. William Kennedy crossed Peel Sound from Somerset Island in April 1852. He believed that he saw land blocking the sound farther north. As a result of these erroneous observations, subsequent Franklin search expeditions concentrated on regions farther north.

By the late 1850s, it was clear that the earlier reports were almost certainly mistaken and that Franklin had sailed through Peel Sound, since his expedition was known to have met its tragic end in the vicinity of King William Island. In August 1858, Leopold McClintock attempted to sail through the sound but penetrated only 25 miles before being forced to turn back by ice stretching from shore to shore. He described it as much decayed and of one year's growth only, but he could not afford to wait for it to break up. Allen Young, however, was sufficiently encouraged by what he saw to make another attempt in 1875. Completing only the second transit after Franklin, Young succeeded in getting as far as the De la Roquette Islands in Franklin Strait before being turned back by solid ice.

The Franklin search was conducted at a time when temperatures were on average 1–2°C lower than those at the turn of the twenty-first century. Amundsen was fortunate in making his transit of the Northwest Passage after the Little Ice Age had come to an end, and he found very little ice here in August 1903. Peel Sound remains a favored route for small boat transits of the Passage. Those passing through in recent years include Willy De Roos in 1977, John Bockstoce in 1980, and Jeff MacInnis in 1987.

See also: Amundsen, Roald (1903–1906); Austin, Horatio; Franklin, John (1845–1848); Franklin Search Expeditions; Kennedy, William; Northwest Passage; Ross, James Clark (1848–1849)

Pendleton, Benjamin
(fl. 1820s–1830s)
The experienced American sealing captain Benjamin Pendleton led two fleets from Stonington, Connecticut, to the South Shetland Islands and was responsible for sending Nathaniel Palmer on exploratory voyages during which important discoveries were made. With Palmer, he later led a third sealing voyage to those islands; they also searched for the mythical Swain's Island.

A Sealing Voyage to the South Shetland Islands, 1820–1821
Hersilia returned to Stonington on 21 May 1820 with its valuable cargo of sealskins from the South Shetlands and triggered a stampede among New England ports to send off sealing vessels in time for the next season. Benjamin Pendleton, in the 147-ton brig Frederick, was already on his way to the Falkland Islands, to where he had probably been sent in advance to investigate previous rumors of the discovery of new land far south. In his absence, a fleet of four other vessels was readied—the 131-ton brig Hersilia, 138-ton schooner Express, 52-ton schooner Free Gift, and 44-ton sloop Hero—and word was sent to Pendleton that they should meet up at Rugged Island off western Livingston Island. By 13 November, all vessels were at New Plymouth opposite Rugged Island, but with their anchorage being exposed to possible northwest gales, Pendleton sent Palmer to look for a better harbor and more seal beaches. It was during this voyage that Palmer discovered several fine harbors, including Yankee Harbor on Greenwich Island, and sighted the Antarctic Peninsula. On Palmer's return, Pendleton moved the fleet to Yankee Harbor on 24 November, where it remained until 22 February 1821, when it sailed for Stonington with a rich cargo of sealskins. There is some mystery about the movements of Pendleton himself in January 1821, and there is the possibility that he participated in an exploratory voyage, probably with Palmer in Hero, and possibly reaching as far south as 66°S or 68°S (see Palmer, Nathaniel).

Return to the South Shetlands, 1821–1822
The following season, Pendleton commanded a fleet of six ships. Hersilia had been captured by Chilean patriots during its return voyage the previous year; the remaining vessels were as before, with the addition of the 147-ton brig Alabama Packet and the 80-ton James Monroe, the latter captained by Palmer. The fleet reached Deception Island in late October and early November. Fur seals were scarce, and Pendleton sent out his three smallest vessels—James Monroe, Free Gift, and Hero—on exploratory voyages to look for new seal beaches. With no surviving logs for Free Gift and Hero, we know little of what they found. Palmer's discoveries are described in the entry under his name. The fleet left Deception on 30 January 1822, their holds still unfilled. Pendleton made up his cargo by hunting hair seals along the Chilean coast, and as a result his voyage made a small profit, but insufficient to encourage the dispatch of further fleets.

Precursor of the United States Exploring Expedition, 1829–1832
Pendleton's final voyage to the South Shetlands resulted from the campaigning efforts of Jeremiah N. Reynolds, an Ohio congressman, in favor of a government-sponsored expedition to the far south. Ultimately, Reynolds's agitation was to lead to the United States Exploring Expedition of 1838–1842 (see Wilkes, Charles). But long before that, Reynolds had managed to persuade President John Quincy Adams of the need for an expedition, only to have his proposals rejected by the incom-
In his search for new whaling grounds in Baffin Bay, the enterprising Scottish whaler William Penny made a significant contribution to knowledge of southeast Baffin Island. In particular he rediscovered Cumberland Sound, which had remained unvisited by any European since first discovered by John Davis in 1585. When contact was lost with Sir John Franklin’s Northwest Passage expedition, Penny offered to assist the search effort, demonstrating that Franklin had wintered on Beechey Island and conducting the first systematic exploration of Wellington Sound.

Cumberland Sound Rediscovered, 1832–1840

Penny’s birthplace, Peterhead, was Scotland’s leading whaling port for much of the nineteenth century, just twelve years old when he undertook his first whaling voyage to the Greenland Sea, Penny had risen to mate by age twenty. He witnessed firsthand the disastrous year of 1830, when nineteen whaling vessels sank and twelve more were seriously damaged in Melville Bay off the west coast of Greenland. Penny was not put off this experience and, two years later, persuaded his captain, George Simpson, to investigate Lancaster Sound when the fishing proved poor off Pond Inlet. As a result, a large number of whales were killed and a new area opened up to whaling. The catch was better the next year, enabling Penny to persuade Simpson to allow him to investigate Inuit reports of a large bay farther south where whales abounded. Penny went with two Inuit in a boat to discover Exeter Sound and sailed 30 miles into it before being forced to return by contrary winds. Opportunities for exploration were limited by the natural concern of whaling companies that each vessel return with the largest possible catch. The 1830s were a difficult time for the British whaling industry, and many companies incurred crippling losses during a series of bad ice years—1830, 1835, and 1836—when many ships were wrecked and others forced to winter in the ice. In such circumstances, exploration was viewed as a luxury despite the potential profits to be made from discovering new whaling grounds. Thus, it was not until 1839 that Penny, now captain of Neptune, had opportunity to follow up reports of a large inlet known to the Inuit as “Tenudiakbeek.” Accompanied by four Inuit, he explored Exeter Sound to its termination. Realizing that this was not “Tenudiakbeek,” he had the good fortune to fall in with an Inuk named Eenoolooapik, who had actually been born in “Tenudiakbeek.” From Eenoolooapik’s description, Penny concluded that this must be Davis’s long-lost Cumberland Sound. Eenoolooapik agreed to come with him to Scotland to help persuade Neptune’s owner, William Hogarth, for once to sponsor an exploring expedition. Hogarth, however, was not persuaded, and with Neptune withdrawn from whaling, the best that Penny could do was undertake another whaling voyage in Bon Accord, having obtained permission from its owner to search for “Tenudiakbeek” if time permitted at the end of the season. It proved to be a bad ice year, but in late July Penny got within 10 miles of the coast to discover a large opening not shown on
his charts. Once within it, Eenoolooapik was able to confirm that this was indeed “Tenudiakbeek.” At first, no whales were seen, but the local Inuit asserted that they would arrive with the fall, as indeed they did in early September, when large numbers migrated into the sound. Unfortunately for Bon Accord’s owner, Penny failed to take a single whale. Not for the last time, a voyage of great geographical significance proved a commercial disaster, bringing a temporary end to the Aberdeen whaling industry.

Searching for Franklin on Beechey Island and in Wellington Channel, 1850–1851
For three years Penny was deprived of a vessel. At last able to resume whaling in 1844, he had no time for exploration, spending the early part of the season off Pond Inlet and the fall in Cumberland Sound. Returning once more to Baffin Bay in 1847 in St. Andrew, he decided to investigate north of his usual fishing grounds and explore Lancaster Sound, hoping to obtain whales as well as news of Franklin. The latter had been last seen in July 1845, and there was increasing concern that he might have run into difficulties. Adverse winds and a strong swell stopped St. Andrew from penetrating far, and Penny was not able to obtain any news of Franklin from the Pond Inlet Inuit, but his was the first expedition to search for Franklin. The next year, he returned to Lancaster Sound in Advice with Robert Good sir on board, the brother of one of Franklin’s surgeons. This time, he was turned back by ice and unable to investigate incorrect rumors circulating at Pond Inlet that Franklin had been found alive.

Penny had some cause to believe he was as qualified as anyone to bring assistance to Franklin. Once back in Scotland, he wrote to Sir John’s wife, Lady Franklin, offering his services in any future expedition. He made a similar approach to the Admiralty. Lady Franklin was keen to take up his offer, and such was the popular mood that the Admiralty was persuaded to make the highly unusual gesture of granting a whaler command of an official naval expedition. Thus it was that on 13 April 1850 Penny sailed for the Arctic in the brigs HMS Lady Franklin and HMS Sophia, the latter named for Sophia Cracroft, Lady Franklin’s niece and loyal companion; it was captained by Alexander Stewart. Penny’s instructions were to search for Sir John in Jones Sound, Wellington Channel, and beyond Cape Walker.

Once reached, Jones Sound was found to be blocked by ice, and Penny therefore entered Lancaster Sound to join a veritable armada of search vessels, including a naval squadron of four under the command of Horatio Austin. Austin and Penny were to enjoy an uneasy relationship, but matters began well when two of Austin’s ships discovered evidence of Franklin in the vicinity of Beechey Island. At first, the cairns, campsite, broken bottles, and other rubbish were interpreted as having been left by a small party traveling east on foot. Penny, how-
ever, was able to demonstrate that this was the site of Franklin's winter quarters when his men discovered three graves, dated January and April 1846. Once an exhaustive search had been conducted of the island, Penny next attempted to get beyond Cape Walker, only to meet dense ice in Barrow Strait, compelling him to winter in Assistance Bay on the south coast of Cornwallis Island. Austin wintered nearby, enabling the two to discuss plans for the following spring when Austin would search the islands south and west for signs of Franklin while Penny concentrated on Wellington Channel.

The first sledging parties departed on 17 April 1851. Deciding to search the west shore himself with Goodsir, he assigned the east shore to Stewart, surgeon Peter Sutherland, and mate John Stuart. Penny accompanied Goodsir for part of the way, then separated to discover Queen's Channel, an area of open water north of Cornwallis Island. Goodsir continued around Cornwallis but was prevented from completing a circuit by open water in McDougall Sound. Penny returned later with a boat to discover several smaller islands in Queen's Channel and landed on the Grinnell Peninsula of Devon Island. He was particularly excited by finding a piece of English elm. This surely could only have come from one of Franklin's ships, meaning that he must have sailed through Wellington Channel. Meanwhile, Stuart found evidence of a former Franklin campsite near Caswall Tower, Radstock Bay, while Stewart and Sutherland explored the west coast of Devon Island to Cape Becher and looked for a strait connecting with Jones Sound.

Penny had seen enough to convince him that Wellington Channel held the key to Franklin's whereabouts. On 11 August, he petitioned Austin to allow him use of one of his two steamers. Unfortunately, relations between the two men, always uneasy, had deteriorated to such a point that a blazing row broke out. Austin considered that there was nothing more to be learned in Wellington Channel, and Penny—never an articulate man—failed to communicate his true purpose, which was to explore the region beyond the channel. Having failed to make his case, Penny considered that he could achieve nothing more in the Arctic and headed back to London. Although the naval inquiry into the dispute ruled against Penny and in favor of Austin, it is noteworthy that Penny's supporters included Sherard Osborn, one of Austin's officers, as well as Lady Franklin and John Barrow Jr. More significant still, when the next search party of the island, Penny next attempted to get beyond Cape Walker, only to meet dense ice in Barrow Strait, compelling him to winter in Assistance Bay on the south coast of Cornwallis Island. Austin wintered nearby, enabling the two to discuss plans for the following spring when Austin would search the islands south and west for signs of Franklin while Penny concentrated on Wellington Channel.

The first sledging parties departed on 17 April 1851. Deciding to search the west shore himself with Goodsir, he assigned the east shore to Stewart, surgeon Peter Sutherland, and mate John Stuart. Penny accompanied Goodsir for part of the way, then separated to discover Queen's Channel, an area of open water north of Cornwallis Island. Goodsir continued around Cornwallis but was prevented from completing a circuit by open water in McDougall Sound. Penny returned later with a boat to discover several smaller islands in Queen's Channel and landed on the Grinnell Peninsula of Devon Island. He was particularly excited by finding a piece of English elm. This surely could only have come from one of Franklin's ships, meaning that he must have sailed through Wellington Channel. Meanwhile, Stuart found evidence of a former Franklin campsite near Caswall Tower, Radstock Bay, while Stewart and Sutherland explored the west coast of Devon Island to Cape Becher and looked for a strait connecting with Jones Sound.

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**Later Whaling Voyages and the Establishment of a British Colony in Cumberland Sound, 1853–1863**

Penny had hoped to continue the search for Franklin the following year. When the invitation failed to materialize, he decided to devote his energies instead to establishing a British colony in Cumberland Sound. There, whalers would be able to winter rather than having to sail home at a time of year when there were still whales to be had off southeast Baffin Island. Once the sound froze over and the last whales had gone, the whalers could render down the blubber for shipping back to Great Britain as soon as the ice broke up. Backed by a number of Aberdeen businessmen, the Royal Arctic Company was established in 1853 with Penny as general superintendent. Having seen how well steamers coped in ice-covered waters, Penny was keen that such vessels should be employed by his company. He also wanted a missionary brought from West Greenland to convert the Inuit. *Lady Franklin* and *Sophia* were purchased, and the first wintering was a great success. The company's men were soon afterward joined by American and other British whalers to form a flourishing community. One of those who was to benefit from their presence was the explorer Charles Francis Hall, who wintered there in 1860–1862. Penny undertook his last whaling voyage in 1863.

It is tempting to compare Penny's contribution to that of William Scoresby Jr., another great explorer-whaler of the early to mid-nineteenth century. Penny lacked Scoresby's education and scientific curiosity but shared his fresh, pragmatic approach. Thus, Penny was the first to employ dogs for pulling sledges in the Franklin search, afterward putting them to good effect in his later whaling ventures. Ironically, whereas the Admiralty was unwilling to give command of a naval vessel to the cultivated Scoresby, it was persuaded by popular opinion to appoint the bluff Penny. Today, Penny is best known for his participation in the Franklin search, but his discoveries in southeast Baffin Island were no less significant.

**See also:** Austin, Horatio; Baffin Island; Beechey Island; Cornwallis Island; Davis, John (ca. 1550–1605; 1585); Franklin, Jane; Franklin, John (1845–1848); Franklin Search Expeditions; Hall, Charles Francis (1860–1862); Inuit Contribution to Polar Exploration; Lancaster Sound; Northwest Passage; Scoresby, William Jr.; Wellington Channel; Whaling and Arctic Exploration

**References and further reading:**


**Peru**

Peru's involvement in the exploration and scientific study of Antarctica began with ratification of the Antarctic Treaty on 10 April 1981. Peruvian scientists participated in the Australian research program for 1982–1983. But it was not until 1988 that the first Peruvian expedition was organized. It conducted oceanographic studies in Bransfield Strait and landed a field party on King George Island, where geomag...
First into the Kara Sea, 1580–1581

During the planning of Martin Frobisher’s expedition to the Northwest Passage, the Muscovy Company had been criticized by the English Privy Council for failing to fulfill the commitments under which its monopoly was granted, since it was expected to sponsor exploratory expeditions as well as undertake trade. As a result, certain privileges had been removed, and a new company—the Company of Cathay—was set up in 1577, leaving the Muscovy Company’s monopoly intact only for regions lying northeast of England. Fear that others might now seek to dispute these privileges as well prompted the Muscovy Company to organize a new expedition to seek the Northeast Passage, the first since Stephen Borough’s expedition of 1556–1557. Two experienced seamen were appointed to lead it. Arthur Pet had sailed with Richard Chancellor in 1553–1554 as a mariner and had captained ships for the company since 1560. Having undertaken many previous voyages to the White Sea, he knew these waters as well as anyone. Arthur Jackman also had Arctic experience, having been master’s mate of Ayde during Frobisher’s second expedition in 1577.

The expedition’s instructions were drawn up by William Borough, who had participated in his brother’s 1556–1557 expedition and had since established a reputation as a fine cartographer. Pet and Jackman were to sail along the coast beyond the River Ob’ until they reached Cathay. If they failed to reach that destination the first year, they were to winter on the coast and establish friendly relations with the natives before continuing the voyage the next year. If the land east of the Ob’ trended north rather than southeast as anticipated, they were to winter on the river and sail up it the following spring. If the Ob’ proved impossible to navigate, they were to explore the west coast of Novaya Zemlya. It can be seen that this expedition intended serious exploration and as a consequence was provisioned for two years. Borough also provided a chart based on his personal knowledge of the route as far as Vaygach Island and Novaya Zemlya, as well as on what he had learned from the Pomor hunters for what lay beyond.

Pet and Jackman sailed from Harwich on 30 May 1580, Pet in the 40-ton George, crewed by nine men and a boy, and Jackman in the 20-ton William, crewed by five men and a boy. These tiny craft had been selected for their shallow drafts. They would have to sail through shoaling waters and had instructions to always keep close to shore.

The two vessels rounded North Cape on 22 June; the north Norwegian port of Vardo was reached the next day. There, they were held up by contrary winds until 1 July. Eager to make up for lost time, they were just one day out from Vardo when William developed steering problems and had to return to land for repairs. Pet was unwilling to wait and made arrangements to meet up again with Jackman off Vaygach Island. One of the tasks assigned to the expedition was to determine whether “Willoughby’s Land,” the land seen at 72° N by Sir Hugh Willoughby in 1553, was indeed Novaya Zemlya. To that end, he now sailed northeast to sight Novaya Zemlya on 5 July, then followed its southern coast as close as the ice would permit. By 10 July, he was off Vaygach and spent the next few days investigating Kara Gate, the strait between that island and Novaya Zemlya; he was hampered by fog and often unsure whether what he observed was land or ice. He could find no way through to the Kara Sea. On 18 July, he was off the southern end of Vaygach and at last was able to sail east through Yugor Strait, between Vaygach and the Russian mainland. He was the first Western European to enter the Kara Sea, though preceded by generations of Pomors. He was not, however, to get far. His instructions were to always remain within sight of land, and here he was constantly impeded by ice. Even when he put farther out to sea, ice blocked his passage. Pet reluctantly turned about, passing back through Yugor Strait to meet Jackman off Vaygach on 25 July. The two ships continued together to seek a way east through the ice, trying both north and south of Vaygach, but found the ice impenetrable. These efforts were continued until mid-August, when they turned for home. On 20 August, both vessels went aground off Kolguev Island at 68°40’ N. Two days later George and William lost contact with each other, George reaching London on 26 December while William was forced to winter at a Norwegian port. It is unclear whether Jackman in fact ever returned to England. The last report is that he sailed from Norway in February 1581, in company with a Norwegian ship heading for Iceland.

One consequence of Pet and Jackman’s expedition was to convince the Dutch geographer Peter Plancius that the straits north and south of Vaygach Island were too shallow and too frequently blocked by ice to offer a practical route into the Kara Sea. This observation was to determine his advice that Willem Barents should seek the Northeast Passage much farther north.
See also: Barents, Willem; Borough, Stephen; Chancellor, Richard; Frobisher, Martin; Kara Sea; Kolguev Island; Muscovy Company; Northeast Passage; Pomor Contribution to Arctic Exploration; Russia; Willoughby, Hugh

References and further reading:

Peter I Island (Antarctica)
Located at 68°51’S, 90°37’E, this small volcanic island—13 miles long by 6 miles wide—lies 280 miles off the coast of Antarctica and is 95 percent covered by ice. The island was discovered on 20 January 1821 by the Russian naval officer Fabian von Bellingshausen, though dense pack ice meant that he never came closer to it than 16 miles. The island was not seen again until Jean-Baptiste Charcot reached within 3 miles of it on 14 January 1910.

Seeking to expand the whaling activities of his ships from their existing areas of operation off South Georgia and the South Shetland Islands, the Norwegian entrepreneur Lars Christensen sent one of his whale catchers, Odd I, to investigate Peter I’s potential as a site for a whaling station. They reached the island on 4 January 1927; two weeks were spent circumnavigating it, but no landing could be effected. Two years later, having acquired Norvegia, a much more suitable vessel for exploratory work, Christensen sent another party to examine the island. On 2 February 1929, the first landing was made by Captain Nils Larsen and Dr. Ola Olstad, who raised the Norwegian flag and claimed Peter I for Norway. A hut was built and a rough survey completed. Sovereignty over the island was claimed in the Norwegian Royal Proclamation of 1 May 1931.

The next two landings were both made in February 1948. On 10 February, a Norwegian party from Brategg, captained again by Nils Larsen, landed for three days to build a hut and carry out biological, geological, and hydrographical studies. Five days later, a party from the American icebreaker USS Edisto landed during Operation Windmill. Subsequent visits have been rare. In 1956, a party from the Chilean ship Baquedano was landed with a view to deploying an automatic weather station; and in the 1970–1971 season, Argentina established the temporary station Teniente Ventimiglia, with men and equipment landed by helicopter. In October 1983, personnel of the 29th Soviet Antarctic Expedition erected a plaque to commemorate the island’s discovery by Bellingshausen. The most extensive survey to date was conducted by five Norwegian scientists who spent eleven days on Peter I in January 1987. They also established an automatic weather station. Keen to communicate from an island they arguably considered the most isolated in the world—Bouvet would be another contender—a party of radio enthusiasts stayed here from 29 January to 20 February 1994, the longest stay to date. This is not a comprehensive list of all landings and surveys, but it includes the most significant.

See also: Argentina; Bellingshausen, Fabian von; Chile; Christensen, Lars; Norway; Operation Windmill; Russia

References and further reading:

Petermann Island (Antarctic Peninsula)
Located at 65°10’S, 64°10’W, this small island south of the Lemaire Channel was discovered in January 1874 by Eduard Dallmann. It was named for August Petermann (1822–1878), the famous German geographer. Jean-Baptiste Charcot ventured in 1909 in the enclosed inlet he named “Port Circumcision,” after its discovery on the day of the Feast of the Circumcision (1 January). On 17 January 1955, Argentina built the refuge hut Groussac, much used subsequently by staff of the Falkland Islands Dependencies Survey and the British Antarctic Survey stationed on the Argentine Islands. In 1982, this was the scene of tragedy when a three-man survey team (A. C. Morgan, K. P. Ockleton, and J. Coll) found themselves marooned by a winter storm, which had broken up the pack ice and cut off the island from the adjacent mainland. After remaining on the island for more than a month and beginning to run short of food, they decided to risk crossing the reforming ice and were never heard from again. A cross erected in their memory stands south of the refuge hut.

See also: Argentina; Argentine Islands; British Antarctic Survey; Charcot, Jean-Baptiste (1908–1910); Dallmann, Eduard; Lemaire Channel

Phipps, Constantine
(1744–1792)
Famous for Horatio Nelson’s encounter with a polar bear, the British naval expedition of Captain Constantine Phipps was sent to investigate the possibility of navigation close to the North Pole, in the expectation that it might be surrounded not by ice but by open water.

The Search for the Open Polar Sea, 1773
In 1765, the Swiss scientist Samuel Engel (1702–1784) published his theory that the ice found in northern seas was formed exclusively from freshwater in rivers and lakes. Most “sea” ice therefore originated in the estuaries of large rivers. Since seawater was believed never to freeze, it followed that once sufficiently distant from land the sea would be free of ice, no matter how cold the climate. Similar views had been put forward at least as far back as the sixteenth century, but Engel was the first to systematize them in a widely read book. In Great Britain, they were taken up by the Honorable Daines Barrington (1727–1800), an enthusiast for Arctic exploration.
He later published a compilation of reports indicating, at least to his satisfaction, that vessels could navigate near the Pole. Barrington shared Engel’s view that previous expeditions had failed to penetrate the ice surrounding the open polar sea because they had kept too close to land.

Barrington was a man of influence and, following a meeting with the Earl of Sandwich, first lord of the Admiralty, led a discussion at the Royal Society, of which he was vice president. There he proposed organization of an expedition to test Engel’s ideas and investigate whether a navigable seaway to the East Indies might be found by, or near, the North Pole. The Royal Society was persuaded, and a letter was sent to the Earl of Sandwich, who then obtained approval from King George III that the expedition be mounted without delay. One amendment was made to the Barrington’s original proposition: If it proved possible to reach the Pole, the expedition should return rather than attempt to cross the Arctic Ocean.

Befitting these origins in a Royal Society petition, a detailed scientific program was arranged, including tests on the use and accuracy of chronometers made to John Harrison’s design, as well as natural history and physical oceanography. The participants were to include Dr. Charles Irving, whose method for distilling fresh water from the sea proved more successful than his suggested technique for ensuring that meat remained fresh during long voyages; and Israel Lyons, an astronomer charged with looking after the chronometers.

The scientifically minded and well-connected Honorable Constantine John Phipps was chosen to command the expedition, which was equipped with the two bomb-vessels HMS Racehorse and HMS Carcass. Constructed to withstand the recoil of heavy mortars, bomb vessels were to feature prominently in British polar explorations, having been first used during Christopher Middleton’s expedition of 1741–1742. For this voyage, they were further strengthened and supplied with double sets of ice poles, anchors, cables, sails, and rigging in expectation of exceptionally severe weather near the Pole. Similar care was taken in the clothing of the crew and the provisions, the latter being sufficient for a voyage of six months. Since neither Phipps nor Skeffington Lutwidge, captain of Carcass, had any experience in ice, four whalers long familiar with the waters off Spitsbergen were appointed pilots.

Racehorse and Carcass sailed from the Thames on 26 May 1773. On 28 June Spitsbergen was within view, and as they made their way northward along the west coast, several whalers were encountered from whom information was gathered on ice conditions that year. On 4 July, a landing was made...
just south of Magdalena Hook on the island’s northwest coast to take on fresh water and to observe magnetic variation. With no sight yet of any ice, Phipps was optimistic of getting far north. The first ice was met the next day. It would present a formidable barrier to the planned voyage to the Pole, something that was soon apparent as Racehorse and Carcass were forced to tack this way and that and boats were put out in an attempt to tow and warp them through the ice to the presumed open water not far beyond. By 10 July, Phipps had come to the view that the pack formed “one compact impenetrable body” (Phipps 1775, 43). He now decided to try farther east, but before doing so he spent several days in preparations and making scientific observations on the Norway Islands off north Spitsbergen, where he anchored from 13 to 18 July.

Immediately north of the island, the ice proved just as impenetrable as farther west, though 80°48’N was achieved on 27 July, a record farthest north by ship and surpassing the 80°28’N reached by Vasily Chichagov in 1766. This record was to stand until 1806, when it was broken by William Scoresby Sr. Continuing east, they were in the vicinity of Hinlopen Strait on 29 July, between Spitsbergen and North East Land. The next day, they reached 80°31’N at their farthest east of 18°48’E, close to the Seven Islands. Here Lutwidge landed, climbing a hill from which to survey the state of the ice. It stretched to the horizon in an unbroken sheet. Although Phipps and his men appear to have been quite sanguine as to their situation, by now the four whalers were greatly alarmed, having never been so far north and east. With ice closing in around the vessels, they communicated their concern to Phipps, who ordered that saws and axes be used to cut a path through the ice, in places already 4 meters thick. On 7 August, while Lutwidge continued to move Racehorse and Carcass painfully slowly through the ice, Phipps took charge of a party hauling the two launches toward open water, since it now appeared probable that the ships would have to be abandoned. As long as Amsterdam Island on the northwest coast of Spitsbergen could be reached in time, his men could sail home with the Dutch whalers. This scenario was narrowly averted as Racehorse and Carcass were successful warped through a considerable distance of ice during the next two days. The launches were taken back on board, and with the ice increasingly fragmented, all sail was set to force a way through to open water on 10 August. The following day, anchor was dropped off Amsterdam Island at Smeerenburg, where they found four Dutch whaling vessels. Phipps remained there until 19 August to make astronomical, pendulum, and natural history observations and—ever considerate of his crew—to bake large supplies of fresh bread. After making one last attempt to penetrate the polar pack to the northwest of Spitsbergen, Phipps decided that nothing was to be gained by further exploration and set course for home, London being reached on 24 September. His voyage had demonstrated that the polar pack extended continuously for more than 20 degrees between 80° and 81°N.

This voyage is best known for the story of how the fourteen-year-old midshipman Horatio Nelson attempted to obtain the skin of a polar bear for his father. He was lucky to escape with his life but demonstrated all the pluck and enterprise for which he was subsequently to become famous. “Do but let me get a blow at this devil with the butt end of my musket, and we shall have him,” he is quoted as saying after his musket flashed in the pan and his companion had fled (Savours 1984, 416). But the expedition is interesting in other ways. For an apparently scientific expedition, it was surprisingly well-resourced and fitted out with commendable rapidity, undoubtedly benefited by the full support of the British Admiralty. Certainly, a full scientific program was conducted, but it is by no means improbable that the Earl of Sandwich, in initially indicating to Barrington that the Royal Society might propose an expedition, had in mind a secret recent Russian naval voyage in the same region that had been reported by whalers. A Russian station had been built on Spitsbergen and an attempt made by Chichagov to reach the North Pacific via the Arctic Ocean. The growth of Russian power in the North Pacific was of some concern to Great Britain, and the Earl of Sandwich was sufficiently sly to be capable of organizing an expedition to investigate whether such a route was really possible while disguising his investigation as an essentially scientific venture.

See also: Chichagov, Vasily; Farthest North; Middleton, Christopher; Open Polar Sea; Seven Islands; Spitsbergen; Whaling and Arctic Exploration

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**Plaisted, Ralph** (1927–)

Some believe that the first man to reach the North Pole across the ice was no grizzled Arctic veteran but an insurance salesman from St. Paul, Minnesota.

Ralph S. Plaisted was and is a man of enthusiasms. One day in 1966, he was discussing with Dr. Arthur Aufderheide the comparative advantages of dogs and snowmobiles for Arctic travel. Aufderheide had been describing his plans to go on a hunting expedition to northern Canada, in which transport would be provided by Inuit dog teams. Plaisted had no experience in the Arctic, but like many others in Minnesota, he owned a snowmobile, which he used for wintertime hunting and fishing trips. If snowmobiles were so good, Aufderheide
inquired, then why didn’t he drive one to the North Pole? At this date, Robert Peary’s claim to have reached the Pole on 6 March 1909 was generally, though not universally, accepted. And while the Pole had since been reached by airship, airplane, and submarine, only the Norwegian Bjorn Staib in 1964 had attempted (unsuccessfully) to repeat Peary’s journey over the ice.

With some difficulty, Plaisted persuaded a group of friends to join him. Although the National Geographic Society remained unconvinced, Plaisted was successful in obtaining sponsorship elsewhere from Bombardier Snowmobiles, which provided him with ten free snowmobiles, and the CBS network. CBS reporter Charles Kuralt and cameraman Bob Clemens now joined Plaisted’s team, with CBS paying for the essential Twin Otter support airplane.

**Toward the North Pole by Snowmobile, 1967**

On 28 March 1967, Plaisted set out at the head of an eight-man party from the Canadian meteorological station Eureka on Ellesmere Island. With him were Don E. Powellek (second-in-command, radio operator), Aufderheide (medical officer, photographer), Gerald R. Pitzl (navigator), Walt H. Pederson (mechanic), Bob Clemens (cameraman), Jean Luc Bombardier, and Dr. Blair D. Woolsey. Bombardier was there to represent his company and assist with snowmobile repairs. Woolsey was Plaisted’s dentist. Of these, only Aufderheide had any Arctic experience—acquired on his previous year’s hunting trip—though back at Eureka and soon to be airlifted out to join them was Corporal Jack Austad of the Royal Canadian Air Force, a senior survival and rescue instructor with eight years’ Arctic experience. Eureka was 600 nautical miles from the Pole, and Plaisted’s route up Nansen Sound and north was essentially the same as that claimed to have been taken to the Pole by Frederick Cook in 1908.

A few days out, navigator Pitzl was disconcerted to discover that they appeared to be traveling southeast instead of northwest. Plaisted was leading the way, and when Pitzl caught up with him, the leader replied, “I’ve been reading canoe maps all my life. The way you do it is, you pick out a landmark. See that iceberg over there? I’ve been keeping it on my left shoulder” (Kuralt 1968, 42). Pitzl pointed out that if he did this long enough, he would go around in a circle. This in fact is what they had done, and they were now heading back to Eureka. If they could not navigate their way out of Nansen Sound, what hope had they of finding the North Pole? Fortunately, Austad joined them soon afterward, and Plaisted promised to check compass directions with Pitzl at least three times a day.

On 2 April, a U.S. Navy C-121 Constellation flew from Thule Air Base, North Greenland, to the North Pole and back along the 90°W meridian to Ellesmere. This happened to correspond closely to Plaisted’s planned route, and arrangements had been made for the flight crew to inform him of ice conditions toward the Pole. What they reported was not encouraging: thousands of pressure ridges, many open leads, and extensive areas where newly formed ice would make passage dangerous. At least they were able to direct him to where the perennial “Big Lead” north of Ellesmere might be crossed and drop a chart to help him find the best way north. On the same day, Plaisted reluctantly concluded that his party must be cut to only the most essential members; Aufderheide, Bombardier, Clemens, and Woolsey were flown back to Eureka, leaving himself, Austad, Powellek, Pitzl, and Pederson to continue on toward the Pole.

From that point on, Plaisted rotated his men as they made painfully slow progress away from land, at one time having to surmount a 12-meter-high ridge that appeared to extend indefinitely on either side of their course. By 17 April, they were still only 53 nautical miles from land, but north of the “Big Ridge” the going improved considerably. Seven days later they had crossed 83°N. Achieving up to 20 miles north each day, it almost seemed possible to believe that they might now reach the Pole, or at least get near to it, as they set up camp on 26 April with every sign of a perfect traveling surface ahead of them. The next morning, however, they awoke to limited visibility and strongly gusting winds, the speed of which increased as the day progressed while they waited in their tents. Through the next seven days, the storm continued. Gusts of up to 60 miles per hour threatened to break apart the floe on which they were camped and blow away their lightweight tents. By the time the storm stopped on 3 May, all Plaisted and his men wanted was to be airlifted back to Eureka as soon as possible. They were 384 nautical miles short of the Pole.

**The North Pole at Last, 1968**

Whereas Plaisted’s 1967 expedition is documented by Kuralt’s book and a CBS TV documentary, virtually nothing has been written about the expedition on which he actually reached the Pole. The bare facts are these: Accompanied by five members of his former team—Powellek, Aufderheide, Pitzl, Bombardier, and Pederson—Plaisted set out on 7 March 1968 (significantly earlier than the previous year) from Ward Hunt Island, Ellesmere Island, 125 miles closer than Eureka to the Pole. Aufderheide and Powellek had been airlifted out previously to “work on photographic and electronic problems” (*Polar Record* 1968, 340); on 19 April four twin-ski, 16-horsepower Bombardier Ski-Doo snowmobiles reached the Pole driven by Plaisted, Pitzl, Bombardier, and Pederson. It had taken them forty-three days to travel 825 miles, considerably farther than the straight-line distance of 475 miles. Ice conditions were reported as difficult, particularly in the early stages with pressure ridges up to 15 meters high. Later on, the journey had been slowed by numerous open leads. The expedition’s position at 90°N was confirmed the next day by an overflying U.S. Air Force weather reconnaissance airplane. Plaisted and his companions were evacuated back to Ward Hunt Island by the expedition’s Twin Otter.

For anyone wishing to know who reached the North Pole...
first across the ice, it is particularly frustrating that this expedition should have remained largely undocumented, especially in light of rumors that part of the journey was made by air. Plaisted himself has yet to publish anything on the subject, and it is very much to be hoped that this issue will be resolved by his long-awaited book. For those accepting the claims of Cook or Peary, of course, the matter is of little concern. But for those who do not, at stake is whether priority at the Pole should be accorded to Plaisted or to Wally Herbert, who reached the Pole the following year.

See also: Cook, Frederick (1907–1909); Herbert, Wally; North Pole; Peary, Robert (1908–1909)

References and further reading:

Poland

The first Polish scientists to go to Antarctica were Henryk Arctowski and Antoni Dobrowolski on Adrien de Gerlache’s Belgian Antarctic Expedition of 1897–1899. Arctowski was to become a leading authority on all matters relating to Antarctica, most especially geology, where he was the first to draw attention to the apparent extension of the Andes in the Antarctica, most especially geology, where he was the first to refer to those points in the Arctic and Antarctic that are most difficult to reach. In the Antarctic, it is the point farthest from the coast; in the Arctic, it is the point farthest from open water. The position of the Northern Pole of Inaccessibility was originally calculated by Stefansson at 83°50'N, 160°W on the basis of farthest norths reached by ships in different sectors of the Arctic. Other writers give different figures, reflecting later voyages such as that of Konstantin Badigin in 1937–1940, whose farthest norths exceeded those achieved previously. By contrast, the Southern Pole of Inaccessibility (85°50'S, 65°47'E) is fixed subject to major breakup of ice shelves surrounding the continent. Several expeditions have been organized with the intention of reaching the Poles of Inaccessibility. Hubert Wilkins intended to fly toward the Northern Pole in 1926 but was prevented by a series of accidents. On the basis of two exploratory flights undertaken with navigator V. I. Akkuratov in August 1939 and July 1940, Soviet pilot Ivan Cherevichnyy succeeded in persuading the Chief Administration of the Northern Sea Route to back his plans for an expedition. Establishing his main base on the sea ice near the polar station on Wrangel Island, Cherevichnyy made three flights to the vicinity of the Pole, where he landed for the first time on 8 April 1941. He was accompanied by scientists who conducted a series of observations at each landing. This marked the start of a program of high-latitude air expeditions, which was resumed by the Soviet Union after the end of World War II. Wally Herbert planned to establish his summer camp at the Pole of Inaccessibility to benefit from the Transpolar Current, anticipating that this would carry him toward the North Pole. Unfortunately, he was prevented from putting his theory to the test when forced to camp some way south at 81°30'N, 165°29'W. First to reach the

Poles of Inaccessibility

The concept of Poles of Relative Inaccessibility (or the Poles of Inaccessibility) was introduced by Vilhjalmur Stefansson in 1920 to refer to those points in the Arctic and Antarctic that are most difficult to reach. In the Antarctic, it is the point farthest from the coast; in the Arctic, it is the point farthest from open water. The position of the Northern Pole of Inaccessibility was originally calculated by Stefansson at 83°50'N, 160°W on the basis of farthest norths reached by ships in different sectors of the Arctic. Other writers give different figures, reflecting later voyages such as that of Konstantin Badigin in 1937–1940, whose farthest norths exceeded those achieved previously. By contrast, the Southern Pole of Inaccessibility (85°50'S, 65°47'E) is fixed subject to major breakup of ice shelves surrounding the continent. Several expeditions have been organized with the intention of reaching the Poles of Inaccessibility. Hubert Wilkins intended to fly toward the Northern Pole in 1926 but was prevented by a series of accidents. On the basis of two exploratory flights undertaken with navigator V. I. Akkuratov in August 1939 and July 1940, Soviet pilot Ivan Cherevichnyy succeeded in persuading the Chief Administration of the Northern Sea Route to back his plans for an expedition. Establishing his main base on the sea ice near the polar station on Wrangel Island, Cherevichnyy made three flights to the vicinity of the Pole, where he landed for the first time on 8 April 1941. He was accompanied by scientists who conducted a series of observations at each landing. This marked the start of a program of high-latitude air expeditions, which was resumed by the Soviet Union after the end of World War II. Wally Herbert planned to establish his summer camp at the Pole of Inaccessibility to benefit from the Transpolar Current, anticipating that this would carry him toward the North Pole. Unfortunately, he was prevented from putting his theory to the test when forced to camp some way south at 81°30'N, 165°29'W. First to reach the
Pole over the ice, though not from land, was Dmitriy Shparo in 1986, when he completed a 700-mile journey on skis via the Pole between the Soviet ice stations NP-26 and NP-27.

The Southern Pole has also proved suitably difficult to reach. Perhaps because obliged to compete with the Americans, who were establishing a station at the Geographic South Pole, the Soviet Antarctic Program set itself the task of erecting a station at the Pole of Inaccessibility as part of its contribution to the International Geophysical Year (1957–1958). Whereas the Americans employed airplanes, the Soviets relied on tractors, which were unable to reach farther than 78°24'S, 87°35'E, where Sovetskaya was constructed 450 miles short of the Pole. Another tractor team later succeeded in reaching the Pole, where a temporary station was maintained between 13 and 28 December 1958. The location was 800 miles from the coast and 3,720 meters above sea level.

See also: Herbert, Wally; Queen Mary Land; Russia; Shparo, Dmitriy; Stefansson, Vilhjalmur; Wilkins, George Hubert (1926)

References and further reading:

Pomor Contribution to Arctic Exploration
Novaya Zemlya and possibly Svalbard were visited by hunting expeditions long before being “discovered” by explorers. These hunters were the Pomors (literally, “people living by the sea”), peasants who came originally from central Russia and migrated north to the White Sea region in the tenth and eleventh centuries. Soon afterward, they expanded even farther north, extending their activities to the Arctic archipelagos of Novaya Zemlya and Svalbard, where they hunted walrus, seals, polar bears, and other Arctic bird and mammal species. If Uleb’s voyage of 1032 to the “Iron Gates” is interpreted as being to the Kara Strait north of Vaygach Island, Pomor knowledge of the sea route east to the Pechora River can be dated back to the eleventh century. By 1556, substantial fleets sailed regularly at least as far as the Pechora, with some continuing on to the Kara River. By this date, Pomors were certainly engaged in hunting and fishing off Vaygach and Novaya Zemlya and regularly reached the Ob’ estuary via a portage across the Yamal Peninsula. Exactly when they first visited Svalbard is subject to dispute, but it is possible that they anticipated Willem Barents’s first sighting in 1596 (see Svalbard).

The annual expeditions of the Pomors were sent out by
local merchants, trading companies, and monasteries, such as Solovetsk. Toward the end of July, groups of hunters would set out in lodyas, open sailing vessels with a simple rig. When they reached Novaya Zemlya and Svalbard, they would spread out along the coast, relieving wintering parties left behind from the previous season. The Pomors usually established a main station in an area with a few minor stations nearby. Their huts were constructed on the Russian mainland and brought across, though local driftwood also might be incorporated. Wooden crosses characteristic of the Russian Orthodox Church were erected by stations, a few of which still survive. In order not to overhunt, they alternated between areas. On arrival, the wintering parties’ first task was to hunt reindeer in order to be sure of having sufficient food. They would also collect eggs and eider down. During winter, bears and foxes were hunted; in spring, walrus and seal. Some parties may also have hunted beluga, but fur-trapping was their primary concern. The numbers involved are unknown, though 100–150 men went north to Svalbard at the end of the eighteenth century when the Arctic hunting expeditions are believed to have been at their height. For an account of survival for six years by a party of four marooned in the Arctic, see the entry Edge Island. The last expedition was organized from Archangel in 1850–1851.

In addition to their role as early discoverers, a number of Pomors were notable explorers. Many of those involved in Russia’s exploration of the Arctic coast were from the White Sea region, among them quite possibly Semen Dezhnev. Vasily Chichagov may or may not have been a Pomor, but Mikhail Lomonosov certainly was. We know very little of the backgrounds of the leaders of the various detachments of the Great Northern Expedition, but it would be surprising if some of them at least were not Pomors. More recently, the captains of the Soviet hydrological expeditions of the 1930s were generally natives of Archangel and its vicinity, true heirs of the Pomor tradition. See also: Barents, Willem (1596–1597); Borough, Stephen; Chichagov, Vasily; Dezhnev, Semen; Edge Island; Novaya Zemlya; Svalbard; Vaygach Island

Ponies

With dogs apparently so well-suited to polar exploration, why should anyone want to use ponies? Dogs could be fed seals and, in Antarctica, penguins. And apart from a single pony that acquired a taste for meat with Frederick Jackson, fodder for ponies had to be brought with the expedition. Ponies were also slower, heavier, and thus more likely to fall into crevasses, and less insured to extreme cold. Despite these evident disadvantages, they were to be employed by numerous expeditions, sometimes in preference to dogs.

A number of factors influenced the choice of draught animal. Throughout much of the north, it was easier to obtain good ponies than good dogs. Dog handlers were generally scarce, whereas no special training was required to lead ponies. Over much of Eurasia, native peoples relied on reindeer. But reindeer were insufficiently powerful for expeditionary purposes and like ponies relied on transported feed. The earliest recorded use of ponies was during the first Great Northern Expedition of Vitus Bering, when dogs and reindeer were also employed.

Prior to leading his expedition to Franz Josef Land, Frederick Jackson traveled widely with the Nentsy and Saami peoples of the European Arctic, at first with reindeer and then with Siberian ponies. He preferred the ponies and decided to employ them as his main draught animal, though he also took dogs. Jackson was particularly enthusiastic about the ponies, declaring “horses can be used to very great advantage in Arctic exploration, and I am more than satisfied with the results of my experiments with them” (Jackson 1898, 114). He recommended that Fridtjof Nansen use them on his planned expedition to the South Pole, and his second-in-command, Albert Armitage, was later to make the same recommendation to Robert Falcon Scott, when the latter placed him in charge of sledging arrangements for his 1901–1904 expedition. Problems with dog feed, as well as lack of skill in dog handling, meant that less success was had with dogs. These experiences led Ernest Shackleton to take with him ten ponies but only nine dogs on his own expedition to Antarctica in 1907–1909. In turn, the near-success of Shackleton’s polar journey, undertaken with ponies but without dogs, persuaded Scott to stick with ponies but also to take an increased number of dogs. How Roald Amundsen’s exclusively dog-powered expedition got to the Pole before Scott is told in their respective entries.

The success of Amundsen’s dogs over Scott’s ponies, dogs, motor-sledges, and man-hauling has led many to question the contribution of ponies in polar exploration. The story of their comparative failure in Antarctica is well known; less familiar is their continued use in Franz Josef Land, where Evelyn Baldwin brought fifteen ponies in 1901–1902 and Anthony Fiala sixteen in 1903–1905, or in Greenland, where Johan Peter Koch inaugurated a tradition lasting into the late 1940s.

Koch chose to employ sixteen Icelandic ponies for his crossing of the Greenland ice sheet in 1912–1913 on the basis of experiences with Ludvig Mylius-Eriksen (1906–1908). Mylius-Eriksen had found dogs incapable of hauling loads up the steep inclines onto the Inland Ice, whereas ponies had proved invaluable during his survey of Vatnajökull in Iceland. Six tons of hay had to be transported to feed them, as well as four tons of a special concentrated feed developed by the Royal Veterinary and Agricultural High School in Copenhagen. Initially the ponies managed well, that is, when the snow was hard and smooth. Farther in, difficulties were experienced with soft snow; their feet sank deeply despite being shod with specially designed snowshoes. Only one pony completed the crossing, but in a very weakened condition. Koch and his three companions attempted to save its life by taking turns hauling it on
a sledge, but they found it impossible to bring it across the many crevasses near the ice edge and had to shoot it 6 miles short of their destination.

Alfred Wegener was one of those with Koch. When he came to organize his own expedition in 1930, he brought to Greenland twenty-five Icelandic ponies as well as dogs and motor-sledges. Believing “ponies on the glacier, dog sledges and motor-sledges on the ice-cap, that is the correct choice” (Wegener 1932, 57), Wegener found the ponies to perform well in hauling large quantities of equipment and supplies up the short, steep glacier to the Inland Ice. Once on the ice sheet, the dogs also did well, but not the motor-sledges, whose failure contributed significantly to Wegener’s death.

Koch’s nephew Lauge also made extensive use of Icelandic ponies in transporting fossils and other heavy loads in East Greenland in 1931–1934 and 1937–1938. He continued to employ up to eleven animals each year until 1949, feeding them largely on hay imported from Iceland.

See also: Amundsen, Roald (1910–1912); Armitage, Albert; Baldwin, Evelyn; Bering, Vitus (1733–1743); Dogs; Fiala, Anthony; Greenland, Inland Ice; Jackson, Frederick; Koch, Lauge (1926–1959); Mylius-Erichsen, Ludvig (1906–1908); Nansen, Fridtjof; Scott, Robert Falcon; Shackleton, Ernest (1907–1909); Wegener, Alfred

References and further reading:

Powell, George
(ca. 1796–1824)
The discovery of the South Orkney Islands by the British sealer George Powell, sailing in consort with the American Nathaniel Palmer, followed shortly after, and as a consequence of, the decimation of the fur seal population of the recently discovered South Shetland Islands. As fur seals became harder to find, new voyages were undertaken to find untapped sealing grounds, during which discoveries quite often resulted.

George Powell was only twenty-three years old when appointed by the leading London South Sea company, Daniel Bennett & Sons, to command the 58-ton smack Dove in August 1818. He returned in July 1819 with 1,290 casks of oil and 11,385 sealskins, probably obtained either from South Georgia or the Kerguelen Islands. For his second voyage he was given command of the 132-ton sloop Eliza, in which he sailed on 4 September 1819. At some time during this voyage he must have heard of William Smith’s discovery of the South Shetlands, quite possibly when he was at Rio de Janeiro, because he is reported there on 5 January 1821; he returned with a catch of 18,000 sealskins.

**Discovery of the South Orkney Islands, 1821–1822**

It was during his third voyage that Powell discovered the South Orkneys. Clearly regarded as a coming man by the Bennetts, Powell was appointed to command two vessels, with himself in *Eliza* and John Wright in *Dove*. They sailed on 30 June 1821 and reached the South Shetlands on 9 November. In search of an anchorage for *Eliza* and *Dove* from where his boats might be sent out safely to obtain seals, Powell tried a series of harbors along the north coast of Livingston Island, finally finding some security at Clo ther Harbor on Robert Island. There he transferred to *Dove*, leaving Wright and *Eliza* behind as he continued on to search for new sealing grounds; this season there were many sealers and only a few seals. Powell first tried his luck at Elephant Island, where he was fortunate not to be driven onto a reef. He landed a shore party and, thinking there were many seals, went back to Clo thier Harbor for more men. He was disappointed upon returning to discover that only 150 seals had been taken. Together with the American sealer Nathaniel Palmer in *James Monroe*, Powell next decided to make an exploratory voyage east. The two chose to sail together because they considered it unsafe to sail alone in new waters. After leaving behind a shore party on Clarence Island, Powell set out with Palmer on 4 December.

Driven by fresh winds, they made rapid passage in heavy seas, constantly in danger of running into ice in the persistent fog. However, Powell managed to get a good positional fix when the weather cleared on 6 December, and land was sighted by a sharp-eyed sailor at the masthead the following day. At this time, Powell was sailing 4 miles ahead of Palmer, who himself could see no sign of land, but said that he would follow in any case. The land seen consisted only of three tall rocks, but from there further land was visible, this time extensive. It was Coro-case. The land seen consisted only of three tall rocks, but from could see no sign of land, but said that he would follow in any
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could see no sign of land, but said that he would follow in any
case. The land seen consisted only of three tall rocks, but from
there further land was visible, this time extensive. It was Coro-
nation Island, the largest island in the group, where Powell
effected a landing and claimed possession for King George IV.
After making a running survey of the island's north coast, he
found safe anchorage at Spence's Harbor on the east coast—
and just in time, with snow thickening and a gale rising. Boats
were sent out to search for seals, and landings were made on
Powell and Laurie Islands. Whereas Palmer appeared interested
only in finding seals, of which there were few, Powell made a rough chart of his discoveries. With their provisions running low, they left the islands behind on 13 December. A southern course was next followed until thick pack ice was met at 62°30'S, 45°29'W. From there, they skirted the ice edge west to Elephant Island, reaching it on 14 December, and then sailed in open water to Clo thier Harbor, where they arrived on 22 December. Powell probably remained in the South Shetlands to seal until 26 February, when his meteorological log ceases. He returned to London in August 1822.

Despite the brutality of their trade, many sealing captains
were men of education. Among them, Powell stands out as cul-
tivated and with scientific interests. During his voyage, an
almost complete meteorological record was maintained,
including twice-daily air and sea temperatures and pressure
readings. Magnetic variations were recorded, as well as sound-
ing and the direction and speed of currents. Soil samples were
Collected for the Royal Society. His published chart of the South
Shetlands was the best compiled by any sealer, and the sailing
directions written to accompany this chart (*Notes on South
Shetland . . .*) contain a wealth of information about anchor-
ages, shoals, submerged rocks, and so on, essential for sailors
in these dangerous waters. Powell was not to enjoy the distin-
guished career that his talents might have created for him. While commanding *Rambler* for the Enderby brothers, he
anchored on 3 April 1824 in the Friendly Islands—ill-named,
at least for Powell. There, a local chief had encouraged some
of Powell's crew to desert, including a young man who had
been placed under Powell's care. In an attempt to recover him,
Powell went ashore and was then killed.

**See also:** Coronation Island; Enderby Brothers; Palmer, Nathaniel (1821–1822); Sealing and Antarctic Exploration; South Orkney Islands; South Shetland Islands

**References and further reading:**

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**Prince Charles Foreland (Svalbard)**

Located at 78°30'N, 11°40'E, this island (54 miles long and 3–8 miles wide) is separated from Spitsbergen by Foreland Sound. The North Grampian Range of mountains extends south for 35 miles from the island's northern tip, reaching its highest point at Mount Monaco (1,065 meters). The official Norwegian name is Prins Karls Forland. It was discovered in June 1596 by the Dutch Northeast Passage expedition piloted by Willem Barents, who failed to recognize that it formed a separate island; he mapped it instead as a peninsula. The first documented landing was made by Jonas Poole, who hunted bears and reindeer on the west coast in 1610. Its insu-
sularity was established by 1613, when it was depicted as an island by the Dutch cartographer Hessel Gerrits and referred to by the English whaler Robert Fotherby as “Prince Charles his Iland.” From this it can be inferred that the island was named for Prince Charles, later king of England and Scotland (1625–1649).

Following landings by Elling Carlsen in 1863 and Richard von Drasche-Wartinberg in 1873, William Speirs Bruce con-
ducted a comprehensive topographic survey in the summers of 1906, 1907, and 1909, resulting in a published map (1913). Bruce also made natural history collections, focusing espe-
cially on geology. After completing his survey, Bruce claimed Prince Charles Foreland for the Scottish Spitsbergen Syndicate. Further geological studies were carried out by Adolf Hoel in 1910 and by Bruce in 1914, but no mineral resources were found of economic significance. The first aerial photographic survey was organized in 1936 by Norwegian Svalbard Expe-
ditions (see Hoel, Adolf), D. J. Atkinson and R. A. McDonald spent three summers here in 1950, 1951, and 1953. From their hut, at Dawes Point on the east coast, they conducted the most detailed topographic and geological survey to date. See also: Barents, Willem; Bruce, William Speirs; Hoel, Adolf; Svalbard

References and further reading:

Prince Edward Islands (Sub-Antarctic)
This somewhat confusingly named group consists of two islands, the smaller Prince Edward Island (46°38’S, 37°55’E), and the larger Marion Island (46°55’S, 37°45’E). The islands lie 1,250 miles southeast of South Africa.

Although Marc-Joseph Marion Dufresne is generally credited with their discovery, the islands were in fact first seen on 4 March 1663 by the Dutch East Indian merchant vessel Maere-sevene. However, they were not seen again until rediscovered by Marion Dufresne on 13 January 1772, who named the larger island “Terre d’Espérance” for the hope it gave him of finding the southern continent, and the smaller “Ile de la Caverne” for a prominent cave. These islands today bear the name given them by James Cook, who, in the absence of names on his French-compiled chart, named them collectively for the fourth son of King George III of Great Britain. Today, the names “Marion Island” and “Prince Edward Island” are frequently mistakenly attributed to Cook, who in fact referred to the two island groups discovered by Marion Dufresne respectively as the “Prince Edward Islands” and the “Marion and Crozet Islands.” The latter are now known simply as the Crozet Islands. This sublety was clearly lost on the sealers, who were first to use the names “Marion” and “Prince Edward Island” for the two islands in this group.

Neither Marion Dufresne nor Cook landed on the islands. The first known landing was made in 1799 by French sealers in Sally. This marked the beginning of a period of intense sealing activity, during which the fur seal population was virtually wiped out by 1810. Apart from occasional later visits to take elephant seals, the islands were largely left alone throughout the remainder of the nineteenth century. Among scientific expeditions, James Clark Ross wished to land in April 1840 but was prevented from doing so by poor weather, though he did make soundings and take dredgings offshore. On 26 December 1873, HMS Challenger landed a party on Marion Island to conduct a brief survey of the island’s natural history and to collect specimens. During that visit, the island was also charted for the first time (see Nares, George).

Events during World War II, particularly the activities of German raiding vessels, drew attention to the strategic significance of the islands. This provoked the South African government to organize the secret Operation Snoektown, during which the frigate HMSAS Transvaal annexed Marion Island on 29 December 1947 and Prince Edward Island on 4 January 1948 for “His Majesty’s Government in the Union of South Africa.” An occupying force was left behind at Transvaal Cove on Marion Island, which was replaced in February 1948 by a meteorological party led by Allan B. Crawford. A meteorological station was established that has been maintained ever since. During his stay, Crawford also conducted the first triangulation of the eastern half of the island, during which he climbed the highest point and made ornithological observations. Until 1956, the station was relieved twice a year. Since then, it has been relieved annually.

Whereas Prince Edward Island remains unoccupied and seldom visited, Marion Island is the site of much scientific exploration, beginning in 1965–1966 with the First South African Biological-Geological Expedition led by Professor Eduard M. van Zinderen Bakker Sr. On this and his Second South African Biological Expedition (1971–1972), Bakker conducted the first systematic scientific survey of Marion Island, spending several days as well on Prince Edward Island in March 1965. The latter island was subsequently studied at much greater length by a major biological expedition in 1981–1982.

See also: Cook, James (1776–1780); Marion Dufresne, Marc-Joseph; Nares, George (1872–1874); Ross, James Clark (1839–1843); Sealing and Antarctic Exploration; South Africa; Sub-Antarctic Islands

References and further reading:

Prince Harald Coast (Antarctica)
Lying between 34° and 40°E in the vicinity of Lützow-Holm Bay, this section of the coastline of Queen Maud Land has Princess Ragnhild Coast to the west and Prince Olav Coast to the east. It was discovered from the air on 4 February 1937 by Viggo Wilderøe, Nils Romnaes, and Ingrid Christensen during an expedition led by Lars Christensen in 1936–1937 and named for Prince Harald of Norway. It was claimed for Norway by royal proclamation on 14 January 1939.

The large Japanese station Syowa (69°S 39°35’E), is located on East Ongul Island, on the eastern shore of Lützow-Holm Bay. Opened in February 1957, this base has been continuously occupied since 1966. In addition to an extensive scientific program based at the station itself, wide-ranging studies have been made of the adjacent region, beginning with an aerial survey in 1961–1962.

See also: Christensen, Lars (1936–1937); Japan; Norway; Queen Maud Land

References and further reading:
Prince of Wales Island (Canada)
Located at 72°30'N, 99°00'W, this island lies south of Barrow Strait. It is separated from Somerset Island to its east by Peel Sound and Franklin Strait, and from Victoria Island to its southwest by McClintock Strait. Predominantly low-lying, it is 190 miles long and 40–130 miles wide, with an area of 12,872 square miles. On 24 August 1819, Edward Parry observed Cape Walker, a bold headland on Russell Island, immediately to the north of Prince of Wales Island. Behind it, he reported seeing a “loom of land” but was unable to ascertain its extent.

This was the first sighting of the island, which was named in 1851 by Horatio Austin for Albert Edward, Prince of Wales and later King Edward VII of Great Britain (1841–1910).

Sir James Clark Ross charted parts of the east coast from the far side of Peel Sound in May and June 1849. The first landing was made by Erasmus Ommanney in April 1851. He had sledged across Barrow Strait from the vicinity of Griffiths Island, first visiting Russell Island in the hope that Sir John Franklin might have left a message at Cape Walker. He then traveled along the west coast to Ommanney Bay, with Sherard Osborn continuing on beyond to 72°20'N. At the same time, William Browne investigated the east coast as far as Pandora Island. The first crossing was made by William Kennedy in 1852, between Kennedy and Ommanney Bays. Returning to Browne Bay, he then followed the east coast north to Cape Walker. The southern coast between Young Bay and Cape Richard Collinson was surveyed in 1859 by Allen Young during the expedition led by Leopold McClintock.

In 1993, the Lady Franklin Memorial Expedition investigated Inuit reports of a boat wreck in Back Bay on the western shore of Peel Sound. Its size, shape, and design appeared to identify it as an 8-meter whaler of the type often carried aboard nineteenth-century exploring vessels. Since no whaling or other exploratory voyages are recorded as visiting Back Bay, members of this expedition suggested (see Wadhams and Casarini 1994) the intriguing possibility that the wreck might derive from the Franklin expedition itself, representing a last desperate attempt by survivors to make their way north to Barrow Strait through Peel Sound.

See also: Austin, Horatio; Franklin, John (1845–1848); McClintock, Leopold; Parry, Edward (1819–1820); Peel Sound; Ross, James Clark (1848–1849)

References and further reading:

Prince of Wales Strait (Canada)
This channel between Banks and Victoria Islands connects Melville Sound with Amundsen Gulf. It was discovered in September 1850 by Robert McClure and named for Albert Edward, Prince of Wales and later King Edward VII of Great Britain (1841–1910). Unsuccessful attempts at transit were made by McClure in 1850, as well as by McClure and Richard Collinson in the following year. McClure’s vessel HMS Investigator wintered in 1850–1851 off the Princess Royal Islands in the middle of the strait. The next attempt to transit was made by Polar Bear in 1915 during the Canadian Arctic Expedition of Vilhjalmur Stefansson. Polar Bear was unable to reach Melville Sound and, like Investigator, wintered in the Princess Royal Islands.

Following Henry Larsen’s first successful transit in 1944 in St. Roch, this has become the favored deepwater route through the Northwest Passage. More recent transits include those in 1954 by HMCS Labrador and in 1969 by SS Manhattan.

See also: Collinson, Richard; Larsen, Henry (1944); McClure, Robert; Northwest Passage; Stefansson, Vilhjalmur (1913–1918)

Prince Olav Coast (Antarctica)
Lying between 40° and 45°E, this section of the coastline of Queen Maud Land has Prince Harald Coast to the west and Enderby Land to the east. It was discovered by Hjalmar Riiser-Larsen on 15 January 1930 and named for Crown Prince Olav of Norway. It was claimed for Norway by royal proclamation on 14 January 1939.

This region has largely been explored by Japanese parties from Syowa, the major Japanese Antarctic station lying farther west at 69°S, 39°35'E on Prince Harald Coast; and from Mizuho (70°42'S, 44°19'E), an all-year Japanese station opened in January 1970, primarily for glaciological and meteorological studies.

See also: Japan; Norway; Queen Maud Land; Riiser-Larsen, Hjalmar (1929–1930)

Prince Patrick Island (Canada)
Located at 77°00'N, 120°00'W, this westernmost member of the Parry Islands is separated from Melville Island to the southeast by Kellett and Fitzwilliam Straits, and from Banks Island to the south by McClure Strait. It is 150 miles long and 20–50 miles wide, with an area of 6,119 square miles. There has been no permanent Inuit population here within historic times.

Prince Patrick Island was independently discovered in 1853 by sledge parties led by Frederick Meacham and Leopold McClintock, during Henry Kellett’s Franklin search expedition. It was named for Arthur William Patrick Albert, Duke of Connaught and Strathearn (1850–1942), third son of Queen Victoria. Meacham explored the southern and western coasts as far as the vicinity of Cape Andreasen. On his return journey, he took a shortcut through the interior before investigating the southeast coast. McClintock, meanwhile, crossed Fitzwilliam Strait to land at Wilkie Point on 14 May 1853. He then explored southwest as far as Mould Bay, afterward heading counterclockwise around the island to McClintock Point on the northwest coast, some 20 miles short of uniting his survey with that of Meacham.

Although the island was claimed for Canada by Joseph-
Elzéar Bernier in 1906, Bernier himself was unable to land. Prince Patrick Island remained unvisited until 1915, when Vilhjalmur Stefansson surveyed the west coast as far as the island’s northernmost point at Cape Leopold McClintock, thus connecting Mecham’s and McClintock’s surveys.

A meteorological station was established in April 1948 at Mould Bay (76°14’N, 119°02’W) on the southeast coast during Operation Nanook. A seismic and magnetic observatory was added in 1962. The station was closed in 1997 and replaced by an automated weather station. Prince Patrick is one of the most remote islands in the Canadian Arctic and is essentially inaccessible except by air.

**See also:** Bernier, Joseph-Elzéar; Franklin Search Expeditions; Kellett, Henry (1852–1854); McClintock, Leopold; Parry Islands; Stefansson, Vilhjalmur (1913–1918)

**References and further reading:**


**Prince Regent Inlet (Canada)**

This channel between Somerset Island and Boothia Peninsula on the west and the Brodeur Peninsula of Baffin Island on the east leads south from Lancaster Sound into the Gulf of Boothia. Fifty miles wide at its northern outlet and nearly 200 miles long, it was discovered in August 1819 by Edward Parry and named for George August Frederick, prince regent and later King George IV of Great Britain (1762–1830). Parry hoped to reach open water reported off the north coast of mainland North America by a succession of explorers and thus to complete the Northwest Passage. He came within sight of Cape Kater when he was forced to turn back by ice on 8 August. Like subsequent navigators, he followed the east side of the channel away from the heavy ice off Somerset Island. Parry returned to make another attempt in 1824, his third Arctic expedition, in a bad ice year. He wintered at Port Bowen, Baffin Island, between 1 October 1824 and 20 July 1825. Soon afterward, HMS *Fury* was driven aground at Fury Point, where Parry was forced to abandon the ship together with a substantial store of provisions and equipment. The presence of this cache at Fury Beach was to be an important factor for subsequent expeditions.

With Parry unable to prove whether or not the inlet connected to channels farther west and thus to the Northwest Passage, John Ross organized a private expedition in 1824, his third Arctic expedition, in a bad ice year. He wintered at Port Bowen, Baffin Island, between 1 October 1824 and 20 July 1825. Soon afterward, HMS *Fury* was driven aground at Fury Point, where Parry was forced to abandon the ship together with a substantial store of provisions and equipment. The presence of this cache at Fury Beach was to be an important factor for subsequent expeditions.

With Parry unable to prove whether or not the inlet connected to channels farther west and thus to the Northwest Passage, John Ross organized a private expedition to settle the issue. In a highly favorable year, he was able to penetrate as far as the Gulf of Boothia, where he wintered at Felix Harbour (1829–1830), Sherriff Harbour (1830–1831), and Victory Harbour (1831–1832) before making his way north to Fury Beach, wintering there in 1832–1833. Ross’s conclusion was that there was no connection west through Somerset Island and Boothia Peninsula. Although he was correct as far as the Gulf of Boothia was concerned, he had in fact missed Bellot Strait, which was discovered in 1852 by William Kennedy on the second expedition sent by Lady Franklin to the inlet. Its first expedition, led by Charles Forsyth, got no farther than Fury Beach. Kennedy spent the winter of 1851–1852 at Batty Bay, Somerset Island. Between 1858 and 1859, Leopold McClintock led Lady Franklin’s third expedition to the inlet, wintering off Bellot Strait when he found it impossible to sail farther west.

Joseph-Elzéar Bernier surveyed the west coast of Brodeur Peninsula, Baffin Island, in 1911 during an abortive attempt to reach Foxe Basin through Fury and Hecla Strait. Between 1937 and 1947, *Nascopie* undertook annual voyages — when the ice permitted — to the Hudson’s Bay Company trading post at Fort Ross in Bellot Strait. It was also through this inlet that Henry Larsen reached Lancaster Sound in 1942 during his first transit of the Northwest Passage.

**See also:** Bellot Strait; Bernier, Joseph-Elzéar (1910–1911); Franklin, Jane; Hudson’s Bay Company; Kennedy, William; Larsen, Henry (1940–1942); McClintock, Leopold; Northwest Passage; Parry, Edward (1819–1821, 1824–1825); Ross, John (1829–1833)
Princess Astrid Coast (Antarctica)

This section of the coastline of Queen Maud Land lies between 5° and 20°E, with Princess Martha Coast to the west and Princess Ragnhild Coast to the east. It is lined in its entirety by ice shelves. The coast was first seen by Fabian von Bellingshausen on 16 February 1820; it was not rediscovered until March 1931, when sighted by Captain H. Halvorsen of the whaler *Sevilla*, who named it for Princess Astrid of Norway. In January 1939, photographic flights were made by Alfred Ritscher's German Antarctic expedition. Darts with inscribed swastikas were dropped every 16 miles, and the area surveyed was claimed for Germany as "Neu Schwabenland." Based on Halvorsen's rediscovery—Bellingshausen's sighting was not known at this date—the region had just previously been claimed for Norway by royal proclamation on 14 January 1939.

The Soviet station Lazarev (69°56'S, 12°58'E) was built in 1959 close to the Lazarev Ice Shelf, operating until 1961 when replaced by Novolazarevskaya (70°46'S, 11°50'E), which is sited farther inland on a lake at the eastern end of the Schirmacher Oasis. Both stations are named for Mikhail Lazarev, the captain of *Mirnyy* during Bellingshausen's expedition. The Schirmacher Oasis is an ice-free area of low coastal hills, some 11 miles long, with numerous meltwater ponds. The all-year Indian station Maitri (70°46'S, 12°00'E), opened in the 1988–1989 season, is also located here, as was the former East German station Georg Forster (70°46'S, 11°50'E), closed in 1993 after operating since 1976. India also maintains Dakshin Gangotri (70°05'S, 12°00'E), now a summer station, but manned throughout the year between 1984 and 1990. In 1993–1994, Ivar Erik Tøljesen led a Norwegian mountaineering expedition to the Mühlíg-Hofmann, Orvin, and Wohlthat Ranges, making a series of first ascents including Jöulkykjura (3,148 meters) and Ulvetanna (2,931 meters), in a section of the coastline of Queen Maud Land that was not previously climbed.

References and further reading:

Princess Elizabeth Land (Antarctica)

Princess Elizabeth Land forms that part of East Antarctica lying between 73° and 87°43'E, with Kemp Land to the west and Wilhelm II Land to the east. It was discovered on 9 February 1931 by Sir Douglas Mawson during the British, Australian, and New Zealand Antarctic Research Expedition (BANZARE) and was named for Princess Elizabeth of Great Britain. Mawson's discovery was made from the air, and he was unable to land; the first landing was made by the Norwegian whaler Klarius Mikkelsen in February 1935.

Although Princess Elizabeth Land falls well within the sector proclaimed as the Australian Antarctic Territory in 1933, Australia's right to claim a section of the continental interior reaching to the South Pole on the basis of Mawson's brief coastal investigations was not accepted by all nations. In 1938, the American explorer Lincoln Ellsworth was given secret instructions by the U.S. government to fly as far south as he could in this region and to claim all land seen for the United States. In the event, he reached 72°S, 79°E, where he dropped the American flag together with a copper cylinder stating the claim of the United States to the "American Highland," consisting of all land falling within 150 miles of his flight path. As with other territorial claims under the Antarctic Treaty, this claim has been suspended but not revoked, and thus American publications make no reference to "Princess Elizabeth Land," preferring instead to use "American Highland" for the interior and "Ingrid Christensen Coast," "Lars Christensen Coast," and "Leopold and Astrid Coast" for the coastline. Place names can be highly political. U.S. interest in this region continued in the 1940s, when much of it was photographed from the air by the Western Group during Operation Highjump in February and March 1947.

Scientific stations have tended to be located in one of two ice-free "oases," either in the Vestfold Hills on the Breidnes Peninsula or farther west in the Larsemann Hills, both located besides Prydz Bay and to the east of Amery Ice Shelf, which has provided the main focus for long-continuing glaciological studies. The first station to be opened in January 1957 was the Australian all-year station Davis (68°35'S, 77°25'E) in the Vestfold Hills. More recent stations have tended to cluster in the Larsemann Hills, where the Soviet Progress Station (69°24'S, 76°24'E) was open for several years (1986–1987), alongside the Australian summer station Law, and the Chinese all-year station Zhongshan (69°22'S, 76°25'E) opened in February 1989, it is still in operation. Far into the interior, Sovetskaya was established in February 1958 at 78°24'S, 87°35'E by the 3rd Soviet Antarctic Expedition. The original intention was to site Sovetskaya at the Pole of Inaccessibility, but this location was as far as the tractor party traveling out of Mirnyy in Queen Mary Land could reach.

Dome Argus (81°S, 77°E), the highest point in the Antarctic ice sheet, at just over 4,000 meters, is found close to the center of East Antarctica. This upward fold in the ice sheet is formed by the presence beneath the ice of the Gamburtsev Mountains, a major range trending north-south and rising to nearly 3,000 meters. These mountains were discovered in 1958 by Soviet scientists conducting seismic studies and
named for the geophysicist Grigoriy A. Gamburtsev. Knowledge of subglacial topography here and elsewhere in Antarctica was vastly extended by the radio-echo sounding program conducted by the Scott Polar Research Institute with U.S. logistical support between 1967 and 1979. See also: Australian Antarctic Territory; Ellsworth, Lincoln (1938–1939); Ingrid Christensen Coast; Mawson, Douglas (1929–1931); Operation Highjump

**Princess Martha Coast (Antarctica)**

Lined throughout its length by ice shelves with high ice cliffs, this coastline forms the western extremity of Queen Maud Land between 5°00'E and the beginning of Coats Land at the terminus of Stancomb-Wills Glacier at 20°00'W. On 27 January 1820, an ice shelf along this coast was the first part of continental Antarctica to be seen, discovered by the Russian navigator Fabian von Bellingshausen. The coast was not rediscovered until February 1930, when seen from the air by Hjalmar Riiser-Larsen, who named it for Crown Princess Martha of Norway. In January 1939, air photographic flights were made by Alfred Ritscher's German Antarctic expedition. Darts with inscribed swastikas were dropped every 16 miles and the area surveyed claimed for Germany as “Neu Schwabenland.” Based on Riiser-Larsen's rediscovery—Bellingshausen's sighting was not known at this date—the region had just previously been claimed for Norway by royal proclamation on 14 January 1939.

Several scientific stations have been maintained at various times along this lengthy section of coast. Between February 1950 and January 1952, John Giever's Norwegian-British-Swedish Antarctic Expedition was based on the Quar Ice Shelf at Maudheim (71°03'S, 10°56'W). A full scientific program was carried out, including topographic, geological, and glaciological surveys, and a seismic transect was made 390 miles south to 74°20'S, 0°48'E. The Norwegian International Geophysical Year (IGY) station Crown Princess Martha Coast (70°30'W, 2°32'W; also known as Norway Station) operated between 1957 and 1960, contributing to all fields of science studied during the IGY. Its scientific program was continued when South Africa took over the station in January 1960, replacing it in February 1962 by SANAE (South African National Antarctic Expeditions). As with other stations located on ice shelves, SANAE periodically was relocated and rebuilt. As a result, a decision was taken to site the most recent station—SANAE IV—on a nunatak considerably farther inland at 71°40'W, 2°50'W, with the expectation that rebuilding should be less frequent (though resupply would be more difficult). South Africa has also operated geological field stations in the Borg Massif and Ahlmann Ridge regions. In March 1981, the West German station Georg von Neumayer (70°37'W, 8°22'W) was opened at Akta Iceport on the Ekström Ice Shelf. This is the major German Antarctic station, conducting studies in a wide range of scientific fields throughout the year. In 1987–1988, the Swedish Antarctic Program established the field station Svea in the Heimefront Range at 74°58'S, 11°22'W. In the following year, both Sweden and Finland opened stations in the Vestfjella—Wasa and Aboa—at 73°03'S, 13°25'W. Since then, these stations have opened during several summers, usually in combination with the Norwegian station Troll (72°00'S, 02°32'E), operating as the combined Nordenskiöld Base with the logistics provided by a joint Nordic expedition. The Soviet summer station Druzhnaya III, near Cape Norvegia, was also opened in 1987–1988.

It was on this coast hat Sir Ranulph Fiennes chose to winter his Trans-Globe Expedition in 1980, some way inland of SANAE at Rvigen in the Borg Massif, before setting out across the previously unvisited interior to the South Pole. See also: Bellingshausen, Fabian von; Fiennes, Ranulph (1979–1982); Germany; Giever, John; International Geophysical Year; Norway; Queen Maud Land; Riiser-Larsen, Hjalmar; Ritscher, Alfred (1938–1939); South Africa

References and further reading:

**Princess Ragnhild Coast (Antarctica)**

This section of the coastline of Queen Maud Land lies between 20°00' and 34°00'E, with Princess Astrid Coast to the west and Prince Harald Coast to the east. It was discovered from the air by Hjalmar Riiser-Larsen and Nils Larsen on 16 February 1931 and was named for Princess Ragnhild of Norway. In February 1937, the region was photographed from the air during an expedition led by Lars Christensen, the major discovery being the impressive Sør-Rondane Mountains 100 miles inland. It was claimed for Norway by royal proclamation on 14 January 1939.

The first station established here was the Belgium International Geophysical Year station Roi Baudouin (70°25'S, 24°20'E). Named for King Baudouin of Belgium, it was built in 1957 by an expedition led by Gaston de Gerlache, the son of Adrien de Gerlache. A variety of studies were carried out until its closure in 1967, including the first topographic and geological surveys of the Sør-Rondane Mountains, in addition to full geophysical and meteorological programs at the station itself. The most recent work, particularly on the Sør-Rondane Range, has been conducted by the Japanese, whose Asuka station (71°32'S, 24°08'E) was open between 1986 and 1995.

In January 1991, the summer station Jinnah (70°25'S, 25°46'E) was established by Pakistan. Pakistan's involvement in Antarctic science, and hence this station, are controversial because Pakistan has yet to sign the Antarctic Treaty.

In 1996–1997, Ivar Erik Tøllefsen led a Norwegian mountaineering expedition to the Sør-Rondane, making several first ascents, including the spectacularly precipitous Ronde Spire (2,567 meters).
References and further reading:

Pronchishchev, Vasilyi (d. 1736)
The Russian naval lieutenant Vasily Pronchishchev was given responsibility for surveying and compiling charts of one of the most difficult of all sections of the Siberian Arctic coast, from the Lena Delta west to the great Taymyr Peninsula.

Defeated by the Taymyr, 1735–1737
In his original plan for what was to become the Great Northern Expedition, Vitus Bering had suggested that the Arctic coast of Russia be surveyed between the Ob' and Lena Rivers. This proposal was subsequently expanded to take in the entire coast from Archangel to the Kamchatka Peninsula. Bering himself was charged with making a voyage to America. But while he remained at Yakutsk he was expected to oversee all detachments operating out of there, including that of Pronchishchev.

On 30 June 1735, Pronchishchev set out with some fifty men and, most unusually, was accompanied by his wife, Tatyana, who was probably the first woman to participate in an exploring expedition. On his long voyage down the Lena, his detachment traveled with that of Lieutenant Peter Lassinius, who had been charged with exploring the coast east from the Lena. A fleet of barges trailed behind, carrying supplies and equipment for both expeditions. On reaching the Lena Delta on 2 August, the two detachments separated, Lassinius taking the well-marked main eastern channel while Pronchishchev searched for a suitable channel leading west. Finding himself in danger of getting lost in the maze of waterways, Pronchishchev decided to backtrack to the main eastern channel and follow that to the sea. This gave him a much longer voyage north and west, skirting the outside edge of the delta in very shallow waters, before he finally arrived at the Olenek River on 25 August. Although Pronchishchev had hoped to reach much further, he decided to winter here, where there was a small hunting and trading settlement. The navigation season was drawing to an end, and his leaking vessel Yakutsk was in need of repairs.

Work continued through the winter, regardless of an outbreak of scurvy, as well as the disappearance of the sun for nearly three months between 3 November and 22 January 1736. As expedition staff compiled a map of the Lena from Yakutsk to the Arctic Ocean, the local inhabitants informed Pronchishchev that copper could be found on the upper Anabar River. A sample of this was sent to Bering in Yakutsk, and instructions were received back that the Anabar should be investigated further.

On 2 August 1736, Pronchishchev set out again, not long afterward reaching the Anabar, where he remained for several days. Nikifor Chekin was sent upstream to search for copper while quartermaster Tolmachev investigated the coast for minerals. Meanwhile, Pronchishchev surveyed the river mouth and made tidal observations. The three were reunited on 11 August. Two days later, they reached Begichev Island in Khatanga Bay. There, signs of human occupation were found: a hut, food, and a dog, but no occupants. The way now led north along the east coast of the Taymyr Peninsula. At this time, no one knew just how far this peninsula projected into the Arctic Ocean, where in fact it forms the most northerly land of continental Eurasia. Pronchishchev made a valiant attempt to circumnavigate it, working Yakutsk through increasingly ice-filled waters until 77°29’N was reached on 19 August. He was now just 15 miles short of the Taymyr’s northern tip, but further progress was impossible with heavy pack ice surrounding them. By now, Pronchishchev was seriously ill with scurvy. He summoned a council of his officers, and the decision was made to turn back. With many others also afflicted, the journey soon deteriorated into a scramble south to find anywhere where sufficient food might be found to keep them alive through the winter. Pronchishchev had planned to winter in Khatanga Bay, but, considering there was little prospect of finding game in so barren a place, they continued on to the Olenek. By the time the expedition arrived there on 2 September, Pronchishchev was dead. His wife, Tatyana, lived only two weeks longer.

Command devolved to pilot Semen Chelyuskin. Pronchishchev’s detachment had been given two years to complete its task. With time being up, Chelyuskin traveled overland to Yakutsk once he had recovered to inform Bering of the expedition’s progress and Pronchishchev’s death. Bering, however, was unreachable, having shortly before Chelyuskin’s arrival set out for Okhotsk, leaving no instructions behind. Instead, these would have to be sought from the Admiralty College in St. Petersburg. There was a considerable delay, therefore, before the decision could be made to organize a new expedition under the leadership of Lieutenant Khariton Laptev.

See also: Bering, Vitus (1733–1743); Laptev, Khariton; Northeast Passage; Russia; Women Explorers

References and further reading:

Pytheas (Fourth Century B.C.)
Controversy still surrounds just how far north the Greek Pytheas reached in the fourth century B.C. Did he reach
Iceland? Did he see the frozen sea? For centuries, the name “Ultima Thule” has been applied to places marking the northernmost margin of inhabitability, both real and imagined. This name we owe to Pytheas. His “Thule” lay six days sail north of Britain—but did he visit such a place, or merely report hearsay?

**Did an Ancient Greek Reach the Arctic Around 325 B.C.?**

Pytheas was a native of the Greek colony of Massalia, the predecessor of Marseilles. He is recorded as having written at least one book, *On the ocean*, but none of his writings survive. His work is known only through fragmented quotation by others, many of whom themselves knew his work second-hand. Later writers are remarkably divided in their opinion of him. On the one hand, Pytheas is credited with being the first to show how astronomical observations could be used to determine latitude through use of the gnomon, the upstanding projection of a sundial. Again, probably in pursuit of improved methods for calculating latitude, he is said to have demonstrated that the Celestial North Pole, although lying close to the North Star, Polaris, does not actually coincide with it. Such achievements marked him as one of the greatest astronomers of the classical world. On the other hand, his geographical achievements were clearly not credited by all, and knowledge of where he went and what he said is preserved only in statements selected by hostile authors, often with derisory intent. Polybius (208–126 B.C.) and Strabo (ca. 64 B.C.—after A.D. 23) were particularly antagonistic, and since most of what is known to us comes through Strabo, Pytheas’s reputation has suffered as a consequence. Reasons for this hostility may now only be guessed at, but Strabo knew of Pytheas only secondhand via Polybius, and it has been suggested that Polybius, who also prized himself as a widely traveled geographer, may have found it unacceptable that Pytheas could have achieved so much more than he.

What can be reconstructed of Pytheas’s voyage? We know that Massalia had recently fought a successful war against Carthage. One result was that its ships were for the first time able to sail through the Strait of Gibraltar, previously passable only by Carthaginians. Tin and amber were important trade goods from the north, and Massalia may have wished to send out an expedition to make direct contact with the sources of supply. For Pytheas, such a voyage would have provided him the opportunity to develop his theories and extend his observations. And, indeed, on reaching the Atlantic he was immediately struck by the extent of the tides, so much greater than in the Mediterranean, and he was the first to connect these with the phases of the moon. His ship proceeded to the British Isles, which he is credited with circumnavigating, most probably by sailing up one side on his outward voyage and back down the other on his return journey. As he traveled north, he quizzed the inhabitants as to the length of their longest day—the chief method prior to Pytheas for establishing latitude. The figures he recorded match well with northern Scotland (eighteen hours), the Shetland Islands (nineteen hours), and Thule (twenty-one and twenty-two hours). Where, however, was Thule? Scholarly opinion divides on this issue. Some argue that Pytheas reached no farther that the Shetlands—though this would not match the figures given—and others suggest Iceland or west Norway. Whereas Iceland has been put forward most frequently, Norway would seem more likely, since this is the direction that winds and current would have taken Pytheas after Scotland. Thule is also recorded as inhabited, which Iceland was not, whereas Norway was. Whatever the location he had reached, Pytheas is reported as continuing north, now motivated presumably exclusively by scientific desire to reach the Arctic Circle and as far beyond as was necessary to see the midnight sun. Here, in the far north, he reports the existence of a frozen sea, which in Strabo’s hostile quotation is transformed into a Mediterranean jellyfish!

Should Pytheas be regarded as the first polar explorer? Even the most favorable interpretation of his travels would not have him reaching beyond the sub-Arctic. But in aspiration he was so far ahead not only of his contemporaries but also of generations long afterward. To deny him this title would be to deprive ourselves of a great pioneer.

**References and further reading:**


Queen Elizabeth Islands (Canada)

This name was adopted in 1954 to designate the islands in the Canadian Arctic Archipelago north of Parry Channel. The group is named for Queen Elizabeth II of Great Britain. The islands have a total area of some 160,000 square miles. Ellesmere is the largest and most northerly island. Other members of the archipelago are included within the Parry and Sverdrup Groups (see their respective entries).

**See also:** Canada; Ellesmere Island; Parry, Edward (1819–1820); Parry Islands; Sverdrup Islands; Sverdrup, Otto (1898–1902)

**References and further reading:**


Queen Mary Land (Antarctica)

Queen Mary Land forms that part of East Antarctica lying between 91° and 102°E, with Wilhelm II Land to the west and Wilkes Land to the east. It was discovered in February 1912 by members of the Australasian Antarctic Expedition led by Frank Wild and was named for Queen Mary of Great Britain. Wild’s eight-man party wintered at West Base on the Shackleton Ice Shelf before undertaking a series of sledging journeys west as far as the Gaussberg Nunatak in Wilhelm II Land and east to the Denman Glacier. On their way to the Gaussberg, the Western Party discovered the Haswell Islands, where a survey party landed in December 1947 during Operation Windmill to provide ground control for air photographs taken earlier that year by the Western Group of Operation Highjump. Farther east, the Bunger Hills were discovered during Operation Highjump in February 1947 by Lieutenant Commander David E. Bunger. This ice-free “oasis” was also visited by Operation Windmill in January 1948, and both sites were later selected for scientific stations during the International Geophysical Year (IGY, 1957–1958).

The major Soviet station Mirnyy was opened in February 1956 by the 1st Soviet Antarctic Expedition at 66°33’S, 93°01’E at a site opposite the Haswell Islands. This was the first Soviet Antarctic station to be established and served until 1972 as the headquarters for that country’s activities on the continent, a role later assumed by Molodezhnaya. In addition to a comprehensive scientific program at the station itself, aerial, topographic, and geological surveys have been made of the surrounding region, covering much of Queen Mary Land in the process. The station’s major first task, however, was to act as the logistics base from which tractor parties set out to establish first operational support stations and then, in the most inaccessible parts of the continent, Vostok at the South Geomagnetic Pole and Sovetskaya at the Pole of Inaccessibility itself. The first operational support station to be set up was Pionerskaya, 234 miles inland of Mirnyy at 69°44’S, 95°31’E, followed soon afterward by Komsomoł’skaya—or “Young Communist”—originally built in 1957 at 72°08’S, 96°35’E and subsequently moved to 74°06’S, 97°30’E. The tractor party seeking to establish Vostok was forced to winter in 1957 some distance short of the South Geomagnetic Pole at Vostok-1, 395 miles from the coast and less than halfway to their destination. With the party reaching its objective later the same year, on 16 December the IGY station Vostok was opened at 78°28’S, 106°48’E at an altitude of 3,488 meters. Sovetskaya was established by the 3rd Soviet Antarctic Expedition in February 1958 at 78°24’S, 87°35’E, 450 miles short of the Pole of Inaccessibility but as far as the tractor party could reach. The Pole of Inaccessibility itself (85°50’S, 65°47’E) was reached by another tractor team, where a temporary station was opened between 13 and 28 December 1958. Following the return of the Pole of Inaccessibility party in 1959, Sovetskaya was closed. Since 1963, Vostok has been supplied annually by a tractor train from Mirnyy, earlier attempts to supply by air proving only intermittently successful.

In the Bunger Hills, the Soviet IGY station Oazis was established by air in October 1956. In 1958, this station was transferred to Poland and operated briefly under the name Antoni Bolesław Dobrowolski until it was closed in 1959. It has since been reopened occasionally in the summer under both its Russian and Polish names, depending on which country is making use of it. Although this is an interesting area in which to conduct research, dense pack ice offshore has meant that stations here have always been difficult to supply, a point underlined by the brief establishment of the Australian summer station Edgeworth David (66°15’S, 100°22’E), which opened here in January 1986 but had to be closed the next season when the pack ice proved impenetrable.

As Queen Mary Land is part of the claimed Australian Antarctic Territory (AA T), Australian scientists have also worked extensively here. Queen Mary Land was first photographed in its entirety from the air in the comprehensive trimetrogon survey of AA T initiated in 1961–1962.

**See also:** Australian Antarctic Territory; Geomagnetic Poles; International Geophysical Year; Mawson, Douglas (1929–1931); Operation Highjump; Operation Windmill; Poles of Inaccessibility; Russia; Wild, Frank (1911–1913)

**References and further reading:**


Queen Maud Land (Antarctica)

Also widely known by its Norwegian name of Dronning Maud Land, this major section of East Antarctica lies between 20°00′W and 45°E, with Coats Land to the west and Enderby Land to the east. It corresponds to Norway’s territorial claim, now suspended under the Antarctic Treaty of 1959. Interpreted as extending from the coast south to the South Pole, it comprises one-sixth of the total area of Antarctica. From west to east, it includes: Princess Martha Coast, Princess Astrid Coast, Princess Ragnhild Coast, Prince Harald Coast, and Prince Olav Coast. A Norwegian royal proclamation of 14 January 1939 consolidated the various discoveries made by Norwegian explorers and whalers in this region into a coherent territorial claim on behalf of Norway, defining Queen Maud Land as “that portion of the Antarctic mainland coast which extends from the limits of the Falkland Islands Dependencies in the west (the limits of Coats Land) to the limits of the Australian Antarctic Territory in the east (45°E long.) with the land lying inside this coast and the environing sea.”

With dense pack ice customarily found offshore, the 6,270-mile long coastline of Queen Maud Land was paradoxically both the first part of Antarctica to be seen—by Fabian von Bellinghausen on 27 January 1820—and among the last to be explored. It required aircraft in combination with ships for systematic investigation. This occurred during a series of expeditions sponsored by the Norwegian whaling entrepreneur Lars Christensen, supplemented by observations made from numerous other Norwegian whaling vessels operating in the region in the early 1930s. The land as a whole was named in January 1930 for Queen Maud of Norway by Hjalmar Riiser-Larsen, the man responsible for discovering three of the five coasts comprising this sector: Prince Olav and Princess Martha coasts on 15 January and 18 February 1930, respectively, and Princess Ragnhild Coast on 16 February 1931. Princess Astrid Coast was discovered on 5 February 1931 by Captain H. Halvorsen of the whaler Sevila, and Prince Harald Coast was not discovered until six years later on 4 February 1937 by Viggo Widerøe, Nils Romnaes, and Ingrid Christensen. With the exception of Halvorsen’s sighting of Princess Astrid Coast, all of these discoveries were made from the air. Norway’s claim to this sector was disputed by Germany, Alfred Ritscher’s expedition being dispatched in 1938 to overfly as much of it as possible, taking aerial photographs and dropping darts inscribed with swastikas every 16 miles. “Neu Schwabenland,” the region to which Germany laid claim, extended as far south as 72°44′S, with the western and eastern limits respectively 4°50′W and 18°30′E.

A number of spectacular mountain ranges rise inland above the ice plateau, reaching their greatest altitude at Jökulkyrka (3,148 meters) in the Mühlig-Hofmann Mountains. Other major ranges include the Heimefront, Orvin, Wohlthat, and Sør-Rondane Mountains, some of which may have been first seen during Ritscher’s expedition (though without ground control many of the features photographed by this expedition have never been satisfactorily identified). These mountains were subsequently reached by ground parties: the Sør-Rondane first by Belgians from Roi Baudouin (Princess Ragnhild Coast) in 1958; the Heimefront first in 1961 by a British party from Halley Bay (Coats Land); and the other ranges first by Norwegians from Norway Station (Princess Martha Coast).

Farther inland, the ice plateau rises above the level of all but the very highest nunataks. Beyond even these, at 3,624 meters above sea level, the American Plateau Station (79°15′S, 40°30′E) was operated throughout the year from 1965 through to January 1969. An automatic weather station now occupies the site. More recently, as part of major ice-coring projects, Japan and Germany opened the field stations Dome Fuji and Kohnen in 1995 and 2001 at 77°19′S, 24°08′E and 75°00′S, 0°04′E, respectively. Other stations near the coast and in the mountains are described in the entries for Queen Maud Land’s component coasts.

See also: Christensen, Lars; Coats Land; Enderby Land; Giæver, John; Japan; Norway; Prince Harald Coast; Prince Olav Coast; Princess Astrid Coast; Princess Martha Coast; Princess Ragnhild Coast; Riiser-Larsen, Hjalmar; Ritscher, Alfred (1938–1939); Whaling and Antarctic Exploration

References and further reading:
Rae, John  
(1813–1893)

A British naval cap band and monogrammed cutlery were among objects brought to England in October 1854 by the Hudson’s Bay Company surgeon and explorer Dr. John Rae. The disappearance of Sir John Franklin somewhere in the Canadian Arctic was the mystery of its age. Sir John had last been seen in July 1845, since when numerous expeditions had searched for him in vain. Rae had acquired these items from the Inuit, who spoke of many white men dying some years previously near a large river farther west. Initials on the cutlery proved them to have been members of Sir John’s expedition.

John Rae was born and raised in the Orkney Islands, Scotland, acquiring in boyhood skills that were to equip him well in future life: shooting, sailing, and rock-climbing. After qualifying as a doctor at Edinburgh University, he joined the Hudson’s Bay Company, first as a surgeon and then as a fur-trader. This gave him the opportunity to spend time with the Cree Indians, enabling him to further improve his hunting and traveling techniques, the latter to such a degree that he was soon regarded as the finest-ever exponent of snowshoeing. HBC governor Sir George Simpson recognized his prowess and selected him to complete the survey of the Arctic coast of North America brought to near completion in 1837–1839 by Peter Dease and Thomas Simpson.

Boothia and the Northwest Passage, 1846–1847

The expedition led by Dease had reached as far east as the Castor and Pollux River in 1838, leaving the region between there and Fury and Hecla Strait, Edward Parry’s farthest west in 1822, yet to be surveyed. This was a critical section, because between the two lay Boothia. John Ross had reported this to be a peninsula when he returned to England in 1833. Thomas Simpson, by contrast, believed that in 1838 he had seen a strait separating it from the continent. If indeed Boothia was an island, south of it lay the long-sought Northwest Passage. Simpson had planned to resolve the question himself but was prevented by his untimely death. The task would fall to Rae.

On 13 June 1846, Rae set out from York Factory in two small boats with ten men. At Fort Churchill, he was joined by two Inuit—Ouligbuck and his son, William—who would serve as interpreters. Reaching Repulse Bay in northeast Hudson Bay through Roes Welcome Sound, Rae led his party overland to the Gulf of Boothia, in the process crossing the isthmus later named for him. Although Rae’s was the first exploring expedition to cross this land, many Inuit from nearby Igloolik would have done so previously. With the days shortening, Rae decided not to explore farther, returning instead to Repulse Bay, where he built his winter quarters, Fort Hope. The weeks before winter drew in were profitably employed in hunting and fishing.

On 5 April 1847, Rae was ready to set out again, sledging across Rae Isthmus before exploring to the northwest as far as Lord Mayor Bay, which had been discovered by Ross in 1830. Since this lay on the east coast of Boothia and Rae found no strait separating it from the mainland, it was clear that Simpson had been mistaken and that Boothia formed part of continental North America. This dashed Rae’s hopes of discovering the Northwest Passage. The coast farther north having been surveyed by Ross, Rae returned to Fort Hope, where he arrived on 5 May. Delaying just eight days to make essential preparations, he next recrossed Rae Isthmus to explore the west coast of Melville Peninsula, where lack of provisions caused him to turn back just 20 miles short of Fury and Hecla Strait. By 9 June he was back at Fort Hope, beginning his return voyage to York Factory on 12 August.

Although no Northwest Passage existed south of Boothia, Rae’s first expedition was in other respects a success. At minimal cost, he had reduced the sections of the Arctic coast remaining unsurveyed to the 20 miles south of Fury and Hecla Strait and the west coast of Boothia Peninsula. Rae himself was to map much of the latter in 1853–1854.

Searching for Franklin along North America’s Arctic coast, 1847–1849

While on leave in London, Rae was introduced to Sir John Richardson (1787–1865), who had recently been appointed leader of an overland expedition to search for Franklin. Richardson invited Rae to serve as his second-in-command. Richardson was now fifty-nine, and many years previously he had assisted Franklin as surgeon and deputy leader during two expeditions to survey the American Arctic coast in 1819–1822 and 1825–1827. Richardson’s instructions from the British Admiralty were to explore this coast between the Mackenzie and Coppermine Rivers, as well as the southern shores of “Wollaston” and “Victoria” Lands beyond.

Twenty men with four boats were sent ahead to York Factory in the HBC supply vessel Prince Rupert and Westminster. Meanwhile, Richardson and Rae traveled separately to New York, meeting up with the rest of their party at Methy Portage on 28 June 1848. The mouth of the Mackenzie was reached on 3 August, and from there they searched the coast for Franklin as far east as Cape Kendall in Coronation Gulf. Leaving their boats at Icy Cove, they then traveled overland to northeast Great Bear Lake, where an advance party had built Fort Confidence to serve as their winter quarters.
With only one boat available for the following summer, Richardson decided to delegate continuing the search to Rae and return to Great Britain, aware that there was nothing he could accomplish that the younger Rae could not do at least equally well. On 7 June 1849, Rae set off with six men up the Dease River to reach the mouth of the Coppermine on 14 July. His intention was to complete the Admiralty’s instructions by crossing over the sea ice in Dolphin and Union Strait, permitting him at last to cross to “Wollaston Land.” During the next three weeks, he proved this and “Victoria Land” to form the single landmass known today as Victoria Island. At his farthest point west, Rae narrowly missed making contact with one of Robert McClure’s sledding parties in Prince Albert Sound, the latter traveling south from Mercy Bay on the north coast of Banks Island. On 30 May, he returned to the mainland to make his way up the Kendall River, where he met the party from Fort Confidence with his two boats. Sailing them down the Coppermine, he next followed the southern coast of Victoria Island heading east, landing near Cambridge Bay on 27 July, then continuing along the eastern coast as far as Pelly Point. There, Rae came close to discovering what had happened to Franklin when three attempts to reach King William Island were thwarted by heavy ice in Victoria Strait. At this time, Franklin’s abandoned ships were probably still to be seen in the strait, and along the west coast of King William Island a trail of bodies lay where Franklin’s men had dropped during their last desperate march toward the Back River. Rae did discover two pieces of wood in Parker Bay, which he believed to be from Erebus or Terror, but he saw nothing else to indicate that the solution to Franklin’s disappearance lay nearby.

Later, Rae came to regard this expedition as his greatest achievement. During what he described as “the most quickly performed Arctic journey on record” (Rich 1953, xcv), he had explored 1,080 miles on foot and 1,390 miles by boat, in the process charting 630 miles of previously unknown coast.

Franklin’s Tragedy Revealed, 1853–1854
Rae’s fourth expedition was made at his own suggestion. In 1846–1847, he had come close to completing the survey of the Arctic coast, and he now intended to finish the job, at least as far as the west coast of Boothia was concerned. In 1852, William Kennedy had reported Bellot Strait between Boothia and Somerset Island. Although there remained some doubt as to whether this really existed, if it did, it marked the northern limit of continental America, making Rae’s task one of surveying the coast between it and Castor and Pollux River. A subsidiary aim was to confirm his previous conclusion that Boothia was a peninsula, which the Admiralty was still reluctant to accept.

On 24 June 1853, Rae departed from York Factory with twelve men and two boats, intending to travel to the head of Chesterfield Inlet, make an overland journey to the Back River, and then descend that river to the coast. Unfortunately, no suitable route could be found toward the Back River. Sending six of his men back to Fort Churchill in one boat, Rae continued with the others to Fort Hope in Repulse Bay. Arriving there on
14 August, he spent the fall hunting and fishing, accumulating sufficient food to keep his party well fed and healthy throughout the winter. Although the stone house built in 1846 was still in good condition, Rae chose to live instead in snow houses, which he found to be much more comfortable.

Leaving Fort Hope on 31 March 1854, Rae had reached Pelly Bay in the Gulf of Boothia when he was informed by an Inuk of a large party of white men who had starved to death near a large river some way farther west. Purchasing from him a gold cap band—said to have come from one of the bodies—Rae decided to press on with his survey rather than investigate the report for himself. After locating the cairn built by Simpson at Castor and Pollux River, he spent the next nine days mapping the coast as far as Cape Porter, in the process discovering Rae Strait and thus proving King William “Land” to be an island. In his mind, however, he kept thinking of what he had been told. If true, this must be Franklin’s expedition, for whom he and many others had searched so long. If so, it was clearly his duty to carry the news back to London as quickly as possible to forestall further search expeditions, or at least direct them where to look. Arriving back at Repulse Bay on 26 May, he was visited by a party of Inuit with more detailed knowledge of the dead men. From them, he learned that a group of Inuit had met about forty white men on the southern coast of King William Island. The men were clearly starving and were overjoyed to be able to acquire seal meat from the Inuit. Later in the same year, thirty bodies were found on the mainland and five more on a nearby island, which Rae identified as Montreal Island off the Back River. Although none of this party had seen the kabloonas (white men), they had with them many objects clearly acquired from the bodies, including monogrammed silverware and a medal later identified as belonging to Sir John Franklin himself. There could now be no doubt that his was indeed the expedition that had met a tragic end farther west.

Rae’s news caused consternation when his report was published in full by the Admiralty. According to his Inuit informants, in their last desperate days some among the survivors had resorted to cannibalism. For Victorian Britain, such behavior by officers and men of the Royal Navy appeared inconceivable. In the uproar, Rae became the subject of considerable public opprobrium. What right had he to slur the memories of brave men when he had not even taken the trouble to confirm the truth or otherwise of the Inuit reports? Why indeed had he rushed back to London rather than visiting Montreal Island? The answer seemed obvious: Parliament had promised £10,000 to whomever solved the Franklin mystery, and Rae was intent on claiming the prize. All this was most unfair. Rae learned of the award only upon his arrival in England. As he stated, his sole concern had been to forestall the sending of further expeditions and thus to prevent other lives being placed at risk. Great Britain being then at war and the Royal Navy fully occupied, the British government enlisted the HBC’s assistance to investigate the truth of the rumors reported by Rae. In 1855, James Anderson and James Stewart were sent down the Back River. Without an interpreter, they learned little but did obtain further relics among the Inuit confirming that Franklin’s men had met their end nearby. King William Island remained unvisited until 1859, by which time just two written records survived to be found by Leopold McClintock. However good Rae’s reasons, it remains a matter of regret that he felt unable to visit this island or Back River at a time when journals and other papers might still have been found. They were long scattered and lost by the time McClintock arrived.

Rae retired from the HBC in 1856. He was subsequently employed on a number of surveys, chiefly in Canada, but including one with McClintock in 1860 to investigate a suitable route for a telegraph line between Europe and North America. Later in life he settled in London, where his forthright views embroiled him in several controversies, including the planning and equipment of the naval expedition led by George Nares in 1875–1876, as well as the lack of recognition accorded by the Admiralty’s charts to the many contributions to the mapping of Arctic America made by HBC employees such as Dease, Simpson, and himself. Rae knew his own excellence as an Arctic traveler and could be scathing in his comments on others—sometimes justifiably, sometimes not. In truth, he was generally more at ease in the company of the Indians, Inuit, and Métis with whom he traveled more than 10,000 miles on his four expeditions between 1846 and 1854. Vilhjalmur Stefansson, who thought more of Rae than of any other explorer, attributed to Rae a slew of innovations, including the simplicity and cheapness of his equipment; the speed, length, and safety of his sledding journeys; his willingness to depend on local resources and to act as the main food-provider rather than rely on natives; the first major use of snow houses by an explorer for dwellings, as well as the first construction of them by a European; and the first Arctic use for wintering purposes, by an explorer, of fuel other than coal or wood. Central to these was his adoption of Inuit rather than the forest Indian practices used by earlier explorers (Stefansson 1954, p. 491).

See also: Boothia Peninsula; Dease, Peter; Franklin, John; Franklin Search Expeditions; Hudson’s Bay Company; Indigenous Peoples; Inuit; Contribution to Polar Exploration; Kennedy, William; King William Island; McClintock, Leopold; Northwest Passage; Parry, Edward (1821–1823); Ross, John (1829–1833); Stefansson, Vilhjalmur; Victoria Island (Canada)

References and further reading:
Rasmussen, Knud
(1879–1933)

The Greenlandic and Danish explorer Knud Rasmussen stands apart from others in that his greatest achievements were not so much geographic as ethnographic, the primary purpose of his travels being to learn more about the Inuit: how they had come to Greenland in the first place, as well as their intellectual culture. He was, nevertheless, an explorer of the first rank. He did as much as anyone to extend knowledge of north and southeast Greenland, quite apart from being the first to dogsled through the Northwest Passage.

The son of a Danish missionary who had lived twenty-eight years in Greenland, Knud Johan Victor Rasmussen’s maternal grandmother was an Inuk, and he learned Inuktitut as a child. At age eight he was driving dog teams. At fourteen he was sent to be educated in Denmark, eventually graduating from the University of Copenhagen. His first experience on an Arctic expedition was as ethnographer on Ludvig Mylius-Erichsen’s expedition to North Greenland in 1902–1904. In 1905, Rasmussen was in West Greenland, studying the possibility of introducing reindeer, when he learned that the whalers had been unable to reach Smith Sound that year. Because this meant that the Polar Inuit would be unable to obtain the goods on which they now depended, Rasmussen decided to travel north himself across Melville Bay, bringing with him sledges laden with essential supplies. This incident sowed the seeds of his plan to establish a trading post in the region. Eventually, in 1910, with the aid of many private donations, he was able to establish Thule Arctic trading station at North Star Bay, Wolstenholme Fjord, a location where a mission station had been set up the previous year. The venture proved profitable. Rasmussen buying arctic fox furs from the local Inuit in exchange for rifles, ammunition, tea, sugar, and other goods. His seven Thule expeditions were to be funded largely from its proceeds; he was often accompanied by the station’s trading manager, Peter Freuchen (1886–1957). Detailed accounts are given below for all but the Third and Fourth Thule Expeditions. On the third expedition, Rasmussen sponsored Godfred Hansen’s journey to northern Ellesmere Island to lay depots for Roald Amundsen. The fourth expedition was Rasmussen’s month-long visit to Ammassalik in 1919 to collect material for his study of legends and folklore among the East Greenlanders.

The First Thule Expedition: Across the Inland Ice to Search for Mikkelsen, 1912

The original aim of the First Thule Expedition was to investigate “Peary Channel,” which Robert Peary had announced in 1892 as dividing Greenland from islands farther north. However, when Ejnar Mikkelsen failed to reach Thule Station as expected in 1910, having last been seen traveling across the Inland Ice of northeast Greenland, Rasmussen decided that his first priority must be to search for Mikkelsen. As with all his early expeditions, Rasmussen was to adopt Inuit methods of travel, aiming to obtain most of his food supplies through hunting.

After Rasmussen headed north some 125 miles to Neqé, he found that the ice had broken up in recent gales, forcing him to change his plan. Instead of following the coastal ice, he would head across the Inland Ice to Danmark Fjord. Thus, on 14 April 1912, accompanied by Freuchen and two Greenlanders—Uvdloriaq and Inukitsaq—Rasmussen climbed up Clements Markham Fjord, leading a long cortège of thirty-five sledges pulled by 350 dogs. The crossing was largely free of incident, and it took just seventeen days to travel 650 miles. Descending from the ice cap proved more difficult, and dogs, sledges, and men had to be lowered on ropes down a 20-meter wall before reaching ice-free land. On 4 June, Mylius-Erichsen’s summer camp was discovered on the western shore of Danmark Fjord, but no message was found. In fact, they had been anticipated by Mikkelsen, who had removed Mylius-Erichsen’s note two years earlier without, however, replacing it with his own. This was to have two principal consequences. Rasmussen was led to infer that Mikkelsen could not have reached this region and must have turned back earlier. With no information to go on as to the latter’s whereabouts, he decided to abandon the search for him. (In fact, at this time Mikkelsen was far to the south, awaiting collection from Bass Rock, and there was nothing that Rasmussen could have done for him.) More seriously, Mylius-Erichsen’s message had announced his discovery that “Peary Channel” did not exist, a discovery now repeated in ignorance by Rasmussen, as he traveled to the head of Independence Fjord and found land where Peary had reported an ice-filled channel. Therefore, much time was wasted before they were able to begin exploring areas not previously visited, discovering Nyeboe Glacier and venturing into Adam Biering Land. Crossing over into Peary Land to hunt muskoxen and other game, he found ancient Inuit tent rings, indicating that this route might have been followed by the Inuit on their way to the east coast. On 23 July, they found the cairn marking Peary’s discovery of Independence Fjord, high on Navy Cliff. Since this was clearly joined to land farther north, it was something of a mystery how Peary could have mistaken the fiord for a channel. Ras-
Rasmussen's generous explanation was that the base of the fiord could not be seen from Peary's viewpoint.

They were ready to return home, but continuous gales, bringing rain and snow, delayed them until 8 August, when at last they were able to climb onto the Inland Ice, their three sledges now being pulled by twenty-seven dogs. The snow was softer and traveling conditions less favorable than during their first crossing, but they still managed to make it back to Thule Station by 15 September with one sledge and just thirteen dogs. In all, they had traveled some 1,500 miles.

**Across North Greenland as Two Die, 1916–1918**

The ancient Inuit tent rings found in Peary Land during the First Thule Expedition suggested to Rasmussen the possibility of mounting further expeditions to explore the routes taken by the Inuit in their epic migration across Arctic North America to Greenland. He considered that two questions in particular required resolution. Had the Inuit traveled across the Inland Ice to reach West Greenland from the north, or did they make their way over the sea ice of Melville Bay? And did the East Greenlanders reach their current settlement of Ammassalik from north or south Greenland?

On 1 April 1916, Rasmussen departed from Copenhagen in the steamer *Hans Egede* accompanied by Lauge Koch, who was to act as cartographer and geologist. Reaching Godthåb on 18 April, they were unable to travel sufficiently fast up the coast to undertake Rasmussen's original plan for this year to investigate a series of fiords in northern Greenland. Instead, they studied Melville Bay. Arriving there on 4 June, Koch spent two weeks completing a topographic survey while Rasmussen succeeded in identifying the remains of no less than fifty ancient houses, indicating that the Inuit had indeed migrated overland as well as along the coastal ice.

At Thule, they were joined by the Swedish botanist Dr. Thordrid Wulff. Originally invited to conduct studies in the local area, Wulff soon found himself co-opted as a member of the sledding party when Freuchen proved unable to participate. Three Polar Inuit—Inukitsoq, Ajako, and Nasaitorluarsuk—were to serve as hunters, the party being made up by the West Greenland Inuk Hendrik Olsen, who had been with Mylius-Erichsen on the *Danmark* expedition. Rasmussen’s objective was to map and study the geology and botany of a series of fiords—St. George Fjord, Sherard Osborn Fjord, Victoria Inlet, Nordenskiöld Inlet, Chipp Inlet, and De Long Fjord. Although several sledding parties had passed along this coast (see the entries for George Nares, Adolphus Greely, and Robert Peary), the fiords and their interiors had remained unexamined. It was conceivable that at least one of them led through to the east coast.

On 6 April 1917, the seven-man party departed from Thule along the coastal ice with twenty-seven sledges and 354 dogs. All but six of the sledges carried walrus and narwhal meat to feed men and dogs until they got farther north, where good hunting was anticipated in the extensive ice-free land reported in the vicinity of Victoria and Nordenskiöld Inlets. On 1 May, the last of the accompanying Polar Inuit turned back in Kennedy Channel at 81°30’N. Not long afterward, St. George Fjord was reached and mapping begun. By 31 May, the first three fiords had been explored, but the hunting proved disappointing, and many dogs had to be killed to conserve feed. Rasmussen, Koch, and Ajako now set out west through Nordenskiöld Inlet with the aim of reaching Independence Fjord. From there the plan was to head north and return along the coast of Peary Land. Meanwhile, Wulff was to continue his biological studies, making his way along the coast to join up with the others on their way back. This was exceptionally ambitious but came to nothing when Rasmussen found the way through Nordenskiöld Inlet blocked by icebergs. Instead, he took his party north to survey De Long Fjord. By 23 June, the mapping program was complete, and it had been established that none of the fiords formed a channel cutting off Peary Land from the rest of Greenland. Peary Land was thus not a separate island but Greenland’s northernmost extension.
The journey home began well when nine seals were killed, providing sufficient food to reach Sherard Osborn Fjord, where seals were known to be plentiful. Unfortunately, once there they found the seals congregating in the open water, where they could not be recovered if shot. Thus, just two seals were obtained. The problem now facing Rasmussen and his party was that although enough game could be had to subsist from day to day, they had accumulated insufficient provisions for the 270-mile journey over the Inland Ice, where no game could be expected. It was while out hunting hares that the Greenlander Olsen disappeared on 21 July. He had remained behind to rest and was never seen again. Four days were spent searching for him before Rasmussen decided that they must go on, leaving behind food, clothing, and maps in the faint hope that Olsen might still be alive.

With fourteen dogs pulling two sledges, they reached the Inland Ice on 11 August, up a glacier in St. George Fjord. Progress was slow, and sixteen days passed before they came in sight of ice-free land beyond Humboldt Glacier. It was nearly 20 miles away, and they had eaten their last provisions, including most of the dogs. Now the rain came and torrential rivers sprang up, through which they slipped and slid, tied to each other by seal straps, until in sodden clothes they reached Inglefield Land at Cape Agassiz on 24 August. At last they seemed safe, this being familiar hunting territory to the Inuit. Wulff, in particular, was causing Rasmussen considerable concern, repeatedly stating that he could not go on. Etah was still 125 miles away. Some hares had been caught, and with the prospect of finding caribou as well, Rasmussen decided to leave the others while he and Ajako went ahead to summon help. Koch and Wulff were instructed to make for a large lake, where they would be easy to find. By now, Wulff was incapable of eating his share of food and seemed resigned to die. When Rasmussen arrived, Koch sat weeping before Rasmussen decided that they must go on, leaving behind food, clothing, and maps in the faint hope that Olsen might still be alive.

Rasmussen’s relief party reached Koch, Inukitsoq, and Nasairdluuarsuk on 4 September. Having managed to shoot a caribou, they had debated going back to Wulff in the hope that he might be able to eat some of it, but they judged that by now he must be dead. When Rasmussen arrived, Koch sat weeping on a rock. Wulff’s body was never found.

The Danish Ethnographic Expedition to Arctic North America, 1921–1924

Among Rasmussen’s undertakings, the Fifth Thule Expedition is the best-known. In it he sought to discover the origins of the Inuit and to repeat their journey across Arctic America in reverse. The expedition would consist of two phases. In the first, from a base in western Hudson Bay, he and a team of appropriately trained staff would conduct archaeological and ethnographic studies of the various Inuit tribes living nearby; in the second, he personally would continue along the northern shore of the continent to Alaska and, if possible, eastern Siberia to compare lifestyles across the Arctic. The rise in fur prices at the end of World War I had helped Thule Station to generate even larger profits, and Rasmussen’s intention was to invest these on behalf of all Inuit in an expedition designed to recover knowledge of their past. During the first phase, he was to be accompanied by Freuchen (cartographer and biologist), Therkel Mathiassen (archaeologist and cartographer), Kaj Birket-Smith (ethnographer and geographer), Helge Bangsted (assistant and secretary), and Jacob Olsen (interpreter).

While in Copenhagen, Rasmussen and Freuchen had constructed the small motor-schooner Søkongen (Sea-King), specifically for use on expeditions. Small and sturdy at about 100 tons, it was sent ahead on 27 May 1921 under the command of Captain Peder M. Pedersen. Rasmussen himself departed on 18 June, accompanied by Mathiassen and Birket-Smith in the large passenger vessel Bele, which was wrecked on its way to Upernavik with much of the expedition’s equipment on board. On 2 August, Søkongen arrived at Thule to take on seventy-five dogs. Since the expedition members would not themselves have time to hunt, four Inuit hunters and three seamstresses joined the party here: three couples—Iggiánguaq and Arnarulúnguaq, Arqiq and Arnánanguaq, Nasairdluuarsuk (“the Bo’sun”) and Aqatsaq—and Arnarulúnguaq’s cousin Qavigárssuaq (Miteq). While they were returning south to complete preparations at Godthåb, virulent Spanish influenza broke out among the Inuit. Six of them recovered in hospital but the seventh died—their best hunter, Iggiánguaq. It was a dispiriting start.

Once across Davis Strait, Søkongen entered Hudson Strait. Unable to make contact with the inhabitants of the Savage Islands, they continued to Foxe Channel. Now late in the year, it was important to press on with all speed to their intended destination of Winter Island, where Edward Parry had wintered in 1821–1822. Heavy ice made navigation increasingly difficult, and it did not help that their map had been lost with Bele. Eventually, land was seen to the west and a suitable anchorage found off a small island at 65°54’N, 86°50’W. There, on Danish Island, Rasmussen decided to establish his base, which he named Blæsebaelgen (The Bellows) on account of the strong winds. It lay between Frozen Strait and Lyon Inlet. Søkongen departed on 24 September.

The expedition was to remain there for two and a half years. From it, several long sledging journeys were made to the north, west, and south. The Northern Party of Freuchen, Mathiassen, Arqiq, and Arnánanguaq was assigned the region between Danish Island and Baffin Island. Ethnographic studies were conducted near Igloolik, and mapping of the east coast...
of Melville Peninsula was significantly improved. Much of Baffin Island farther north remained unexplored, and the first surveys were made of the Aggo Bay/Cape Hallowell area and of the extensive region between Gifford Inlet on the southern coast and Admiralty Inlet and Eclipse Sound.

The first major journey of Rasmussen's Southern Party began on 24 March 1922, when he set out for Chesterfield Inlet accompanied by Bangsted, Qavigârssuaq, and Arnarulûnguaq. Meeting up with Olsen, who had gone ahead with Birker-Smith, they followed the Inlet to Baker Lake, where they arrived on 12 May to find Birker-Smith happy with what he was learning about the Caribou Inuit from those visiting the HBC post to trade. Almost unique among their people, the Caribou Inuit were not hunters of marine mammals inhabiting the coast but lived inland, where caribou provided their chief means of subsistence. Despite their relatively southern location, they had been visited by few Europeans and by no ethnographers. The Southern Party remained with the Caribou Inuit until late June: Rasmussen copying down folktales, Birker-Smith continuing his ethnographic studies, and Bangsted collecting artifacts. They did not arrive back at Danish Island until 15 September, finding the rest of the expedition assembled (except for Mathiassen and Olsen, who had been excavating house ruins on Southampton Island and had been unable to cross Frozen Strait). Mathiassen and Olsen would have to winter with the Inuit.

The following spring, members of the expedition began to make their way home along routes designed to gather as much information as possible. After finally arriving back at Danish Island on 21 February 1923, Mathiassen was first away on 22 March heading for Pond Inlet, where he planned to excavate more house ruins. The next day, Birker-Smith and Olsen left, traveling south along the west coast of Hudson Bay to Churchill. On the way, Birker-Smith continued his studies among the Caribou Inuit and Chipewyan Indians. Bangsted stayed on to improve the archaeological and zoological collections before leaving for Churchill on 28 December. Freuchen set out for North Greenland early the following year.

Meanwhile, Rasmussen himself had begun the long overland journey during which he intended to follow the Arctic coast of North America to Alaska. With two sledges, each pulled by twelve dogs, he set out on 11 April accompanied by Qavigârssuaq and Arnarulûnguaq. Reaching the Gulf of Boothia across Rae Isthmus, they arrived at King William Island on 13 June. They remained through the summer among the Netsilik Inuit, who visited the island each year to hunt caribou. As Qavigârssuaq laid in a store of fresh meat through hunting, Rasmussen continued his studies of Inuit intellectual culture and excavated ancient house ruins with Arnarulûnguaq's help. Resuming their journey on 3 November, they soon fell in with the Copper Inuit of Victoria Island and Coronation Gulf. Photographer Leo Hansen joined them at the HBC post on the Kent Peninsula. He was to remain with them for the rest of the expedition. Rasmussen's investigations of the Copper Inuit continued until 16 January 1924, when he decided that his studies of the Central Inuit were complete. With the Western Inuit much better known, he and his companions sledged west to reach Point Barrow on 21 May. Throughout the journey, Rasmussen had found his Greenland dialect understood by all. At Barrow, he was able to outline his preliminary results to an audience of 300 Inuit, who seemed to have no difficulty following what he had to say. The long sledger journey ended at Icy Cape on 30 June. From there, he and his companions traveled by boat to Kotzebue and Nome. Before leaving Copenhagen, Rasmussen had applied for appropriate papers to visit the Inuit of the Chukotka Peninsula. Unfortunately, the papers had not reached Nome in time. Undeterred, he crossed Bering Strait as planned, only to be arrested on arrival and deported two days later by order of the governor. He arrived back in Copenhagen in October.

The Fifth Thule Expedition transformed knowledge of the Inuit. For the first time, comparative ethnographic studies had been conducted of eastern, central, and western tribes. Collections comprising 20,000 items, 15,000 of which were ethnographic, had been brought back for analysis and display in the National Museum of Denmark and the museums of the University of Copenhagen. Rasmussen alone had filled thirty notebooks with ethnographic observations detailing the life and customs, hunting methods, folktales, and songs of the Inuit. His results and those of his colleagues were later published in ten very large volumes.
tigation of the coast between Cape Farewell and Scoresby Sound. He had learned that the coast was navigable only between July and September, but he believed it possible to complete the work in three summers and thus avoid the expense of wintering. In addition to seven motorboats and the mothership M/S Th. Stau ning, he borrowed a Heinkel seaplane from the Danish navy, following the example of Gino Watkins, whose British Arctic Air Route Expedition of 1930–1931 had demonstrated how effective airplanes could be in East Greenland. This was to be a large-scale expedition with twenty-eight Greenlanders and thirty-five Danes, including among the scientific party Captain Carl Gabel-Jørgensen (second-in-command and surveyor), Erik Holtved and Dr. Poul Nørlund (archaeologists), R. Bøgvad (geologist), Poul Hansen (biologist), Commander Madsen (geodesist), and Dr. Therkel Math tassen (ethnographer). Although only 380 miles separate Cape Farewell and Umivik as the crow flies, the many fiords make this coastline thousands of miles long. With ground surveying being provided by the motorboat parties, 1,000 aerial photographs were taken during flights covering 7,000 miles. The results enabled the Danish Geodetic Survey to compile maps at 1:250,000. Rasmussen also wished to investigate the possibility of resettling the region, which had lost its population through migration to the west coast, where living was easier.

To that end, two Greenlanders—Emil Rasmussen and Knud Østergaard—volunteered to remain in Lindenow Fjord. Rasmussen’s goal for the following year was to explore and map the coast between Umivik and Kangerdlugssuak, the southernmost point reached by Mikkelsen’s survey of 1932. Again, the straight-line distance was some 375 miles, but heavy indentation made the actual length considerably longer. Apart from M/S Th. Stau ning’s replacement by M/S Nordstjernen, arrangements were similar to 1932, though with an even larger number of participants: more than 100 Greenlanders—from Ammassalik and the west coast—and fifty Europeans, including an Englishman and four Germans. After Rasmussen established that all was well with the two hunters in Lindenow Fjord, the motorboats headed north from Prince Christian Sound to begin the ground survey at Umivik. The seaplane succeeded in extending photographic coverage beyond Kangerdlugssuak to Cape Daussy on the Blosseville Coast. As if he did not have enough to do as organizer of so large an expedition, Rasmussen, in addition to continuing his own studies into East Greenland folklore and ethnography, was particularly taken up with the making of the film Pa lip’s wooring. Rasmussen’s interest in film dated back to the Fifth Thule Expedition, and great care was taken to ensure authenticity in all details. Fortunately, many Ammassalik residents proved to be natural actors. Rasmussen himself, however, was never to see his film. Mystery surrounds his final illness, but it appears to have begun with a meal of rotten dovekies (little auks). Rotten meat is considered a delicacy by the Inuit, but evidently this meat was too far gone. What began as food poisoning developed into influenza and then pneumonia. Although shipped to Copenhagen for hospital treatment, Rasmussen failed to recover.

Rasmussen was much more than simply a great polar traveler and explorer. Although his expertise was such that he was widely regarded as the world’s best sledge-driver, his explorations were invariably motivated by more than geographical curiosity. Tracing the routes taken by the Inuit in their epic crossing of Arctic North America from Alaska to West and East Greenland was one abiding interest, as was his fascination with Inuit intellectual culture. It is to the immense benefit of all concerned with the Inuit that such a man existed at such a time, for the Inuit accepted Rasmussen as one of them—as a person of such sensibility and understanding that they happily told him whatever they knew on any subject. Great as his journeys were, to Rasmussen we owe not only knowledge of regions previously unvisited but also the preservation of a rich heritage that would otherwise have been very largely lost.

See also: Baffin Island; Greely, Adolphus; Greenland, Inland Ice; Greenland, North; Hudson Bay; Inuit Contribution to Polar Exploration; King Christian IX Land; King Frederik VI Coast; King William Island; Koch, Lauge; Mikkelsen, Ejnar; Mylius-Erichsen, Ludvig; Nares, George (1875–1876); Northwest Passage; Parry, Edward (1821–1823); Peary Land; Peary, Robert (1891–1892, 1898–1902); Watkins, Gino (1930–1931)

References and further reading:


Richardson, Carsten

(fl. 1600s)

Carsten Richardson led the third and last expedition organized by the Danish king Christian IV to search for the lost Norse colonies in Greenland. Unlike the previous expeditions, however, Richardson was given instructions to search Greenland’s unapproachable east coast.

The Search for the Norse Colonies Continues in East Greenland, 1607

King Christian IV of Denmark had organized two earlier expeditions seeking to reestablish contact with the Norse
colonies in Greenland, of which nothing had been heard for more than 100 years. Led respectively by John Cunningham and Godske Lindenow, these expeditions had failed to find any trace of the colonies; nor had any Inuit taken prisoner there known anything of the Norse. And neither did the land seen by Cunningham and Lindenow appear to correspond to the green, productive land described in the Greenlandic sagas. Christian became increasingly persuaded that this was so because he was searching in the wrong place. Why was the larger of the two main settlements named the Eastern Settlement? This could only be because it was not on the west coast but on the east coast of Greenland.

Christian's plan for his third expedition was to search the east coast just north of its southernmost point at Cape Farewell. Southward-drifting ice made this coast notoriously difficult to approach, but Christian and his appointed pilot, James Hall, were heartened by their belief that this very region was as difficult as it could of Frobisher's explorations, ignorant of the fact that although his maps showed “Frobisher's Strait” as in southeast Greenland, it actually lay in southern Baffin Island. (The reasons for this error are explained in the concluding paragraph of the entry for Frobisher.)

Mindful that his previous choice of leader, Lindenow, had proved insufficiently experienced, Christian now appointed Carsten Richardson. Richardson—whose name appears variously as Richardsen and Richardsson—had been captain of Gilliflower under Lindenow in 1606 but, unlike the latter, had many years' service in the Danish navy, reaching back to the reign of Christian's predecessor, Frederick II. His pilot, the Englishman Hall, also had considerable experience, having acted as pilot on both 1605 and 1606 expeditions. The expedition's complement included several men able to speak Icelandic and Norwegian, since it was believed that these were the languages most likely to be understood by any surviving colonists.

On 13 May 1607, Richardson sailed from Copenhagen in the 60-ton Trost, the flagship on the 1605 and 1606 voyages, accompanied by the much smaller Greenland Bark. On 8 June, the east coast of Greenland was in view at 59°N, but the quantities of ice offshore meant that there was no prospect of approaching it. Weeks of futility followed as Richardson and Hall sought to find a way through to land but without success, despite sailing as far north as 64°N. With fresh water beginning to give out and the ships damaged through repeated battering by the ice, the crew could take no more and insisted that Richardson turn about. He did so, initially hoping to retreat only temporarily to Iceland, but then he found himself blown back by a storm all the way to Norway. Although summer was by no means over, it now seemed best simply to return to Copenhagen, which was reached on 25 July.

Although Christian retained hopes of some day rediscov-
from a nearby whaling fleet. On other exploring expeditions, too much valuable space had to be devoted to coal.

Some mystery surrounds the adequacy of the instructions given to Riiser-Larsen, who soon became engaged in a race against the Australian Sir Douglas Mawson. Each sought to be the first to stake a claim to Enderby Land, part of the Antarctic mainland discovered in 1831 by the British sealer John Biscoe but not seen since. Told to make all speed for Enderby Land, Riiser-Larsen was to steam west from there, following the continent as closely as possible to Coats Land, along some 2,500 miles of previously unexplored coast. Christensen was not the first to note the significance of this coastline. In 1921, Sir Ernest Shackleton had set out with the explicit intention of exploring this very area but was prevented from doing so by his untimely death. The question regarding the adequacy of Riiser-Larsen’s instructions is this: Officially the sovereignty of Enderby Land had already been agreed between the Norwegian and British governments; no one, however, seems to have thought to tell him, probably because no one had told Christensen either.

Riiser-Larsen sailed south from Norway in Christensen’s whaling factory ship Thorshammer, which was to act as mother-ship to the expedition throughout its activities. Meanwhile, Norvegia left its winter quarters at South Georgia, heading for Bouvet Island, where Captain Larsen had been instructed to build a shelter and provision depot for shipwrecked sailors. On 8 November, the two vessels met, and Riiser-Larsen was transferred to Norvegia along with coal, the expedition’s equipment, and two airplanes—a Lockheed Vega monoplane and a naval reconnaissance seaplane. Despite having to carry less coal than other expedition ships, Norvegia was now very heavily loaded, with less than one meter of freeboard, and the wings of the aircraft dipping into the water as the ship rolled. As a result, whenever possible, rough weather was ridden out in the lee of icebergs or in the pack ice where the ocean swell was reduced. Norvegia now returned to Bouvet on 11 November to erect another hut and photograph the island from the air.

Once his work at Bouvet was completed, Riiser-Larsen set out for Enderby Land, first steaming to 53°E, then making use of the prevailing easterly winds and currents to push southwest. From 64°21’S, 53°14’E, he and Lützow-Holm took off in the seaplane in bright and clear weather on 7 December. As they climbed to 1,000 meters, far to the south could be seen two black spots, toward which they flew 40 miles into a headwind. Traveling sufficiently far to see mountains unmistakably protruding out of a rising ice plateau, they returned to the ship. What they had seen were the mountains and ice cliffs of western Enderby Land. The next two weeks were spent working Norvegia closer to land. On 22 December, with the ship now at 65°10’S, 49°30’E, Riiser-Larsen and Lützow-Holm again took off. After flying some 90 miles, they found what Riiser-Larsen believed to be Biscoe’s Cape Ann. Passing this rock outcrop, they attempted to continue inland, but the plane was too heavily loaded to climb above the rapidly rising ice plateau. They therefore turned about and landed in open water some 25 miles from Cape Ann. By opening up the engine, Lützow-Holm was able to take the plane up onto the ice, and in this way they drove some way toward land before the surface was found too rough to continue, so they headed back to open water. Riiser-Larsen was determined to reach land to raise his country’s flag and claim the coast for Norway. Nearby ice cliffs 20 meters high prevented access here, so they skied for two hours toward exposed rocks. With signs of a thick bank of fog about to descend, their attempt had to be abandoned, the Norwegian flag being raised instead on a snow-covered islet close to the plane at 66°33’S, 50°40’E. Having experienced considerable difficulty in finding Norvegia on their first flight, Riiser-Larsen had given careful instructions for Captain Larsen to keep it close to two distinctively shaped icebergs. This was foresighted, because the ship was about to be blanketed in fog when they reached it. Norvegia now sailed back to Thorshammer to replenish its coal stocks.

Although the two ships met on 30 December, it was not until 4 January 1930 that coaling could begin and not until 6 January that Norvegia was ready to set out on its return voyage to Enderby Land, steaming well to the south of its previous course and keeping close to the shelter of the ice in a stiff southeasterly gale. By 13 January, it had reached the coastal ice off Enderby Land. The next day, the British exploration vessel RRS Discovery was sighted.

Just prior to meeting Discovery, on 10 January, Riiser-Larsen had received a telegram instructing him that he could occupy land only between 45°E and 15°W. All his efforts to secure Enderby Land for Norway had thus been in vain. He must have been disappointed and exasperated, but he hid his feelings well when he asked Mawson if he might come aboard Discovery. The two expedition leaders now informed each other of their activities and agreed to make 45°E the dividing line between their spheres of exploration.

Because of the failure to keep Riiser-Larsen properly informed, much time had been wasted, but he was not to wait long before making further discoveries. The next day, on 15 January, Norvegia was able to work its way close to land where mountains were soon in view, importantly to the west of 45°E. Although conditions were not ideal in the heavy swell, the plane took off, enabling much new land to be mapped. This mapping was later extended to 43°E during another brief flight. The lead of open water between the coast ice and land had now closed over so that Riiser-Larsen and Lützow-Holm were unable to land. But below them they saw ice stretching into the distant haze studded by innumerable nunataks. Now known as Prince Olav Coast, it forms the easternmost extension of Queen Maud Land, as Riiser-Larsen named his discovery.

Norvegia, continuing west, on 1 February, took soundings that revealed a distinct submerged shoal at 68°S, 32°E, which Riiser-Larsen named the Gunnerus Bank for a Norwegian
bishop who had been first to describe the pelagic shrimp. Beyond this bank ice conditions worsened, with the sea thickly strewn with icebergs. Little could be achieved for the next two weeks as Norvegia was forced north away from likely land.

The Weddell Sea was finally reached on 16 February. Soon afterward, rapidly shallowing soundings indicated that at last Norvegia might again be approaching land. Two days later, land was clearly within view, slopes of ice rising to 300 meters and fringed by ice cliffs. For once the pack opened up before them, and they were able to come within 150 meters of the cliffs in a sheltered embayment, which they named Seal Bay. Their position was 71°27’S, 14°58’W. The seaplane took off, despite signs of a change in the weather, and followed the coast southward, then southwest, until it was turned back by fog. On 20 February, Lützow-Holm and Riiser-Larsen were again in the air and, once south of a belt of low clouds, were able to see the coast of Coats Land. This enabled them to establish the connection between their new discovery, which Riiser-Larsen named Princess Martha Coast, and land discovered by the Scottish explorer William Bruce in 1904. No nunataks could be seen above the land, which appeared entirely covered by snow and ice. Extracting Norvegia from Seal Bay proved far from easy, but eventually it was worked out, then heading north and east to follow the coast as close as possible. With thick pack to the west, it had to go back along its course as concern mounted that this late in the season—23 February—temperatures would fall and sea ice would begin to form. Riiser-Larsen had no desire to be trapped in the Weddell Sea. However, by early March Norvegia had escaped to open water and was able to effect a meeting with Thorshammer to take on more coal. Airplanes and equipment were now transferred to the factory ship and an unencumbered Norvegia was free to sail due north to Cape Town, which was reached on 27 March; there it was laid up until the next season.

**The Discovery of Princess Ragnhild Coast, 1930–1931**

Naval duties prevented Riiser-Larsen from taking command throughout Christensen’s fourth expedition the following year. Instead, Major Gunnar Isachsen was to lead the first part of the season, during which Norvegia completed a circumnavigation of Antarctica, while Riiser-Larsen took over when Norvegia reached Gunnerus Bank. With Lützow-Holm unavailable through illness, Riiser-Larsen now chose Nils Larsen, Norvegia’s captain, as his flying companion, the two of them discovering and charting Princess Ragnhild Coast on two flights on 16 and 17 February 1931. The previous year, Riiser-Larsen had seen cloud formations from Gunnerus Bank, indicating the nearby presence of land, but at the time he had been unable to investigate further. Now he was able to chart 200 miles of coastline, dropping a flag and documents to establish Norway’s claim. After Riiser-Larsen rejoined Thorshammer, on 24 February the planes were transferred to the factory ship while he boarded the transport Truls to return to South Africa. Norvegia continued with its explorations, for which planes and pilots were no longer required.

**An Ambitious Attempt to Sledge Antarctica’s Coastline Come to Nothing, 1933**

Riiser-Larsen was to return once more to the Antarctic on an expedition, which, had it been successful, would be remembered as one of history’s most daring polar feats. On his many flights along the coast of Queen Maud Land, Riiser-Larsen had noted that along much of this coast lay a belt of smooth and unbroken sea ice between the inland ice and the icebergs grounded offshore. His plan was to sledge along this, from eastern Queen Maud Land west toward and around the Weddell Sea, reaching, if possible, as far as Hope Bay at the tip of the Antarctic Peninsula. Such a journey would involve traveling along about 3,750 miles of coastline, nearly half of which was still unexplored. He was to be accompanied by Hallvard Devold and the ski champion Olav Kjellbotten, and the expedition was brought to Antarctica without charge by Christensen’s factory ship Thorshavn.

Luck was against Riiser-Larsen. First, on 8 February 1933, thick ice prevented him from landing near Proclamation Island, his planned starting place. Then, on 5 March, when he was successfully landed on the ice off an ice shelf on Princess Ragnhild Coast at 68°45’S, 33°50’E, the ice broke up in the night just two days later, with men and dogs swept out to sea on separate ice floes. Sending out an emergency SOS, the three men were rescued by the whale-catcher Globus V on 10 March. All but three of the dogs were lost, together with most of the equipment. Undaunted, Riiser-Larsen was keen to try again the following year, but in the middle of the worldwide economic depression he was unable to obtain sufficient backing.

This marked the effective end of his involvement in polar exploration, with naval duties now taking precedence, including distinguished service during World War II as chief of the Royal Norwegian Air Force. Riiser-Larsen is one of many explorers whose achievements receive less recognition than they deserve largely because the only full accounts of their exploits have never been translated into English. Although an English-language description of his 1929–1930 expedition was published in *Geographical Review* in 1930, Riiser-Larsen’s book on this expedition and his autobiography are still available only in Norwegian. As the man responsible for the discovery and acquisition for Norway of Queen Maud Land, a tract of land extending over 60 degrees longitude, it is high time that his fame was spread beyond his native land.

See also: Amundsen, Roald (1925, 1926); Bouvet Island; Bruce, William Speirs; Christensen, Lars; Coats Land; Enderby Land; Franz Josef Land; Mawson, Douglas (1929–1931); Nobile, Umberto; Norway; Prince Olav Coast; Princess Martha Coast; Princess Ragnhild Coast; Queen Maud Land; Shackleton, Ernest (1921–1922)

References and further reading:

Immediately prior to the outbreak of World War II, a secret expedition was sent to Antarctica to stake territorial claims on behalf of Adolf Hitler's Germany, in an area discovered and claimed by Norway. Its leader, Alfred Ritscher, had previously participated in a notably disastrous expedition led by Herbert Schröder-Stranz.

Alfred Ritscher's familiarity with sailing ships was acquired with the Hamburg-America Line. In 1912, he was asked by Schröder-Stranz to captain the two-masted schooner Herzog Ernst during the latter's expedition to Svalbard. Ritscher assumed command when Schröder-Stranz disembarked with three companions to sledge across the sea ice to North East Land. Herzog Ernst became beset in Sorge Bay, and eight of the remaining eleven men attempted an overland journey to the American coal mine at Longyearbyen. Ritscher alone was to get through, after a journey of daunting difficulty and privation. For a full account of this expedition, see the entry for Schröder-Stranz.

**Hitler's Germany Claims Antarctic Territory in a Secret Expedition, 1938–1939**

From 1936 on, decisions were made at high levels within the German government to expand Germany's involvement in Antarctic whaling. The strategic importance of this industry was clear, providing oil, lubricants, glycerine (for nitroglycerine in explosives), margarine, and other essential products. The considerable wealth derived from whaling, in particular by Norway, had not escaped Germany's notice. Pressure resulted in the lease on favorable terms to Germany of two Norwegian factory ships. By the 1938–1939 season, Germany's whaling fleet consisted of no less than seven factory ships and fifty whale-catchers, with the number of barrels of oil obtained rising from 196,300 in 1936–1937 to 492,532 two years later. At the same time, Norwegian production declined from 1,024,375 barrels to 724,329 (Bogen 1958, 93). Between 1929 and 1937, a considerable extent of Antarctic coastline named Queen Maud Land had been discovered by Norwegian whaling fleets, most notably by ships owned by Lars Christensen. Claims to this land had been made on behalf of Norway, though not yet officially announced by royal proclamation. Since these were the coasts off which the German fleet operated, there was German government concern that its ships should not find themselves in the same situation as pertained in the South Atlantic, where Great Britain asserted the right to charge heavy fees for whaling concessions and imposed restrictions on whaling activity. If Norway should attempt to do this to Germany, it would not be tolerated. Instead, Germany would send an expedition to Antarctica to stake a claim in the same area as claimed by Norway, probably more as a spoiling tactic than for imperial aggrandizement, though the exact motivation is still disputed.

There were additional reasons why such an expedition was of interest to its primary sponsor, Field Marshall Hermann Göring. He was keen to learn more about whatever strategic opportunities the Antarctic might offer, and indeed German raiders were to operate very effectively out of sub-Antarctic islands during World War II, creating havoc in Allied shipping and sinking or capturing the entire Norwegian whaling fleet. Furthermore, as chief of the Luftwaffe, the German air force, Göring wanted to know much more about the functioning of airplanes in low temperatures—knowledge that was to prove highly useful during the invasion of the Soviet Union.

The mothership for the expedition was the 8,488-ton Schwabenland, borrowed from the German national airline Lufthansa, together with two Dornier-10 Wal seaplanes and their crew, captained by Rudolf Wahr and Richardheinrich Schirmacher. Schwabenland's normal role was to provide a floating supply base for Lufthansa's transatlantic traffic, especially planes taking mail between Africa and South America, which were hauled aboard by crane and then accelerated to takeoff using a powerful catapult.

The story of the expedition itself can be briefly told. With eighty-two men aboard, including a small team of scientists, Schwabenland sailed from Hamburg on 17 December 1938 under the captaincy of Alfred Kottas. No prior announcements were made as to the purpose of its voyage, which was to be a covert operation. On 15 January 1939, the ship was in the vicinity of Bouvet Island, soon afterward making contact with the German whaling fleet, before dropping anchor at 69°14'S, 4°30'W, close to the edge of the pack ice. From there, the first photographic reconnaissance missions were flown beginning on 18 January. Flying at 1,000 meters, with good conditions, each flight could photograph up to 77,000 square miles, penetrating at the farthest 370 miles from the ship. Deep penetrations over the continent proved impossible, with the planes being unable to achieve sufficient elevation to climb above the ice plateau, which increased in altitude away from the coast. In addition to taking photographs, 1.5-meter darts inscribed with swastikas were dropped every 16 miles and at all turning points along the flight paths. The dropping of flags to establish sovereignty had occurred during a number of recent Antarctic expeditions, though landing to raise the flag was the preferred option whenever possible. Only three landings were made from Schwabenland—twice on the sea ice, and once on land at 69°55'S, 1°09'W on 29 January. Here the swastika was duly raised, one of ten such flags carried on board.
The flights were carried out in three campaigns as *Schwabenland* was forced to alter its position in difficult ice and weather conditions. After a last flight 5 February, Ritscher decided that conditions had now deteriorated to such an extent that further activity would involve unwarranted risk. In all, 10,000 miles had been flown and 220,000 square miles photographed. The farthest south reached was 72°44'S, 4°50'W, with 4°50'W and 18°30'E being the limits of west and east, respectively. All three points were marked by swastika-inscribed darts and the entire area claimed for Germany as "New Schwabenland," ignoring prior Norwegian claims now officially consolidated by royal proclamation on 14 January 1939. Indeed, much of the land photographed had not previously been explored, and a number of new mountain ranges were discovered. But without proper ground control, the photographs were useless for mapping purposes, and it has since proved impossible to locate many of the features shown.

Leaving Antarctica behind on 6 February, *Schwabenland* followed the Greenwich meridian north, obtaining a series of soundings and other oceanographic measurements on the way, before reaching Germany on 11 April.

Opportunities for full analysis of the expedition’s results—
Robert Island (South Shetland Islands)

Located at 62°24’S, 59°30’W, this island—11 miles long and 8 miles wide—is separated from Nelson Island by Nelson Strait, and from Greenwich Island by English Strait. It was first sighted from the north in October 1819 by William Smith, Edward Bransfield’s chart, compiled in January 1820, fails to distinguish it as a separate island, and thus sealers later that year would have been the first to identify its insularity. Fabian von Bellinghausen charted the southern coast in February 1821 and named it “Polotsk Island” for a Russian town near Minsk. This name was predated by the one generally used today, which derives from the sealing brig Robert and was presumably first accorded by its captain Robert Filides. Clothier Harbor, named for the American sealing brig Clothier, which was wrecked there 9 December 1820, had the reputation among sealers as being the safest harbor on the north side of the South Shetland Islands and as being generally clear of ice.

With the exception of British survey parties in 1957–1958 and 1966–1967 on the island as part of a general triangulation of the South Shetland Islands and to complete a survey of English Strait, the majority of work on this island has been carried out by the Chilean Antarctic Program working out of Capitán Arturo Prat, the Chilean station on nearby Greenwich Island. In 1949–1950, a Chilean refuge hut was built at Coppermine Cove, followed in 1957–1958 by the construction of a landing strip at the northwest end of the island to facilitate movement of scientists and other personnel. Since then many botanical, soil, geomorphological, and other surveys have been completed.

See also: Bellinghausen, Fabian von; Bransfield, Edward; British Antarctic Survey; Chile; Greenwich Island; Sealing and Antarctic Exploration; Smith, William; South Shetland Islands

Ronne, Finn (1899–1980)

The Norwegian American Finn Ronne claimed to have discovered more of Antarctica than anyone else, titling himself “the last of the great polar explorers” (Ronne 1979). Whether or not such claims were true, he did make a significant contribution to the continent’s exploration.

Ronne was inspired to become a polar explorer by his father, Martin, who had participated in several of Roald Amundsen’s expeditions, including his Antarctic expedition of 1910–1912. Although then in his late sixties, Martin Ronne had also been a member of Richard Byrd’s first Antarctic expedition in 1928–1930, and he had been invited by Byrd to join him again on his second expedition in 1933–1935. Martin’s death in 1932 prevented this, but Finn was asked to go in his place, marking the beginning of a long polar career, during which he was to visit Antarctica nine times.

On his return from Antarctica, Ronne began planning his own expedition and even acquired a number of sledge dogs before sharing his ideas with Richard Black, a colleague from Byrd’s second expedition. Black was enthusiastic and wrote up a report for the U.S. Department of the Interior, where he worked. This report was to reach President Franklin D. Roosevelt and led to the establishment of the United States Antarctic Services Expedition under the leadership of Rear Admiral Richard Byrd (1939–1941). In his autobiography, Ronne (1979, 94–96) expressed considerable dissatisfaction with the role played by Black, whom he regarded as usurping his idea. But in truth Ronne was not alone in thinking an Antarctic expedition was timely, and the expedition that resulted—the largest to date to the continent—was vastly different from his original plans. Ronne was appointed to serve under Black as second-in-command at East Base, where he distinguished himself by leading a sledging party on a 1,264-mile journey south from Stonington Island in Marguerite Bay to the end of George VI Sound, thus proving beyond doubt the insularity of Alexander Island.

Ronne’s Antarctic Research Expedition, 1947–1948

Once World War II ended, Ronne began planning another expedition, determined not to lose control this time despite
his need for considerable government support. With military hardware in plentiful supply, he was able to borrow most of the equipment he wanted: a wooden-hulled, oceangoing naval tug Port of Beaumont (formerly ATA-215) from the U.S. Navy; two Wescals from the U.S. Army; and three airplanes from the U.S. Army Air Force—a twin-engine Beechcraft C-45, a single-engine Norseman UC-64, and a Stinson L-5. The scientific work was carried out under contract to the Office of Naval Research, assisted by funding from a range of government and educational agencies.

The expedition's objectives were twofold: first, to determine the extension of the mountain chain running along the length of the Antarctic Peninsula and, in particular, whether it was linked to the Queen Maud Mountains discovered by Amundsen or to the ranges of Marie Byrd Land; and second, to trace the coastline of the Weddell Sea in an attempt to disprove once and for all any connection between this and the Ross Sea. Finn Ronne's wife, Edith, designated as recorder, and Jenny Darlington, wife of the pilot Harry Darlington. Jenny was later paid off after being frozen in for the winter off Stonington.

Captained by Commander Isaac Schlossbach, one of the few expedition members with previous polar experience, Port of Beaumont sailed from Beaumont, Texas, on 25 January 1947—very late for an Antarctic expedition—making its way through the Panama Canal to Valparaiso, Chile. In the rush to depart, no one had thought to inoculate the dogs. Distemper broke out during the voyage, with half of the original forty-three huskies dying. Ronne had to comb the streets for replacements, many of which were highly unsuitable, including a hairless whippet. Reaching Stonington Island on 12 March, East Base was found with its buildings intact but otherwise in deplorable condition. The furious Ronne initially—and unjustly—held the personnel of the adjacent Falkland Islands Dependencies Survey (FIDS) Base E responsible. (In fact, the damage had been caused by Chilean and Argentine naval parties, which had treated the American supplies as common property.) Ronne found it initially difficult to come to terms with the nearby presence of the British, feeling they might have chosen another island to one that had been occupied by the Americans in 1940–1941. A nonfraternization edict was issued but progressively ignored by the twenty-two expedition members who, for the first time on an Antarctic expedition, included two women: Finn Ronne’s wife, Edith, designated as recorder, and Jenny Darlington, wife of the pilot Harry Darlington. Jenny was later paid off after being frozen in for the winter off Stonington.

Finally, on 29 September, Cape Keeler Advance Base was established. Expedition members were to live there for seventy-four days in four tents dug beneath the snow. Conditions proved exceptionally stormy, and it was not until 21 November that a long flight could be attempted with promising forecasts both at the camp and farther south, where Pierce-Butler’s sledging party also reported clear weather. The Norseman took off first with Lieutenant Charles Adams as pilot and Schlossbach as copilot. Heavily overloaded with five drums of gasoline aboard to establish a refueling depot for the Beechcraft, Adams had to taxi more than a mile at full throttle before he could get the Norseman into the air. An hour and a half later, the Beechcraft took off, piloted by Captain James W. Lassiter, with Ronne and photographer William R. Latady on board. It soon caught up with the Norseman, and
both planes flew together with good views of uncharted land to either side before landing in soft snow at Mount Austin (74°48'S, 62°50'W), where the Norseman remained while the refueled Beechcraft continued on. Ronne's plan was to follow the mountainous coastline in whatever direction it took. Surprisingly, soon afterward it bore west. After nearly two hours, the mountain range was behind them with only the high snow plateau and one isolated peak ahead. Flying at 3,200 meters, they could see for 200 miles. There was no sign of any strait connecting the Weddell and Ross Seas. With little further apparently to discover, Ronne decided to turn at 77°30'S, 72°W, where the American flag was dropped, before heading back along his course to within 30 miles of Mount Austin, where he now turned to the southeast to follow the face of the ice shelf forming the edge of the Weddell Sea. His aim was, if possible, to fly as far as Moltke Nunatak, the farthest point surveyed by Wilhelm Filchner in 1912. But with fuel running low, he was forced to turn back, having followed the ice cliff for 250 miles without any sign of its coming to an end. Clearly, this ice shelf rivaled in size the Ross Ice Shelf itself. Landing at Mount Austin, the Beechcraft was refueled and, now in company with the Norseman, headed north toward Cape Keeler, which was reached the following day after overcast skies forced a landing on the sea ice, where they remained until the skies cleared the next afternoon.

Ronne now returned to Stonington, where several survey flights were made along the west coast of the Antarctic Peninsula before he returned to Cape Keeler on 8 December, intent once more on reaching Moltke Nunatak. With the Norseman again carrying spare fuel, the two planes flew south to Mount Tricorn, where Pierce-Butler's sledding party was camped. There the Beechcraft was refueled before taking off with the intention of getting as far south as 81°S in the expectation of finding new mountains, which might prove that the Queen Maud Mountains were linked with those of the Antarctic Peninsula. In the event, clouds and fog set in, and Ronne was forced to return to Mount Tricorn to wait for better weather. At the same time as Ronne's aviation party was held up for four days, Pierce-Butler headed off to reach a farthest south of 74°46'S, 62°36'W. When the Beechcraft was able to take off on 12 December, Ronne was again disappointed in his hope of reaching Moltke Nunatak, lack of fuel forcing him to turn back 80 miles short of his goal. The American flag was dropped at the farthest point, and Edith Ronne Land was claimed for the United States. Cape Keeler was now abandoned, with all remaining flights carried out from Stonington.

Supplementing the aerial survey were two main sledging parties. On 28 September, the chief scientist, Dr. Robert L. Nichols, set out with the assistant geologist Dodson on a geological survey of Marguerite Bay with thirteen dogs, assisted initially by FIDS members Butson and Kevin Walton. Having reached as far as Alexander Island, they returned on 26 December, covering 450 miles in ninety days. Pierce-Butler's British-American Weddell Coast party set out on 9 October. Accompanied by his fellow FID Douglas Mason and two Americans—Arthur Owen and Walter Smith—with twenty-three dogs, Pierce-Butler crossed the Antarctic Peninsula to Cape Keeler, from where he headed south along the Weddell coast assisted by depots laid by the Norseman. In addition to providing ground control for Ronne's aerial survey flights, the party was to offer emergency support in the event of any misfortune to the planes. To satisfy national pride, on the southernmost parts of its journey the party changed its name to the Ronne Weddell Coast party. Turning back at the Bowman Peninsula, they made rapid progress northward to Cape Keeler—now abandoned—and then across the peninsula to Stonington, which they reached on 22 January. In 106 days they had completed a journey of 1,180 miles.

All was now ready for the expedition's departure—all, that is, except the ice, which showed no appearance of thawing sufficiently to release Port of Beaumont. Toward the end of February, Ronne heard that the American icebreakers USS Burton Island and USS Edisto were in the vicinity of Marguerite Bay on their way around the continent during Operation Windmill. Making contact by radio, their captains agreed to make a detour to break a passage through to Stonington, from where on 21 February Port of Beaumont was towed out to sea by Burton Island before making its way back to New York on 15 April.

Although probably best remembered today for the curiosity of being the first expedition during which women wintered in Antarctica, this expedition's exploring achievements were considerable. For the first time, the sheer extent of the Filchner-Ronne Ice Shelf was demonstrated, being comparable in size to the vast Ross Ice Shelf. Ronne himself estimated that in all his expedition discovered 250,000 square miles of new land with an additional 450,000 square miles photographed for the first time using the trimetrogon camera.

Conflict at Ellsworth Station, 1957–1958

Despite all of Ronne's endeavors to organize another expedition, it was not until 1957 that he was able to return to the Filchner-Ronne Ice Shelf to continue his explorations. Uniquely, he had been chosen as both naval and scientific commander of Ellsworth Station, one of seven American stations to be established on Antarctica during the International Geophysical Year (IGY). The arrangement did not work well. The only one to have been to Antarctica before, Ronne took it upon himself to instruct the scientists in their work. This was not appreciated; nor was his insistence that they perform mess duties at the sacrifice of the scientific program. The latter was to provoke a strike by the scientists, which was resolved only after heated communications with McMurdo; Ronne was forced to back down.

John Behrendt's (1998) account of life at Ellsworth Station from a scientist's perspective bears out hints by Jenny Darlington (1956) and Kevin Walton (1955) that Ronne was far
from the ideal expedition leader. Styles of leadership vary, but Ronne appears to have been excessively authoritarian. Faced with dissent, he was not above adopting the tactic of divide and conquer, as vividly reported by Behrendt. Not only did he seek to isolate his dissident scientists from the naval support group; he was reluctant to allow them to communicate with other IGY scientists out of concern that they might disclose the true state of affairs at Ellsworth. At times, Ronne's inadequacy as a leader appeared little distinguishable from paranoia (see esp. Behrendt 1998, 123–129), a trait that Ronne also perhaps exhibited in his relations with Richard Black, who throughout his autobiography is never referred to by name but only as “the surveyor.” Ronne had harsh words as well for Richard Byrd, but then he was not alone in that and no doubt suffered more than most from Byrd's inclination to treat Antarctica as his own personal preserve. However, a person does not have to be likable to be an effective polar explorer, and Ronne's achievements speak for him better than do his own somewhat self-serving publications.

See also: Alexander Island; Antarctic Peninsula, East Coast; Black, Richard; British Antarctic Survey; Byrd, Richard; Filchner, Wilhelm, Filchner-Ronne Ice Shelf; International Geophysical Year; Marguerite Bay; Operation Windmill

References and further reading:

**Ross Ice Shelf (Antarctica)**

Occupying an area as large as France, the Ross Ice Shelf extends south from the Ross Sea to the Transantarctic Mountains. It is fed by numerous glaciers discharging from the continental ice sheet, forming a near-level body of ice some 200,000 square miles in extent, varying in thickness between 300 and 700 meters. Much of it is afloat.

In January 1841, James Clark Ross was the first to see the towering ice cliffs forming the front of the ice shelf, rising in places to nearly 100 meters. Ross continued east for 250 miles, hoping to find a way around the “great ice barrier” before turning back. In the following year, he returned to reach 160°00'W, very close to the eastern termination of the ice shelf, Edward VII Land, which was to be discovered by Robert Falcon Scott in January 1902.

For most of its 400-mile length, the ice front affords no anchorages or potential landing places. Indeed, it is exceedingly dangerous to approach too closely, with massive slabs of ice breaking off periodically to form tabular icebergs. Located in the vicinity of 78°30'S, 164°20'W, the Bay of Whales forms the one major exception. This embayment in the ice front just to the north of Roosevelt Island is a more or less permanent feature, offering a natural ice harbor that has been used by numerous expeditions. The bay was discovered by Carsten Borchgrevink on 16 February 1900. There, he managed to work his ship, Southern Cross, farther south — 78°34'S — than had been achieved by any ship previously, before making the first landing on the Ross Ice Shelf and traveling with two companions across the ice to 78°50'S, the farthest south then reached by man. The Bay of Whales was next visited by Robert Falcon Scott on 3 February 1902. Scott landed to make the first balloon ascent in Antarctica, and a sledding party led by Albert Armitage surpassed Borchgrevink's record, reaching 79°03'S. Ernest Shackleton was responsible for giving the feature its name, observing many whales when he visited on 24 January 1908. Shackleton had planned to winter there but decided against doing so when he noted that substantial masses of ice had recently calved off the ice shelf. He
was not prepared to risk the same fate for his winter station. Roald Amundsen had no such qualms in 1911, wintering at Framheim before making his historic journey to the South Pole. A succession of American expeditions, chiefly led by Richard Byrd, established bases nearby at Little Americas I–V, which were occupied in turn in 1928–1930, 1933–1935, 1940–1941, 1947, and 1956–1959. Little Americas I–IV were essentially at the same place (78°34'S, 163°48'W). When the Bay of Whales was discovered to have virtually disappeared in 1955, Little America V was constructed instead at Kainan Bay, farther east at 78°11'S, 162°10'W. Seismic studies carried out in 1934 by Thomas Poulter during Byrd’s second Antarctic expedition indicated that the Bay of Whales is formed as a result of its position at the junction of two separate ice systems, their movements being influenced by the presence of Roosevelt Island just to the south.

It was immediately apparent to early visitors landing on the Ross Ice Shelf that the ice shelf—apart from the danger presented by crevasses in certain areas—offered an ideal traveling surface. Both Scott and Shackleton hoped that the South Pole lay on it, a hope that was dashed in 1908 when Shackleton proved it to lie instead on the high polar plateau. Both Scott and Shackleton followed the 170°E meridian across the ice shelf, a route that was also taken later by members of the Ross Sea party during Shackleton’s second expedition (see Mackintosh, Aeneas). Toward the eastern end of the shelf, Amundsen’s path lay close to the 163°W meridian, as later did those of Larry Gould on Byrd’s first expedition and of the Geological and Plateau Parties on Byrd’s second expedition. With the exception of explorations made by a sledging party led by Charles Royds, which reached 79°35'S, 175°56'E in November 1903 during Scott’s first expedition, the central area of the shelf between these two meridians remained entirely unexplored until the U.S. Antarctic Services Expedition, when Paul Siple organized two reconnaissance flights in February 1940 from Little America III. Siple also obtained a complete series of photographs of the ice front from Ross Island east to Edward VII Land, from which he was able to prove that much of the ice shelf was aground, with only certain areas being afloat.

The Ross Ice Shelf has thus largely been explored from stations near the Bay of Whales and on Ross Island. However, one temporary inland station must also be mentioned. Between 28 March and 11 August 1934, Byrd wintered alone at Bolling Advanced Weather Base (80°08'S, 163°57'W), 100 miles inland from Little America II, in order to obtain the first winter meteorological record for any inland region of Antarctica. He was later to provide a graphic description of this episode in his book *Alone*.

See also: Amundsen, Roald (1910–1912); Borchgrevink, Carsten; Byrd, Richard; Gould, Laurence; Mackintosh, Aeneas; Ross, James Clark (1839–1843); Scott, Robert Falcon; Shackleton, Ernest (1907–1909); Siple, Paul (1940–1941)

References and further reading:

**Ross Island (Antarctica)**

Located at 77°30'S, 168°00'E, this volcanic island (about 45 miles across) forms the eastern side of McMurdo Sound. Mount Erebus, the only active volcano on continental Antarctica, is 3,795 meters high. Mount Terror, an extinct volcano, rises to 3,230 meters. The island was first seen by James Clark Ross in January 1841, but it was not recognized as an island until Robert Falcon Scott’s expedition of 1901–1904, when it was named by Scott for Ross. Given its close associations with Scott’s two expeditions and with the first two expeditions of Ernest Shackleton, this is the most historically evocative location in the Antarctic. Historic huts at Hut Point, Cape Royds, and Cape Evans survive, still in good condition and with many of their original stores intact. It was close to Hut Point that Scott’s ship *Discovery* anchored from February 1902 to February 1904. From Cape Royds, Shackleton and his three companions set out to get within 100 nautical miles of the South Pole. From Cape Evans, Edward Wilson, Henry Bowers, and Apsley Cherry-Garrard made “the worst journey in the
world” to the Cape Crozier rookery of emperor penguins on the other side of the island in the dead of the Antarctic winter. And it was from Cape Evans that Scott himself set out to reach the South Pole in a party that included Wilson and Bowers, never to return. Less well known is the fact that these huts were also visited and used by the Ross Sea party of Shackleton's Imperial Trans-Antarctic Expedition, which survived largely on the food, clothes, and stores left behind in these huts, particularly at Cape Evans, when Aurora was taken out to sea in a blizzard. The first ascent of Mount Erebus was made by a party led by Jameson Adams in 1908 during Shackleton's first expedition.

It was particularly fitting that Ross Island, after a long period of neglect, should next have been occupied by Sir Edmund Hillary's New Zealand party, engaged in a task essentially identical to the men led by Aeneas Mackintosh. In January 1957, Hillary set up Scott Base (77°51'S, 166°45'E), from where he set out later that year to lead the third party — after Roald Amundsen and Scott — to reach the South Pole overland, controversially anticipating, Vivian Fuchs, who was leading a party across the continent from the Weddell Sea. Fuchs was to reach Ross Island with Hillary on 2 March 1958, the first to complete a land crossing.

Although Scott Base was initially intended simply to support the activities of the Commonwealth Trans-Antarctic Expedition of Fuchs and Hillary, a party of New Zealand scientists accompanied Hillary to Ross Island, where they conducted a range of observations as New Zealand's contribution to the International Geophysical Year (IGY). New Zealand has since maintained Scott Base as its primary Antarctic scientific station. Also with a view to supporting activities to be carried out during the IGY, the U.S. Navy in January 1956 built Williams Air Operating Facility, initially at Cape Evans but almost immediately afterward relocating it to Hut Point. Throughout the IGY, this would serve as the primary air logistics base for U.S. activities. Renamed McMurdo (77°50'S, 166°40'E) in 1957, it was operating by 1961 as an all-year scientific station, and it has since remained the largest such station in Antarctica.

See also: Adams, Jameson; Atkinson, Edward; Fuchs, Vivian; Hillary, Edmund; International Geophysical Year; Mackintosh, Aeneas; New Zealand; Operation Deep Freeze; Scott, Robert Falcon; Shackleton, Ernest (1907–1909); Wilson, Edward

References and further reading:
The literature concerning Ross Island is extensive, and the major works may be discovered through study of the entries listed just above, particularly those relating to the expeditions based here. Harrowfield's book is recommended for its treatment of the historic sites. Cherry-Garrard's
book is quite simply the best about any polar expedition, as well as being highly informative on life on Ross Island.


Company of New Zealand.


Christchurch: Shoal Bay Press.


Ross, James Clark

(1800–1862)

James Clark Ross was an Arctic explorer since the age of eighteen. He discovered the North Magnetic Pole, but the greatest achievement of this Royal Navy officer was his leadership of the British Antarctic expedition of 1839–1843, during which he penetrated the ice defenses of the Ross Sea to discover Victoria Land on one of the most successful of all polar voyages. When fears mounted for Sir John Franklin's Northwest Passage expedition, many of whose members were veterans of Ross's Antarctic expedition, Ross felt honor-bound to search for them. Although failing to find Franklin, he explored new land in Arctic Canada and passed on to a new generation of British naval officers skills in polar travel he acquired over thirty years.

Through the Pack Ice to the Ross Sea, 1839–1843

Once the decision was made to send an expedition south to establish the position of the South Magnetic Pole, there was never any doubt as to whom its leader should be. Aged thirty-eight at the time of his appointment, James Clark Ross had spent fifteen summers and eight winters in the Arctic since 1818, serving on two expeditions (1818, 1829–1833) under his uncle, Sir John Ross, and four (1819–1820, 1821–1823, 1824–1825, 1827) under Sir Edward Parry before himself commanding an expedition in 1836. Not only was his polar experience greater than anyone else's; he was known as a scientific officer who had established a reputation as a diligent and accurate observer of scientific, particularly magnetic, phenomena. The fact that he had discovered the North Magnetic Pole merely confirmed this reputation. Ross had located the pole on 1 June 1831 at 70°05'20"N, 96°46'W on Boothia Peninsula, Arctic Canada, on an expedition led by his uncle, during which they had been forced to endure four Arctic winters when their paddle-steamer Victory was trapped by ice in Prince Regent Inlet when seeking the Northwest Passage. James Clark Ross was second-in-command of this expedition and was credited by many with the expedition's survival until its members were rescued by the British whaler Isabella in Lancaster Sound. In 1836, Ross had been given his first Arctic command, a British naval expedition to rescue whalers cut off by ice in Davis Strait. He thus had the opportunity to save those who a few years before had saved him.

Determining the extent to which the compass needle varies from true north, something intimately related to navigation, was naturally a matter of major concern to the world's navies. Magnetic declination was known to vary both geographically and over time, and although the causes were not fully understood, much clearly could be learned by plotting variations observed around the globe. The German mathematician Carl Friedrich Gauss (1777–1855) had calculated the probable position of the South Magnetic Pole at 66°S and 146°E, in a region where few observations had been made. The major objective of the British expedition was thus to carry out a campaign of magnetic observations over an extended area of the Southern Ocean, in particular in the vicinity of the South Magnetic Pole, whose location was to be determined as exactly as possible.

For this congenial task, Ross was given command of two three-masted bomb-vessels, the 370-ton HMS Erebus and the 340-ton HMS Terror, the latter being captained by Commodore Francis Rawdon Moira Crozier, another Arctic veteran. Bomb-vessels, being built to withstand the recoil of heavy mortars, were enormously strong. Yet Erebus and Terror now underwent even further reinforcement, as this expedition, unlike its French and American contemporaries (see Dumont d'Urville, Jules, and Wilkes, Charles), was intended specifically for Antarctic exploration and supplied for that purpose in all respects, most particularly with regard to the crew's clothing and the ability of the ships to navigate in ice.

The Margate Roads were left behind on 30 September 1839, en route for Madeira—where the chronometers were checked—the Cape Verde Islands—where magnetic observations were made—and St. Helena and the Cape of Good Hope—where permanent magnetic observatories were established at both locations. Once they were in the Southern Ocean, supplies were delivered to sealers on the Crozet Islands; the Kerguelen Islands were reached on 12 May 1840. There, the expedition was to remain for two months. While Ross and Crozier carried out the planned programs of magnetic and pendulum observations, Erebus's assistant surgeon, the botanist Joseph Hooker, explored the islands' flora while Robert McCormick, Hooker's fellow naturalist and surgeon of Erebus, collected rocks and engaged in his favorite zoological activity—shooting as many birds as possible.

They left Kerguelen on 20 July; a rough passage to Van Diemen's Land (Tasmania) followed, during which Erebus's boatswain was lost overboard and several others in the attempted rescue party were lucky not to share his fate. By 16 August, both vessels had reached Hobart, where they received the warmest of welcomes from the lieutenant governor, Sir
John Franklin, another Arctic veteran but here very much out of his depth in malignant local politics. With Franklin’s assistance, another magnetic observatory was erected and a sociable time was enjoyed by all before the expedition’s departure on 12 November. Ross now determined to sail south along the 170°E meridian. Ross chose this route because of his reluctance to visit areas seen the previous season by the French and American expeditions; he also knew that the British sealer John Balleny had achieved a farthest south of 69°02’S at 174°E, some way beyond what they had reached.

On 20 November, the Auckland Islands were reached, and for the next three weeks scientific studies similar to those at Kerguelen were conducted. A brief visit was next made to Campbell Island, where Hooker spent two busy days collecting botanical specimens. On 17 December, Erebus and Terror departed with no known land now between them and the South Magnetic Pole. The Antarctic Circle was crossed on New Year’s Day and thick pack ice was entered on 5 January 1841. It was this zone of ice that had kept James Cook and Fabian von Bellingshausen from reaching the ice-free Ross Sea lying beyond. Ross’s determination to push through showed courage, though in addition to Balleny’s voyage, he may also have heard at Hobart of high latitudes achieved in this region by Samuel Harvey in 1831 and, possibly, by John Biscoe in 1839. He also knew that his vessels were better equipped to withstand battering by ice than those of any earlier expedition. In the event, the pack ice was negotiated with remarkable ease, and by 9 January Erebus and Terror were sailing south through open water.

Ross was now sanguine of reaching the South Magnetic Pole itself, and it was with some disappointment that on 11 January land was seen, a new discovery but one that barred his way to the magnetic pole. He called this discovery “Victoria Land,” a name he probably intended for the entire continent—if continent it was—rather than just the land he was now discovering. A high mountain range was seen stretching toward the south rising to 3,000 meters and more, and this Ross named the “Admiralty Range,” the individual peaks being named for the Lords of the Admiralty. Still intent on sailing if at all possible to the South Magnetic Pole, he sought to skirt the land southward thinking that it might form an island rather than continuous land. Prevented by ice from approaching the mainland, he landed on a small island on 12 January. Here, on Possession Island, Ross claimed Victoria Land for Great Britain. On 22 January, James Weddell’s record farthest south was surpassed with the expedition closing on 75°S and

![Beaufort Island and Mount Erebus, discovered 28 January 1841 (Ross, J. C. 1847. A voyage of discovery and research in the southern and Antarctic regions. London: John Murray, vol. 1, p. 216)](image-url)
brought to a halt by a perpendicular cliff of ice rising in places to nearly 100 meters and towering high above the mastheads. With no more chance of sailing through this than "through the Cliffs of Dover" (J. C. Ross 1969, vol. 1, 219), Ross skirted the ice barrier east for 250 miles, still looking for a way around it to the South Magnetic or South Geographic Poles, or else for an anchorage where his vessels might safely winter. With no end found to the ice barrier, Ross reluctantly turned back on 13 February, eventually reaching Hobart on 6 April but not before—to his considerable surprise—finding himself in open sea where Charles Wilkes had told him that the United States Exploring Expedition had discovered land.

After a second pleasant stay at Hobart and a brief visit to the Bay of Islands, New Zealand, the expedition again headed south on 23 November, this time along the 146°W meridian far to the east of its previous course. On 18 December, the zone of pack ice was entered, but passage through it was far more difficult than in 1841. Indeed, it was not until forty-seven days later that the Ross Sea was reached, Erebus and Terror being fortunate to survive a storm on 19 January 1842, when the rudders of both were severely damaged by ice battering against them in the wildly tossing sea. The ice barrier was reached much farther east than in 1841, but the season was already too advanced to make significant new discoveries. One achievement was accomplished, however—a new record farthest south of 78°10’S, attained on 23 February in an embayment in the ice front some 6 miles south of their 1841 record. With clear signs of the sea congealing, Ross headed north the next day, setting course for Cape Horn and the Falkland Islands. Ahead of him lay the most perilous episode of the entire expedition. On 12 March, with visibility obscured by fog and snow, Erebus and Terror collided, largely disabling one another close to two icebergs, toward which they were inexorably driven. Spotting a small gap between the icebergs, Crozier had no choice but to attempt to sail Terror through the middle, a task that he accomplished with superb seamanship. Erebus had been even more damaged than Terror in the collision, and Ross had no choice but to attempt the same passage. Since Erebus was now past the gap, first he had to sail it backward, the most difficult maneuver for a sailing ship in any conditions, let alone these. Accomplishing this miracle, Erebus reached safety in the lee of the icebergs, and the two vessels continued their course to the Falklands, which they reached on 6 April.

Having wintered in the Falklands at Port Louis, Ross embarked on 8 September for Tierra del Fuego, where further magnetic, botanical, zoological, and other scientific studies were carried out. There, they stayed one month before returning to the Falklands, from where they set out for their final Antarctic season on 17 December. Ross's first objective this time was to sail south along the 55°W meridian to investigate a possible continuation to Dumont d’Urville’s Louis Philippe Land. In Erebus and Terror Gulf, exceptionally difficult conditions were encountered for six weeks, with much pack ice and icebergs posing a constant threat, particularly in the frequent fog. Nevertheless, new land was discovered, with Paulet, Seymour, and Snow Hill Islands all now bearing names given them by Ross; James Ross Island—also first seen at this time—was subsequently named for him by Otto Nordenskjöld. Conditions were such that Ross was unable to determine whether this new land consisted of islands or was attached to the mainland, its insularity being later established by Carl Anton Larsen and Nordenskjöld. Taking four days to extract the vessels from the ice, the expedition next sailed east to look for clearer water. Finding none at 40°W—the meridian along which the British sealer James Weddell had achieved his now superseded record south of 74°15’S—Ross continued farther east, eventually reaching 71°30’S at 14°51’W on 5 March 1843.

A peal of church bells greeted the expedition's return to England on 4 September. Ross's great achievements were recognized by a knighthood, medals from the Royal Geographical Society and Société de Géographie, and, most important for him, by marriage to his long-beloved Anne Coulman. He expressed no desire to lead the planned Arctic expedition, in which it was hoped that Erebus and Terror would now prove the possibility of a Northwest Passage. After so many years spent in polar exploration, Ross was happy to see his old friend, Sir John Franklin, assume command. Little did he know that he would be required to undertake one more Arctic voyage to attempt to rescue Franklin, Crozier, and many veterans of his Antarctic expedition.

The First Franklin Search Expedition to Arctic Canada, 1848–1849

With no news of Franklin's expedition for more than two years, concern grew that all might not be well. In December 1847, Ross submitted a proposal for a relief expedition that he offered to lead himself. This offer was accepted by the Admiralty. On 12 May, Ross sailed from London in the 450-ton HMS Enterprise accompanied by the 400-ton HMS Investigator, the latter commanded by Captain Edward Joseph Bird, first lieutenant of Erebus during Ross's Antarctic expedition. Meeting British whalers in Baffin Bay in late June, Ross was informed that there had been an unusually severe winter and that the ice was still impassable farther north. Forcing a passage close to the Greenland coast, he finally reached open water at 75°N on 20 August; through seas now empty of ice, he crossed Baffin Bay and entered Lancaster Sound. Along Lancaster Sound's southern and northern coasts the expedition searched diligently for Franklin, burning blue lights and firings guns and rockets to alert him to its presence. Unable to
penetrate west into Barrow Strait or north through Wellington Channel, both being blocked by ice, Ross chose to winter at Port Leopold at the northeastern tip of Somerset Island, reaching that relatively safe harbor with some difficulty on 11 September.

With the sun disappearing on 9 November and not reappearing until 9 February 1848, the winter was spent in preparations for the coming sledging season. Copper collars giving details of the location of the ships and of food depots were attached to several captured arctic foxes—“twopenny postmen”—which were then released in the hope that, inveterate scavengers as they were, they would find their way to Franklin's vessels. Following several short depot-laying journeys in April and early May, the main sledging party set out on 15 May. With Ross walking ahead to scout the route, Lieutenant Leopold McClintock followed with twelve seamen who man-hauled the sledges. Although Ross had experience of dogsledging with the Inuit during his uncle's 1829–1833 expedition, no dogs were available to him now. With provisions for forty days, this party charted the north and west coasts of Somerset Island as far south as 72°38'N. From this point, Ross could see the coastline trending south for at least another 50 miles. Much of the east coastline of Prince of Wales Island, across Peel Sound to the west, was also charted for the first time. To Ross, seeing Peel Sound filled with unbroken ice, it seemed inconceivable that Franklin could have sailed through it, though in fact this is just what he had done in the relatively ice-free year of 1846. Instead, Ross thought it more likely that he was either farther west or had pushed north through Wellington Channel. These unfortunate misconceptions were to mislead future expeditions in the search effort. In fact, Franklin's vessels Erebus and Terror lay just over 200 miles south of Ross's farthest point, having been abandoned the previous summer. During Ross's absence, Bird sent out three smaller sledging parties: one led by Lieutenant William Browne to build a cairn in a prominent place near the head of Baffin Bay. With scurvy rife among his crews and little more that he could do for Franklin, Ross accepted the inevitable and returned to England, reaching the Orkney Islands on 28 October.

No man ever deserved retirement more than Ross, but his last years were not to be happy. He faced largely unjustified criticism for his failure to find Franklin, and after falling out with the Admiralty, to whom he had written an intemperate letter, he withdrew into domestic life, only to see his beloved wife die in 1857 at age forty. With no energy or desire to work up his extensive collection of Antarctic marine invertebrates, they rotted away until his death in 1862. There is thus no major zoological publication to bear testament to the work of this most scientific of exploring naval officers. But the world maps preserve his name, not least in the Ross Sea, Ross Ice Shelf, and Ross Island. In the pantheon of polar explorers, he ranks high.

See also: Antarctic Peninsula, East Coat; Auckland Islands; Balleny, John; Bellingshausen, Fabian von; Campbell Island; Cook, James (1772–1775); Dumont d'Urville, Jules; Farthest South; Franklin, John (1845–1848); Franklin Search Expeditions; Kerguelen Islands; Larsen, Carl Anton; Magnetic Poles; Nordenskjöld, Otto; Parry, Edward; Peel Sound; Prince of Wales Island; Ross Ice Shelf; Ross Island; Ross, John; Ross Sea; Somerset Island; Victoria Land; Weddell, James (1822–1824); Wilkes, Charles

References and further reading:


Ross, John

(1777–1856)

At an age when others might happily have chosen retirement after many years of active service in the Royal Navy, the British seaman John Ross began a new career as a polar explorer. The results of his first expedition disappointed virtually everyone apart from himself. But he was to redeem his reputation in two privately funded expeditions, during one of which he managed to survive four winters in the Canadian Arctic when his vessel was trapped by ice and had to be abandoned.

The Northwest Passage Is Prematurely Rejected, 1818

Reports of unusually little ice to the east of Greenland by William Scoresby Jr. and other whalers persuaded John Barrow, second secretary of the British Admiralty, to organize two Arctic expeditions: one to attempt to sail across the Arctic Ocean via Svalbard, led by David Buchan; the other to renew the search for the Northwest Passage, led by John Ross. Ross was to seek the Passage in Baffin Bay, which had not been visited since William Baffin's voyage of 1616. Barrow himself had considerable doubts about the accuracy of Baffin's report. And without access to Baffin's map and tables, which had
been excluded from publication on grounds of expense, he was inclined to believe that north of Davis Strait, where whalers seldom fished beyond 71°N, would be found “Baffin Sea” extending north to the Arctic Ocean. In Barrow’s view, Baffin’s carefully surveyed coast masked straits leading beyond to the purported open polar sea, in which he was a strong believer, and Ross was instructed to pay particular attention to three sounds—Smith, Jones, and Lancaster—reported by Baffin but not investigated by him. Barrow also believed that the discoveries of Samuel Hearne, James Cook, and Alexander Mackenzie indicated that the Arctic coast of North America ran along the 72°N parallel some way south of Ross’s likely course. Since, in his view, ice almost exclusively formed in rivers and lakes and seldom if ever in the open ocean, Ross, once through any of the sounds indicated by Baffin, should find open water to sail west to Bering Strait and the Pacific Ocean.

Commander John Ross had entered the Royal Navy in 1786, serving with distinction through the Napoleonic Wars, during which he was wounded at least thirteen times. What drew him to the Admiralty’s attention for this expedition is unclear. Judging by events, he had some difficulty in adjusting to the requirements of conducting an exploring expedition as opposed to naval warfare, in which he was fully tried and tested. He was to be equipped with two specially strengthened vessels, the 382-ton HMS Isabella and the 252-ton HMS Alexander, provisioned for two years. Lieutenant Edward Parry was to accompany him in Alexander. Other participants included the Royal Artillery officer Captain Edward Sabine, later president of the Royal Society, who was to serve as astronomer; Ross’s nephew, James Clark Ross; and his fellow midshipman Henry Parkyns Hoppner. All were to be familiar names on later expeditions. Also included in the complement of ninety-six men was the interpreter John Sackhouse (or Sackhouse), an Inuk from southern Greenland who had lived for a time in England after stowing away in a whaler. To compensate for the lack of Arctic experience among the naval officers, four ice pilots were recruited from the Greenland whale fishery; none had previously visited Davis Strait, but their expertise in ice navigation would prove invaluable.

Ross set out from London on 18 April 1818 and, after meeting Buchan’s expedition at the Shetland Islands, sailed west across the North Atlantic to round the southern tip of Greenland on 26 May. Soon afterward he came across several whaling vessels, which he joined to sail up the eastern side of Davis Strait until Vaigat, the strait north of Disko Island, where the main whaling fleet of forty-five ships was encountered. Waiting along with them for the ice to diminish, Ross obtained valuable information about conditions to be expected farther north. On 2 July, the ice began to move, and Ross joined the whalers in maneuvering his vessels northward along the coast. By the end of the month he had left them behind and entered Melville Bay alone; those on board thus became the first explorers since Baffin to sail in waters notorious for the numbers of large icebergs calving off the Greenland Ice Sheet, which here directly abuts the coast.

On 10 August, at 75°55′N, 65°32′E, a party of Inuit was met. Halting communication was established through Sackhouse, and it seemed that these Inuit had previously been unaware of the existence of any people other than themselves. They had initially thought that Isabella and Alexander were birds with great flapping wings, their occupants denizens of the sun or moon. Having previously named the neighboring mountains the “Arctic Highlands,” Ross called these Inuit the “Arctic Highlanders,” a name that was ridiculed on his return to Britain as all too redolent of the “Scottish Highlanders,” with whom these people could hardly be less connected. Later termed the “Polar Inuit,” they were to render essential assistance to numerous North Pole expeditions, particularly those of Robert Peary.

Ross next reached the region where Baffin’s three sounds were to be found. The first was Smith Sound. Ice and fog made a close approach difficult, but during brief periods of clearer visibility Ross satisfied himself that land could be seen completely surrounding the opening; it was therefore a bay and not a sound. On the basis of these sightings, made from a distance of some 50 miles, he decided that further investigation was unnecessary. Smith Sound in fact opens north through Kane Basin and channels beyond to the Arctic Ocean. Soon afterward Jones Sound was also declared a bay, Ross again mistakenly seeing mountains at its western end. On 30 August, the expedition reached what had been previously identified as the most promising of Baffin’s three passages: Lancaster Sound. With Isabella sailing some way ahead of the unhandy Alexander, Ross entered the 45-mile-wide seaway with expectations high among the crews—especially aboard the Alexander—that at last this might prove to be the Northwest Passage. All were aware of the large parliamentary awards being offered to the discoverers of the Northwest Passage, and thus it was not on grounds of geographical curiosity alone that Ross’s decision to turn about when the sea appeared open before them led to general disappointment. Visibility was poor that day, but during a brief clearing Ross said that he and a few of the crew—significantly including no other officers—had seen mountains ahead. These he named “Croker’s Mountains” for John Wilson Croker, first secretary of the Admiralty.

Sailing south off the east coast of Baffin Island, Ross passed but did not attempt to enter Cumberland Sound on 1 October. This had been identified by John Davis in 1585 as one of four possible entrances to the Northwest Passage. Prior to the expedition, much had been written of its promise, but Ross’s instructions were to leave Baffin Bay by 1 October at the latest, and he stuck to them to the letter, reaching London on 16 November.

Although Ross was promoted to post captain soon after his return, this was simply on grounds of seniority and not as a reward for his achievements during the voyage. Indeed, what he had or had not achieved soon became the subject of con-
troversy. Barrow in particular was bitterly disappointed by Ross’s failure to investigate properly any of Baffin’s three sounds and, most of all, by his premature decision to turn about in Lancaster Sound. Barrow wrote a scathing review of Ross’s published account, in which he quoted reservations concerning this decision from the journal of Lieutenant Parry, Ross’s second-in-command. Soon afterward, Ross became embroiled in an unseemly dispute with Sabine, who attacked him for publishing scientific observations made by Sabine that were presented as if made by Ross himself, with the assistance of his nephew, James Clark Ross. The latter was called to witness and found himself most uncomfortably placed between his uncle, with whom he had served for many years, and the truth, which was that it was Sabine whom he had assisted and not Ross. Although the dispute with Sabine probably resulted from the carelessness of a novice author rather than malicious intent, the 1818 expedition marked a disastrous beginning to Ross’s career in polar exploration. Indeed, for almost anyone else, graceful retirement might have seemed the wisest option, but Ross was determined to redeem his reputation one way or another. It was, however, to be left to Parry to prove the following year that the Northwest Passage was indeed to be entered through Lancaster Sound.

The Rosses Survive Four Winters in Prince Regent Inlet, 1829–1833

Ross was never again to be given command of a ship by the Admiralty, where his strident campaign for the adoption of steam power did nothing to increase his popularity (this being something of an unwelcome cause to many at a time when Great Britain’s naval supremacy rested on its massed fleets of sailing vessels). In 1828, Ross published A treatise on navigation by steam and in the same year proposed the use of steam on an Arctic expedition. A steam-powered vessel offered several advantages for polar exploration: its reduced draft would enable it to better negotiate shoals and approach closer inshore; thin ice might be forced through; and it would be able to exploit the more open water created by winds, adverse for a sailing ship, blowing from the north but opening up the pack. Ross wished to reexamine Prince Regent Inlet, from which Parry had withdrawn prematurely in 1825 when HMS Fury was wrecked on Somerset Island. Parry had noted open water stretching farther south, and there seemed every reason to suppose that a channel might be found leading west, through which the seasonally navigable waters observed off the North American mainland might be reached, these having been all but proved to continue to Bering Strait by

The Victory’s crew saved by the Isabella (Ross, J. 1835. Narrative of a second voyage in search of the North-West Passage, p. 720)
John Franklin's two overland expeditions. The fact that the plan involved bettering Parry just as Parry had bettered Ross in 1819–1820 was not least among its charms.

With no support forthcoming from the Admiralty, Ross set about raising £20,000 from private sources, contributing £3,000 himself and obtaining £10,000 from his friend, the gin manufacturer Felix Booth. A small paddle-steamer was purchased, optimistically named Victory, which was then subjected to extensive conversion as its sides were raised 1.75 meters and numerous new features and contrivances added, increasing its tonnage from 85 to 150 tons. Since the engines and fuel took up two-thirds of the hold, a whaling vessel—John—was acquired to transport additional stores. Public interest in the expedition was intense, and a number of Arctic veterans, including George Back and Fury's former captain, Henry Hoppner, volunteered their services, but Ross opted instead for his nephew, James Clark Ross, as second-in-command.

Unfortunately, there was no time to test Victory's engines before it sailed from London on 23 May 1829. Their inadequacies soon became evident. They produced a top speed of just 3 knots; the boilers leaked and could only be staunched out of the boilers, the seams gone, and Ross had to amputate them, and by the time Scotland was reached water cascaded suggestion. Valves and pistons broke with no spares to replace with dung and mashed potatoes—this at the manufacturer's quacies soon became evident. They produced a top speed of the arm of a stoker who had slipped into the machinery. Stranraer, Ross discovered that the crew of Victory had mutinied and would neither accompany him north to the Arctic nor assist in shifting the stores to Victory. Better fortune, however, was to be found off Greenland, where the summer was the best in living memory and Davis Strait and Baffin Bay free of ice like never before. On 6 August, Victory entered Lancaster Sound; Prince Regent Inlet was reached five days later. Little ice obstructed progress south, and on 12 August the wreck of HMS Fury was found marked by a profusion of stores, boats, and other usable materials. Ross had planned to recuperate much of his expedition's costs by transporting these supplies back to London in John, an option no longer available to him. Instead, Victory was loaded with such quantities of canned food as it could carry before continuing some 300 miles farther south, where the Gulf of Boothia was discovered and Victory frozen into winter quarters at Felix Harbour on the east coast of the Boothia Peninsula on 7 October. By now Ross had completely lost patience with the engines, which were dismantled and abandoned on the shore. From this point forward, Victory would be powered by wind alone.

During the winter, good relations were established with a neighboring community of about 100 Netsilik Inuit, with whom James Clark Ross was to undertake several journeys across Boothia Peninsula. On the most extended of these, in May and June 1830, he discovered King William Island, though he failed to recognize its insularity, believing it instead to be attached to the North American mainland. (This mistake would have tragic consequences when Sir John Franklin as a consequence sought to sail west around King William rather than east, therefore becoming beset in the multiyear ice of Victoria Strait, from which his vessels were unable to escape.)

Traveling with dogs, J. C. Ross reached as far west as Victory Point, where he observed the strange sight of massive ice blocks driven far inland, testifying to the enormous forces at work in Victoria Strait. Although these discoveries were significant, the future success of the expedition depended on finding a navigable strait leading west out of Lord Mayor Bay to the south of Felix Harbour. Maps drawn by the Inuit showed no promising openings; nor were any found by J. C. Ross during another sledging journey between 23 June and 3 July. Ironically, the one opportunity to reach waters farther west had been missed when ice prevented exploration of Brentford Bay on their way south the previous year. Bellot Strait was not to be discovered until 1851 by William Kennedy.

As the months passed, it became clear just how exceptional a year 1829 had been. When John Ross was finally able to work Victory out of Felix Harbour, he found himself forced to winter just 3 miles northeast at Sheriff Harbour. By April 1831, temperatures were sufficient for exploration to be resumed, as the search continued for a navigable route across Boothia Peninsula. The great achievement of this sledging season was J. C. Ross's attainment of the North Magnetic Pole on the west coast of the peninsula on 1 June at 70°05.3'N, 96°46'W. Not until late August could Victory be worked out of winter quarters—and then only some 15 miles farther north to Victoria Harbour.

This was their third winter in the Arctic and the coldest yet. Most of the canned provisions obtained from Fury had been consumed, and the Inuit with whom they had spent the two previous winters had moved away and were unavailable to assist in supplementing their food stocks through hunting. It was clear to Ross that unless they were to be very fortunate indeed and experience another year like 1829, Victory could never force its way north to Lancaster Sound. During the winter, therefore, he decided to abandon the ship, leading his men in an exceptionally arduous sledging journey during the spring to Fury Beach 280 miles away. From there, on 1 August 1832, an attempt was made to escape from Prince Regent Inlet using three small boats left behind with Fury, a hope brought to nothing by heavy ice. They would have to endure a fourth Arctic winter, this time in the grandly named but distinctly uncomfortable Somerset House, a makeshift home constructed on Fury Beach from ships' planking and canvas, butressed and insulated by snow.

On 8 July 1833, Ross led his men overland to Batty Bay, where the boats had been left the previous year and where they waited for several days. On 14 August, an opening lead allowed them to put out into Prince Regent Inlet, where at last open water was found. Reaching Lancaster Sound, they headed east

566 Ross, John
along the north coast of Baffin Island and eleven days later were picked up by a whaler off Navy Board Inlet. By an extraordinary coincidence it was Isabella, which Ross had commanded in 1818. Ross was to reach London in October just in time to forestall three expeditions that were being organized to search for him. Despite being forced to endure four Arctic winters, twenty out of the twenty-three men had survived.

The extraordinary story of Ross’s survival and rescue not surprisingly became the talk of London. Both he and his nephew were invited to numerous dinner parties, and he was deluged with honors, including a knighthood in December 1834. Such was the popular acclaim that Parliament voted that Ross and Booth be reimbursed for their expenses and the crew’s wages paid for the very extended time they had spent in the Arctic. Ross, however, could not live without controversy, and he very publicly fell out with the manufacturer of Victory’s engines after including highly unfavorable comments in his published narrative. In this, he also claimed partial credit for his nephew’s discovery of the North Magnetic Pole. Relations between the two Rosses were further exacerbated by publication of an unofficial account of the expedition by Robert Huish, who on the basis of information supplied by the disaffected steward William Light criticized John Ross’s leadership and instead attributed the expedition’s survival to his nephew. Though it was probably true that the younger Ross was the more energetic and approachable figure throughout much of the ordeal, John Ross’s insistence on eating fresh meat had staved off scurvy until the final two winters and had then restricted its severity.

**John Ross’s Last Voyage Searches for Sir John Franklin, 1850–1851**

Between 1839 and 1846, Ross served as British consul at Stockholm, a post for which he was well suited linguistically—as a Swedish speaker—though diplomacy must have presented rather more of a challenge. On his return to Great Britain, he was among the first to express concern for Sir John Franklin, of whom nothing had been heard since July 1845. In February 1847, he offered to lead a search expedition, but the Admiralty considered his offer premature. Other expeditions—not least that of Ross himself—had disappeared into the ordeals, John Ross’s insistence on eating fresh meat had staved off scurvy until the final two winters and had then restricted its severity.

**Ross Sea (Antarctica)**

Along with the Weddell Sea, this is one of two large marginal seas occupying deep embayments in the Antarctic continent: that forming the Ross Sea lying between Cape Adare, Victoria Land, on the west, and Cape Colbeck, Edward VII Land, to the east. From the perspective of geographical exploration, the essential difference between the two seas is that whereas dense pack ice fills the Weddell throughout most years, open water is generally found in the Ross Sea throughout the Antarctic summer once through an encircling belt of pack ice. It is this crucial distinction that enabled explorers from James Clark Ross onward to sail to high latitudes in this region, and it ultimately made possible the achievement of the South Pole itself by Roald Amundsen and Robert Falcon Scott at a time when the Weddell Sea region was virtually unvisited apart from the freak ice-free summer of 1823.

Although it is sometimes stated that Ross was the first to penetrate the pack ice to find the Ross Sea beyond, this is almost certainly incorrect. In 1831, the sealer Samuel Harvey reported reaching 72°S. His description of the voyage is brief, and he makes no mention of any difficulties with pack ice. Indeed, in favorable years late in the summer it is sometimes possible to enter the Ross Sea with little sign of ice. John Bal- leny reached 69°S at 172°11’E on 1 February 1839, again reporting few problems with ice. According to newspaper reports, another sealer, John Biscoe, reached 75°S in the same year. This is a voyage about which virtually nothing is known,
but it was clearly a good ice year, and such a latitude would not have been impossible in the Ross Sea, though we don’t know exactly where this latitude was supposed to have been achieved. Ross knew of Balleny’s voyage before he left London, and it is likely that he would have heard about Harvey’s and perhaps Bischoe’s voyages during his stay at Hobart. Such reports probably influenced his decision to sail south along the 170°E meridian. In the event, it took him just five days to cross through a belt of pack ice some 170 miles wide. The following season, he tried farther east along the 146°W meridian and was not to emerge on the other side until forty-seven days later, by which time it was too late in the summer—1 February—for him to be able to achieve much useful work.

This variability in the ease of crossing through the pack came to dominate the thinking of explorers seeking to enter the Ross Sea. Views differed greatly as to what time of the year the attempt should be made and at what meridian. Carsten Borchgrevink, for example, took forty-three days to get through. He had initially attempted far to the west, against the advice of his navigating officer, William Colbeck, who had advocated farther east. Embarrassingly for Borchgrevink, when he finally decided to follow Colbeck’s advice, he passed through the pack in just six hours. On the basis of this experience, Borchgrevink was to recommend that subsequent expeditions should not sail west of 170°E, stating that a general breakup of the ice did not occur near Victoria Land before the end of January. In Roald Amundsen’s opinion, it was best to cross between 175° and 180°E, and certainly ships should not try farther west. Even with the benefit of such helpful advice, some expeditions were to take many days crossing—Lincoln Ellsworth, for example, took twenty-two days in 1933–1934—but by this date it was generally accepted that the best meridian was near 178°E. Ellsworth was simply unlucky in meeting a bad ice year.

Although the drift and eventual loss of Sir Ernest Shackleton’s ship *Endurance* is well known, considerably less so is the fact that he also came close to losing his other ship during this expedition. The *Aurora* had brought the Ross Sea party (see Mackintosh, Aeneas) to Ross Island, where it was anchored with the intention of wintering. Finding a sheltered anchorage proved difficult, and on 6 May 1915 it was blown out to sea, encased in an ice floe. In what was clearly a bad year for ice, *Aurora* soon was frozen into the pack ice, which had already formed across much of the Ross Sea, and was lucky to escape being crushed as the ice in which it was beset piled up against Victoria Land. It was not released until February 1916, when its floe broke up some way farther north. Such ice is more characteristic of the Weddell Sea than the Ross Sea, but *Aurora*’s story (see Stenhouse, Joseph) is a potent reminder that in the Antarctic no place is without its dangers.

See also: Amundsen, Roald (1910–1912); Balleny, John; Bischoe, John; Borchgrevink, Carsten; Edward VII Land; Ellsworth, Lincoln (1933–1934); Mackintosh, Aeneas; Ross Island; Ross, James Clark (1839–1843); Scott, Robert Falcon; Stenhouse, Joseph; Victoria Land; Weddell Sea

References and further reading:


**Rudolf Island (Franz Josef Land)**

Located at 81°45’N, 58°30’E, this is the northernmost island in Franz Josef Land. It has a special place in the history of polar exploration as a favored departure point for expeditions seeking the North Pole. Cape Fligely, at 82°05’N, is just 475 nautical miles from the Pole.

The island was discovered by Julius Payer in April 1874 and named for Crown Prince Rudolf, eldest son of Emperor Franz Josef. Looking out from Cape Fligely, Payer believed that he could see land farther north and to the northwest, which he named “Petermann Land” and “King Oscar Land” for the German geographer August Petermann and Oscar II, king of Sweden and Norway. These were later proved not to exist. Teplitz Bay on the west coast was named by Payer for his birthplace in Bohemia. The island’s official Russian name is Ostrov Rudol’fa.

Although Walter Wellman came within view of it in March 1899 during his abortive attempt on the Pole, the next actually to reach Rudolf Island was the Italian expedition of Luigi, Duke of the Abruzzi, which wintered at Teplitz Bay from 10 August 1899 to 14 August 1900. From there a sledging party led by Umberto Cagni achieved 86°34’N, then the record farthest north. Teplitz Bay is more of an indentation than a bay and offers very little shelter from the west. On 8 September 1899, *Stella Polare* was badly damaged by ice, forcing Abruzzi to winter on land rather than in the ship as planned. Onshore, he erected a surprisingly comfortable “pavilion” consisting of two tents for accommodation surrounded by a canvas awning from the deck, in turn enveloped by a third tent fashioned from the ship’s sails and spars. Another tent was erected at Cape Fligely with snow walls for insulation. While Cagni’s Polar party was out on the ice, Abruzzi spent much of his time in the latter looking out for returning parties. When *Stella Polare* was finally blasted free with gunpowder, a large stock of provisions and equipment was left behind, together with eight dogs, in the hope that three men still missing from the polar journey would finally reach the island and, with this aid, be able to make their way south.

Although Evelyn Baldwin did manage to establish the third of his large depots in 1902 at Cape Auk on Rudolf’s southwest coast, with his base far south on Alger Island and a disaffected team, he himself was never able to make use of it, returning home without even attempting his planned polar journey. The supplies brought here, however, were later made use of by Anthony Fiala, whose expedition reached the island on 31 August 1903. Like Abruzzi, he set up winter quarters in Teplitz Bay, naming it Camp Abruzzi in gratitude for all the useful materials left behind by the Italians. Originally
intended to accommodate sixteen, it had to be enlarged subsequen-
tly when America suffered a similar fate to Stella Polare. Huts were erected to house meteorological, astro-
nomical, and magnetic instruments for an extensive scientific program. Two very brief attempts were made to sledge toward the North Pole in 1904, neither lasting more than a few days, and when members of the party became restive about the prospect of another year, Fiala led all but fourteen south to Cape Flora, where they could be picked up by the supply ves-
sel. Fiala himself returned to Camp Abruzzi on 20 November. During the winter, seaman Sigurd B. Myhre died and was buried on the summit of the plateau overlooking Teplitz Bay. Fiala’s last attempt on the Pole began on 15 March 1905 and lasted just eight days. Camp Abruzzi was abandoned on 26 May. The failure of Fiala’s well-resourced expedition con-
vinced most that Rudolf Island was an unsuitable starting point for polar attempts. The island’s exposed situation meant that the ice, in all but southerly winds, piled up about it, forming numerous pressure ridges. Cagni’s experience revealed a second problem. Farther out, the pack showed a strong west-
erly drift, which was exceptionally hazardous for returning parties since it threatened to carry them far from land and deposit them in the Barents Sea.

These criticisms were indeed made of Georgiy Sedov’s pro-
posal to reach the Pole from Franz Josef Land. In the event, Sedov was to die on 5 March 1914, 2 miles short of Rudolf Island, where he was to be buried at Cape Auk beneath crossed skis and with the flag he had hoped to raise at the Pole laid beside him together with his sledge. A commemorative pillar was erected in 1972 by Ob’.

In 1929, Teplitz Bay was identified as a suitable site for a sta-
tion by the Soviet icebreaker Sedov. Three years later, the northernmost meteorological station in the Soviet Union was opened here by Malysgin, staffed by four men led by F. Balabin during the Second International Polar Year (1932–1933). This station was then left unmanned until 1936, when the aviator Mikhail Vodop’yanov was charged with finding a location for a forward air operations base to support planned high latitude and transpolar flights associated with ambitious Soviet plans to establish an ice station at or near the Pole. Several flat-toped domes in the center of the island’s ice cap were noted as likely to offer natural aerodromes. Men and equipment were brought north in Rusanov, which, despite being an icebreaker, only succeeded in reaching Rudolf Island at the third attempt through the ice-blocked British Channel. While the ice domes were smoothed and otherwise prepared for takeoff and land-
ings by heavy aircraft, a 300-watt radio station was installed together with a radio signaling tower. The earlier meteorolog-
ical station was considerably expanded by the addition of two accommodation blocks, a bathhouse, a garage, two equipment stores, a food store, and a compound for livestock. Twenty-four staff members were left behind to winter.

On 21 March 1937, the first airplane landed from Moscow. Two months later, on 21 May, four four-engine ANT-6 planes took off to establish the drifting ice station North Pole-1 (NP-
1), just 12 miles from the Pole. Throughout NP-1’s drift, relief planes were stationed here. The signaling beacon also proved invaluable to the transpolar flights. When contact was lost with one pilot, Sigismund Levanevskiy, the search for him was coordinated from Rudolf Island, with search flights beginning on 16 September 1937 and continuing until March 1938. The remains of one plane, which crashed in 1938, may still be seen. The station was closed during World War II after being judged too difficult to resupply. After the war, it was reopened and staffed by six or so people until December 1995; general retrenchment with the fall of the Soviet Union led to its closure.

See also: Abruzzi, Luigi, Duke of; Baldwin, Evelyn; Drifting Ice Stations; Fiala, Anthony; Franz Josef Land; International Polar Years; North Pole; Papanin, Ivan; Payer, Julius von; Sedov, Georgiy; Wellman, Walter (1898–1899)

References and further reading:

Russia

Imperial Russia, 1553–1917

The great importance of the Arctic to Russia has been appreci-
ated since at least Tsar Peter the Great (1672–1725). A brief de-
scription of the process whereby Russia expanded beyond the Urals and along the Arctic coast is given in the entry for Semen Dezhnev. By the time that the expeditions of Vitus Bering came to be organized in the first part of the eight-
teenth century, the Russian Empire extended to the Pacific. The logistical difficulties involved in traveling across, let alone exercising control over, this vast territory may be learned from Bering’s entry. Peter the Great began the process of charting the Arctic coast. Shipping had made use of the Northeast Passage to carry goods between Western Europe and Russia since 1553, when Richard Chancellor had reached Moscow via the White Sea. Pomor vessels had long traded along this route as far east as the Ob’ River. Peter’s Great Northern Expedition, coordinated by Bering, surveyed the coast between Archangel and the Chukotka Peninsula. The results were not encouraging from the perspective of shipping, and later rulers sought other means to improve communications with their Pacific possessions—across the North Pole via a presumed open polar sea (see Chichagov, Vasily), or via the Cape of Good Hope and Cape Horn. One of the most ambitious ventures was organized by Tsar Alexander I in 1819, when Fabian von Bellingshausen was sent to search the high southern latitudes for anchorages suitable for use by the imperial navy while Mikhail Vasil’yev was sent to look for the Northwest Passage through Bering Strait. By this date, it was understood that Russian interests would be served as well by a Northwest Passage as by a
Northeast Passage. In the event, both would prove almost equally difficult to navigate. The significance of Bellingshausen’s first sighting of the Antarctic continent was not appreciated until long afterward, and no further expeditions were organized to Antarctica until the Soviet era. Russia’s strategic weakness in the Far East was fully exposed during the Russo-Japanese War (1904–1905), leading to a renewed attempt to render the Northeast Passage navigable by means of the Arctic Ocean Hydrographic Expedition, 1910–1915 (see Vil’kitskiy, Boris).

The need to improve communications throughout the country was a continuing theme of Russian exploration, as was the search for land north of the mainland. Numerous sightings were reported, and whereas some proved genuine—the New Siberian Islands, Wrangel Island, and others—some did not—for example, “Andreyev Land” and “Sannikov Land.” A succession of expeditions was organized, including those of Mathias von Hedenström (1808–1811), Ferdinand von Wrangel (1820–1824), Peter Anjou (1820–1824), and Eduard von Toll (1900–1903). The most spectacular discovery was made as recently as 1913, when Vil’kitskiy’s hydrographic expedition chanced upon Severnaya Zemlya.

The first stations were established at Malye Karmakuly on Novaya Zemlya and Sagastyr’ on the Lena Delta as Russia’s contribution to the First International Polar Year (1882–1883). Malye Karmakuly was reopened in 1896 and has remained open ever since. Three other stations were established prior to the 1917 revolution, including Dikson Island, which was set up in 1915 to assist in the relief of Vil’kitskiy’s two icebreakers, which had become beset while making the first east-west transit of the Northeast Passage. This was one of a series of expeditions requiring relief in late imperial times, the others being those of Georgiy Sedov, Georgiy Brusilov, and Vladimir Rusanov, all of whom encountered difficulties in 1912–1913. The great expense incurred in mounting relief expeditions led to the formation in 1914 of the Polar Commission. Given a staff of twenty-five, this body was charged with coordinating all scientific and practical activities in both polar regions, under the presidency of Grand Duke Konstantin Konstantinovich Romanov. The Polar Commission was not abolished until 1935.
The Soviet Era, 1917–1991

In the years immediately following the Russian Revolution, it was natural that the Arctic and polar exploration figured low in the new government's scale of priorities, though the potential importance of the Northeast Passage—or the Northern Sea Route—was demonstrated by the Great Siberian Bread Expedition of 1920, when 11,000 tons of Siberian grain was transported up the Ob' River and through the Kara Sea to Archangel to relieve famine in European Russia. Once securely in power, the Soviet authorities became increasingly sensitive about foreign encroachments of any type. Vilhjalmur Stefansson's colony was expelled from Wrangel Island in 1924, and a formal declaration was issued two years later proclaiming the assumption of control over all lands in the Arctic Ocean, discovered and undiscovered, lying between 32°4'35"E and 168°49'30"W.

Krassin's role during the search and rescue of Umberto Nobile's expedition in 1928 (see Samoylovich, Rudolph), presented the Soviet Union with an international propaganda triumph of the first magnitude, demonstrating Soviet achievement where others had failed. Whereas previous Arctic policy had concentrated on looking for natural resources, the Soviet leadership, in search of further propaganda successes and aware that its icebreaker fleet offered capabilities not shared by other states, determined to pursue a more ambitious program. Increased resources were allocated to the Arctic Institute, which had conducted the search for Nobile and was now charged with constructing a network of "polar stations" along the Northern Sea Route and in the High Arctic archipelagoes. Equipped with radio, such stations were to provide information on weather, ice, and tidal conditions. Twenty-nine new stations were opened for the Second International Polar Year (1932–1933), and seventy-two were in operation by 1935.

Opening up the Northern Sea Route as a commercial sea-way became the overriding objective of Soviet Arctic policy. In 1932, the Chief Administration of the Northern Sea Route (Glavseveroput', or GUSMP) replaced the Committee of the Northern Sea Route (Komseveroput', or KSMP). Its charter gave it sweeping powers over all the Soviet Union east of the Urals and north of 62°N, overseeing transportation, mining, fishing, agriculture, and cultural groups, though not the gulags, which were run by the Chief Administration for Construction in the Far North (Dal'stroi). Under the dynamic leadership of Otto Shmidt, GUSMP conducted a series of high-profile expeditions, including transits of the Northern Sea Route (see Shmidt, Otto), an ice station at the North Pole (see Papanin, Ivan), and pioneering flights across the Arctic Ocean (see Chkalov, Valeriy). GUSMP's influence declined after 1938, following a disastrous season in 1937, when twenty-six ships were forced to winter in the ice.

Although plans were made to send an expedition to Antarctica in 1932 for the Second International Polar Year, this failed to materialize, and the Soviet involvement in the exploration and scientific study of this continent began only in 1956 in preparation for the International Geophysical Year (IGY). Annual expeditions were organized in all succeeding years, with the scientific program coordinated by the Arctic Institute in Leningrad; its name was changed to the Arctic and Antarctic Research Institute in 1958 in recognition of its new role. The Soviet Union was one of the twelve original signatories to the Antarctic Treaty in 1959.

As with its launch of the first unmanned space vehicle in 1957, the Soviet leadership's decision to participate in the IGY, and to maintain a major presence on the continent thereafter regardless of Cold War tensions, reflected its desire to project a national scientific capability commensurate with status as one of the world's superpowers. Soviet successes in the Antarctic, such as the establishment of stations at the South Geomagnetic Pole and the Pole of Inaccessibility, were widely advertised. Meanwhile, less attention was given to continuing research in the Arctic, where information of greater strategic sensitivity was gathered by high-latitude air expeditions, drifting ice stations, and submarines. Whereas other countries built stations in the specific sectors of Antarctica to which they held claim or had historic association, the Soviet Union (alone with the United States) erected stations across the continent. The first station to be established was Mirnyy on the coast of Queen Mary Land in 1956 (see entry for a description of how Vostok was successfully set up at the South Magnetic Pole in 1957, while Sovetskaya had to be opened some way short of the Pole of Inaccessibility). Oazis was also maintained during the IGY in the Bunger Hills region of Queen Mary Land, but afterward it was transferred to Poland. The following stations were established later: Lazarev (1959–1961) and Novolazarevskaya (1961–) on Princess Astrid Coast; Molodezhnaya (1962–) in Enderby Land; Bellingshausen (1967–) on King George Island; Leningradskaya (1971–1991) in Oates Land; Russkaya (1973–1979) in Marie Byrd Land; and Progress (1987–1991) on Ingrid Christensen Coast. Mirnyy served as the headquarters of the Soviet program until 1972, when this role was taken over by Molodezhnaya.

The Russian Federation, 1991–

Following the fall of the Soviet Union in December 1991, the Soviet Antarctic Expeditions were succeeded by Russian Antarctic Expeditions. The so-called 38th Russian Antarctic Expedition that year was in fact the first to be organized by the Russian Federation rather than by the Soviet Union. Although two stations (Leningradskaya and Progress) were not reopened, five stations (Bellingshausen, Mirnyy, Molodezhnaya, Novolazarevskaya, and Vostok) continue to operate in what remains one of the larger national Antarctic programs.

Activities in the Arctic have also been scaled back. Improved relations with the West have led to a decline in Russian military interest in the region, and resources have been
Rymill, John
(1905–1968)

Less well known than it deserves to be, the British Graham Land Expedition was the most important British Antarctic expedition of the interwar period. It was led by the Australian explorer John Rymill.

John Riddoch Rymill first visited the polar regions in 1930–1931 as a surveyor on the British Arctic Air Route Expedition to Greenland led by Gino Watkins. In May 1931, he was responsible for navigating a relief party 140 miles inland to reach Ice Cap Station, where Augustine Courtauld had spent five months alone. By the time he arrived, the station was marked by only a small flagpole with a tattered flag flying over it. The party was thus strong in knowledge of the Arctic—particularly in relation to the handling of a sailing ship. But those with little previous experience were expected to learn from those with more, and all were to become handy sailors.

On 10 September 1934, Penola sailed from London. It would take five months to reach Port Lockroy on 22 January 1935. A slow steamer in any case, its engine mounting became loose while crossing Drake Passage, making the engine unusable. Powered only by sail, it was forced to return to the Falklands, where sacks of cement were taken on board to fix the engine bed when there was time before heading south again across Drake Passage. Penola was also too small to carry all the expedition’s supplies, let alone the airplane or forty dogs. These had been brought down to the Falklands in a cargo ship and from there to Port Lockroy in the British research vessel Discovery II.
This slow start to the expedition was a great disappointment to Rymill, who had hoped to achieve much in the first Antarctic season, now truncated. The first priority was to find a suitable base, preferably one as far south as possible, though Marguerite Bay was out of the question, with *Penola* needing repairs in a sheltered harbor. Equipping the Fox Moth with floats as a seaplane, Rymill and pilot Hampton took off on 27 January from Port Lockroy on a reconnaissance flight and soon identified a suitable site in the Argentine Islands. *Penola* now ferried supplies south from Port Lockroy in two voyages before being safely bedded in for the winter on 14 February. There, once the sea had frozen over, its engine could at last be fixed within a cage of iron bars and cement.

At Winter Island, a two-story hut was built together with a smaller hut for meteorological observations on top of the island's tiny ice cap. From now on, except during sledging journeys, they were to eat seal meat twice a day. This was another example of Rymill's economy, though one that benefited Bertram's biological studies rather more than the local Weddell and crabeater seals, of which no less than 550 were killed.

Once the hut was complete, scientific work began, together with Stephenson's survey of the Argentine Islands and adjacent mainland. They used the motorboat until the sea began to freeze and then sledged over the ice once it was sufficiently thick. Except in the worst weather, activities continued throughout the winter and spring, though open water 100 miles south disappointing blocked longer sledging journeys in that direction.

Rymill was now determined to move his base much farther south. Initially, he had planned to dismantle the existing hut and then reassemble it at the new site. He found, however, that the wooden planking was too warped to make this worthwhile. In early January 1936, he decided instead to send *Penola* to Deception Island, where large quantities of suitable timber could be obtained from the abandoned whaling station. While *Penola* was away, a number of flights were made north and south, taking aerial photographs to fill in gaps in the ground survey. At the same time, an abortive attempt was made by Rymill, Fleming, and Stephenson to climb onto the 2,500-meter plateau that forms the spine of Graham Land.

No sooner had *Penola* returned than it was loaded and ready for departure from Winter Island on 16 February. Hamp-ton and Stephenson were left behind with the plane, following ten days later when radioed that a possible anchorage had been reached in the Léonie Islands. The next day, Rymill and Hampton took off on a fine and clear day, hoping to fly far south of areas reached by Charcot. To their mounting excitement, as they climbed above the adjacent islands, a high mountain range could be seen in the distance, unexpectedly projecting out westward toward Alexander Island rather than aligned north-south along the peninsula. No sign could be seen of the four channels reported by Wilkins, with the apparent absence of “Stefansson Strait” particularly puzzling in that its existence had only recently been confirmed by another aviator, Lincoln Ellsworth. Continuing on, they were soon able to identify a suitable wintering site in Marguerite Bay, in a group of six small islands that Rymill was to name for Frank Debenham, veteran of Robert Falcon Scott's second Antarctic expedition and now professor of geography at Cambridge University, with—more to the point—six children. Two days later, *Penola* was there, hurriedly unloading its heavy burden of timber, stores, and ninety-eight dogs, following what had been an uncomfortably crowded voyage. This year, it was not to winter with the expedition but was instead to return north to the Falklands and South Georgia with a crew of just seven, including the ornithologist Roberts, whose rumbling appendix Rymill considered too much of a liability to risk.

Although scientific work continued close to the base, it was not until 11 June, in the heart of the Antarctic winter, that the ice was sufficiently thick for Rymill to set out with a tractor and five dog teams (led by Bertram, Bingham, Hampton, Moore, Riley, and Stephenson) to lay a depot 70 miles farther south. With light sufficient for sledging each day only between 10 A.M. and 2 P.M., they made slow progress. Soon, Moore was forced to return to base after being badly frostbitten in the intense cold. One week after setting out, they had traveled only 25 miles. A strong wind now blew offshore. Securing their tents as well as they could against the screaming blizzard, they readied themselves to rush toward the nearest land should the sea ice on which they were camped start moving out toward the nearby open sea. At 3 A.M., they were awakened by shuddering beneath them and, looking out, saw that all around them the ice had broken up. Waiting for sufficient light to identify how best to reach land, they headed there by the most direct route possible, jumping from floe to floe toward some small islands 4 miles from their disintegrating camp. With Rymill ahead, climbing snow pinnacles to scout out their path, they made the best speed they could, hoping against hope that the wind would not
strengthen and send them all out to sea. Still out on the ice when light dwindled and failed in the early afternoon, Rymill was forced to rely on the dim beam of his torch to pilot a way, as the others followed in line with their dog teams. At last, at 6 p.m., after traveling for five hours in darkness, they scrambled ashore on “Terra Firma Island.” This offered at best temporary safety, for they had had to abandon most of their provisions on the ice and were now marooned until the sea ice was sufficiently thick for them to risk traveling over it again. Allowing a week to pass, they managed to return safely to the base, much to the relief of the three left behind, who had seen the sea ice go out in the blizzard and feared that they might still be on it.

With the sea ice to the south of them clearly unsafe, Rymill in July and August concentrated exploratory efforts to the north and in particular on the fiords separating Adelaide Island from the mainland, where useful survey work was carried out by two parties. As winter moved toward its close, conditions were once more favorable for flying, and on 15 August one of the expedition’s major discoveries was made: a great channel apparently separating Alexander Island from the continent. This Rymill named King George VI Sound. Other flights provided further proof that no channels bisected the peninsula and that Wilkins and Ellsworth had been mistaken. More encouragingly, sightings from the air indicated a possible route south along the coastal fast ice and across the shelf ice to the newly discovered sound.

This, then, was the route followed on the major sledging journeys that began on 5 September. Accompanied by fifty dogs, Rymill set out with Bertram, Bingham, Fleming, and Stephenson. Three weeks later and still only 90 miles out, Rymill and Bingham passed on most of their supplies to a party of three led by Stephenson, which was to travel as far as possible along George VI Sound, while Rymill and Bingham reloaded at the base before investigating possible routes to the east across the peninsula.

Stephenson’s party reached the sound on 3 October to find a flat-bottomed rift, 15 miles wide, running slightly east of south between a high mountain ridge of 2,400 meters to the west on Alexander Island and the peninsula plateau to the east. An undulating floor of shelf ice provided generally good going, and after traveling some 200 miles in sixteen days, they were within sight of the sound’s southern end by 19 October as it swung to the west round Alexander Island. At 72°S, 67°18’W, this was considerably farther south than any previous party had sledged in West Antarctica. Now heading back, they spent two days geologizing at Fossil Bluff, where they collected excellent fossils from the Jurassic period.

While Stephenson’s party returned to base, Rymill and Bingham attempted to cross Graham Land, climbing to 2,400 meters onto and over the high plateau until, on 22 November, they saw mountains forming the peninsula’s east coast. They were to remain within sight of the Weddell Sea for thirty days out of their seventy-two-day journey, but continuous cloud cover prevented them from ever getting a truly good view of this still unexplored coast. Finally, with food running short, they hurried down and across the sea ice to their base, reaching it just three days before the ice broke up.

Although the season for long sledging journeys was over, reconnaissance flights continued until the arrival of Penola on 13 February, adding useful knowledge about Alexander Island in particular. On 14 March, they sailed from the Debenham Islands, reaching England on 4 August.

Despite its meager funding, the British Graham Land Expedition made considerable achievements: the Antarctic Peninsula was proved to be indeed a peninsula and not an archipelago; Alexander Island—previously “Alexander Land”—was shown to be almost certainly an island; and George VI Sound, a great rift separating Alexander Island from the continent, was discovered. The expedition was almost equally important for what other expeditions were to learn from it, particularly the Falkland Islands Dependencies Survey. Rymill himself led no further expeditions but returned to South Australia and his family station at Penola, serving during World War II in the Royal Australian Naval Volunteer Reserve.

See also: Alexander Island; Antarctic Peninsula; Argentine Islands; British Antarctic Survey; Charcot, Jean-Baptiste (1908–1910); Discovery Investigations; Ellsworth, Lincoln (1935–1936); Marguerite Bay; Mawson, Douglas (1929–1931); Nordenskjöld, Otto; Watkins, Gino; Wilkins, George Hubert (1928–1929)

References and further reading:


Samoylovich, Rudolf (1884–1940)

For many years, the name “Rudolf Lazarevich Samoylovich” was systematically excised from all accounts of Arctic exploration published in the Soviet Union. As founding head of the All-Union Arctic Scientific Research Institute and leader of the world famous voyage in Krasin, which rescued the last survivors from Umberto Nobile's disastrous airship expedition, Samoylovich was the most prominent of many Arctic explorers who were executed or imprisoned during the great Stalinist purges of the late 1930s.

Samoylovich—also known as Rudolf Lazarevich Samoilowitsch—was born into a wealthy family in Azov-on-the-Don and educated at the Royal Saxon Mining Academy in Freiburg, Germany. Acquiring radical political views as well as a first-class geological education, Samoylovich was repeatedly arrested and eventually exiled to northern Russia. In 1912, he joined a government expedition to Svalbard led by Vladimir Rusanov; its primary objective was to assess the archipelago's mineral potential. Samoylovich made detailed studies of the extensive coal deposits in the Ice Fjord region of Spitsbergen where twenty-eight claims were staked, some of which are still exploited today. Having completed the survey, Rusanov announced that, rather than returning home, he would attempt to sail through the Northeast Passage. Fortunately for Samoylovich, he was one of the three who decided not to participate. None of those who went with Rusanov survived the voyage.

Samoylovich spent several summers in Spitsbergen on further geological expeditions before founding the Northern Scientific-Commercial Expedition in March 1920. Located in Leningrad, this was upgraded in 1925 to become the All-Union Arctic Scientific Research Institute (ARI), the premier research facility for the study of the Russian North and seas adjacent to it. Survey voyages were made to Novaya Zemlya and the Kara Strait (1921), Franz Josef Land (1923, 1924, 1925, 1927), Wrangell Island (1924), and the New Siberian Islands (1927) before ARI achieved international renown with Krasin's rescue of the Nobile survivors.

Krasin to the Rescue, 1928

At 8,750 tons and equipped with 9,000-horsepower engines, Krasin was the world's most powerful icebreaker. One might have imagined that such an asset would be in constant use, but for the previous eighteen months it had laid idle at Leningrad while less powerful ships were preferred because they were cheaper to operate. All this changed on 24 May 1928, when contact was lost with the Italian explorer Umberto Nobile and his airship Italia. As states competed to be first to rescue Nobile, the Nobile Rescue Committee was established on 29 May to coordinate Soviet relief expeditions in three icebreakers—Krasin, Malygin, and Sedov.

After two weeks of frenzied preparations, Krasin was ready to depart on 16 June. By now, Nobile's location was known, though no one had yet succeeded in reaching him. At 80°37’N, 26°50’E, his conspicuously colored red tent was off Foyan Island to the northeast of North East Land. This was one of the least accessible regions of Svalbard; moreover, this early in the summer the ice was too thick for conventional ships to force a passage. As Krasin steamed north, the only question was whether Nobile might be reached first by air.

Delaying first to search for Roald Amundsen, whose flying boat had last been heard from near Bear Island, Krasin was off North Cape, North East Land, by 1 July, some 50 miles short of Foyan Island. Slowed by a broken propeller blade and a damaged rudder, it was virtually halted by very thick ice. Fortunately, a level floe was found not far from the ship, and on 10 July Boris Chukhnovskiy took off in the three-engine Junkers aircraft. Although forced down on the pack when thick fog prevented him from finding Krasin, Chukhnovskiy had radioed back before landing that he had seen three men on the ice 15–18 miles ahead. Inspired by this news, Samoylovich ordered the anchor raised and engines at full power the next day; Krasin resumed its battle to get farther east. At last, it began to make slow and then more rapid progress to close on the location reported for the survivors. The first two were picked up at 7:00 a.m. the next day, the remaining five that evening at 8:15 p.m. The only expedition members now requiring rescue (assuming they were still alive) were the six who were still on board Italia after the crash. After first heading south to Stavanger for essential repairs and recoaling at Bergen, Krasin was ready to resume the search by late August. On 31 August, news came through that a float and petrol tank had been found from Amundsen's flying boat. Since this meant that Amundsen was almost certainly dead, Samoylovich was now able to concentrate on Nobile's men. On 17 September, Krasin reached 81°47’N due north of Cape North, close to Italia's last reported position. This was a record farthest north for the Svalbard region. Finding no trace of the missing men, Samoylovich next headed east toward Franz Josef Land, searching on the way for “Gillis Land,” just in case they might have come ashore on this long-reported but actually nonexistent island. By 22 September, Krasin was off George Land, where a party was landed at Cape Neale. Again, there was no sign of any survivors from Nobile's expedition, but the landing provided an opportunity to raise the Red Flag and restate
the Soviet claim to Franz Josef Land, then disputed by Norway. To buttress the Soviet claim, Samoylovich had planned to erect a refuge hut but was prevented from doing so by worsening weather. On the same day, he received instructions to abandon the search and return to Leningrad.

In a single voyage, Krasin had elevated the Soviet Union to the front rank of Arctic powers. On returning to Leningrad, the crew members were welcomed as heroes; Samoylovich was awarded the Order of the Red Banner of Labor. Krasin’s success was to lead to major changes in Soviet Arctic policy, which had previously concentrated on investigating natural resources. Now, in search of further propaganda triumphs and aware that his icebreaker fleet offered capabilities not shared by any other state, the Soviet leader Joseph Stalin increased ARI’s funding, enabling it to set up stations across the Soviet Arctic. In time, this policy shift also led to the establishment of the Chief Administration of the Northern Sea Route (Glavsevmorput’, or GUSMP), a development that caused Samoylovich to have mixed feelings. In 1930, he had been replaced as ARI director by Professor Otto Shmidt. The creation of GUSMP under Shmidt’s leadership in December 1932 led to his reinstatement as director, but this also meant that ARI lost much of its independence within the GUSMP monolith, into which it was now absorbed. Relations between Shmidt and Samoylovich were tense, with Samoylovich regarding his superior as something of an Arctic parvenu. As a result, he was to be sidelined in the string of successful expeditions mounted later by Shmidt, culminating in 1937 in the establishment of the ice station North Polar-1 (see Papanin, Ivan).

**The High Latitude Expeditions of Sadko, 1936 and 1937**

Although Shmidt’s activities attracted the headlines, the ARI under Samoylovich continued its ambitious program of scientific cruises and station-building. Much had been learned by now of weather and ice conditions along the Northern Sea Route itself, but nothing whatever was known about the central Arctic Basin apart from observations made during Fridtjof Nansen’s 1893–1896 voyage across the Arctic Ocean in Fram. Since the state of the central Arctic clearly influenced shipping conditions along the Northern Sea Route—the prime focus of ARI interest—Samoylovich organized a series of expeditions in which the icebreaker Sadko would collect meteorological and oceanographic data from the highest latitudes that could be reached. The first expedition in 1935 was led by the veteran explorer Georgiy Ushakov. On Ushakov’s dismissal from GUSMP in 1936, Samoylovich took over command of the 1936 and 1937 voyages.

By demonstrating that the Laptev Sea could be entered north as well as south of Severnaya Zemlya, Shmidt’s 1932 voyage in Sibirjakov had raised the possibility of a “northern variant” of the Northern Sea Route, whereby shipping would travel north rather south of Novaya Zemlya, Severnaya Zemlya, the New Siberian Islands, and Wrangel Island. A second purpose of Sadko’s voyages was to gather information as to whether this route was indeed feasible, and to that end Samoylovich intended to investigate conditions north of the New Siberian Islands in 1936. En route, Sadko was required to go to the assistance of shipping beset in the western Kara Sea, leaving time only for a brief visit to Franz Josef Land.

The 1937 voyage was Samoylovich’s twenty-first polar expedition. After a full program of studies was completed in the Laptev Sea, north of the New Siberian Islands, Sadko was ordered west to help shipping through Vit’kitskiy Strait. On the way, it met up with two other icebreakers of similar size, Malygin and Sedov, and soon afterward all three ships found themselves beset and drifting northward toward the central Arctic Basin. Two hundred and seventeen men and women were forced to winter in the ice, a mixed group of scientists, polar station staff, and students from the Leningrad Hydrographic Institute (see Badigin, Konstantin). Samoylovich was a scientist rather than a sailor and was now over sixty years old. He was reluctant to take on overall leadership of the three ships, as their captains had urged him, but when this request was backed by his superior, Shmidt, he had no option. At this stage, Samoylovich may already have had some inking that he was being lined up to take responsibility—not only for the unfortunate besetment of the three icebreakers but also for the disastrous shipping season as a whole, with no less than twenty-six ships wintering in the ice. Against his will, Samoylovich was one of the first airlifted out. In March 1938, while recuperating in a sanatorium, he was taken away by the secret police. There was no show trial, and his name was never published as one of those denounced. Almost twenty-five years later, his daughters were to receive a letter informing them of their father’s posthumous rehabilitation. At some time during 1940 he had been shot.

See also: Badigin, Konstantin; Nansen, Fridtjof (1893–1896); Nobile, Umberto; Northeast Passage; Papanin, Ivan; Russia; Shmidt, Otto; Ushakov, Georgiy

**References and further reading:**


**Saunders Island (South Sandwich Islands)**

Located at 57°47’S, 26°27’W, this island—5 miles long and 3 miles wide—is centrally placed on the volcanic arc forming the South Sandwich Islands. It was first seen on 2 February 1775 by James Cook, who named it for Admiral Sir Charles Saunders (1713–1775). It was next seen by Fabian von Bellingshausen in January 1820 and independently rediscovered ten years later by the American sealer Captain James
Brown (*Pacific*), who named it “Christmas Island.” The first recorded landing was made in November 1908 by Carl Anton Larsen, who compiled a rough survey during his investigation of the whaling potential of these islands. Larsen’s chart was improved upon by RRS *Discovery II* in 1930. Further landings were made from RRS *William Scoresby* in November 1937 and from HMS *Protector* in March 1962. The most recent scientific visit was made in 1997 from HMS *Endurance* during a comprehensive geological and biological survey of the South Sandwich Islands.

See also: Bellingshausen, Fabian von; Cook, James (1772–1775); Discovery Investigations; Larsen, Carl Anton; Sealing and Antarctic Exploration; South Sandwich Islands; Whaling and Antarctic Exploration

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**Schrader, Karl**

(fl. 1880s)

Germany’s International Polar Year (IPY, 1882–1883) expedition to South Georgia was the first land-based expedition to that sub-Antarctic island, and it was the only one among fourteen IPY observatories to be set up in the Antarctic. This was a scientific expedition carrying out little exploratory work, instead maintaining detailed measurements of meteorological, geophysical, and oceanographical phenomena. It was to be led by the scientist Karl Schrader.

**Scientific Studies on South Georgia, 1882–1883**

The German Polar Commission, under the presidency of Dr. Georg von Neumayer, enthusiastically supported the First International Polar Year and determined to establish two stations, one on Baffin Island in the Arctic, and one on South Georgia. The latter was chosen because its longitude is almost 180° (i.e., directly opposite) the geomagnetic observatory set up by Neumayer at Flagstaff, Australia. Dr. Karl Schrader (astronomy, physics) was selected to lead the expedition, accompanied by Dr. P. Vogel (deputy leader, physics), Dr. Karl von den Steinen (physician, zoology), Dr. H. Will (botany), E. Mosthaff (engineer and draftsman, tidal observations), Dr. O. Clauss (mechanic, physics), and four assistants. Their equipment, provisions, and prefabricated buildings were identical to those supplied to the Baffin Bay expedition, with the exception of an observatory with a revolving canvas dome, since their stay on South Georgia would coincide with a rare opportunity for studying the transit of Venus.

On 2 June 1882, the expedition sailed from Hamburg in the steamer *Rio* bound for Montevideo. There, the expedition and its supplies were transferred to the three-masted steam corvette SMS *Moltke*, commanded by Captain Pirner, which sailed for South Georgia on 23 July. On 12 August, South Georgia was in view, but bad weather delayed attempts to find a suitable site. One landing on 17 August came close to disaster when two boats — each with twelve men, including five expedition members — found themselves temporarily marooned on a rocky coast with sheer cliffs above them as *Moltke* was driven from its anchorage in a gale. Putting out into the heaving sea, the boats managed to intercept *Moltke*, and all made their way safely back on board.

On 20 August, a suitable site was at last found at Royal Bay with level ground, a plentiful supply of fresh water, easy access from the sea, and — not least important given the expedition’s scientific mission — lack of local magnetism to disturb the sensitive instruments. By 3 September, all supplies and equipment had been transferred to land and the station made ready for occupation, enabling *Moltke* to depart.

In addition to living quarters, the station consisted of two astronomical observatories, two magnetic observatories, a zoological laboratory, and a darkroom, together with sheds and stalls for the three cows, seventeen sheep, nine goats, and two geese. There was also a garden where Will experimented by growing northern varieties of potatoes, vegetables, and cereals. At times, the station must have resembled a small farm.

The prime purpose of the expedition was to conduct a thorough program of scientific measurements, the exact nature of which was rigidly determined by the International Polar Year, which required precisely coordinated and indeed simultaneous measurements of many geophysical variables. At five minutes before the hour throughout day and night, a signal clock would warn the observer on duty. He went first to the magnetic observatories, where the instruments had to be read always in the same order and timed precisely by signals from the signals clock. Meteorological observations came next, with the barometer always being read on the hour. On term days, readings of magnetic variation had to be obtained every five minutes for twenty-three hours and once every twenty seconds for the last hour in the day. The measurements did not end there, with oceanographic, astronomical, and other observations also being made according to a regular schedule.

With such a program, opportunities were limited for exploration, and the three physicists in particular had little chance to venture far from the station. Such exploration as could be undertaken was largely carried out by the zoologist von den Steinen and the botanist Will in the course of their studies, as well as by Mosthaff, who conducted a triangulation survey, on the basis of which he compiled an excellent map at 1:50,000.

The transit of the planet Venus across the disc of the sun provides a rare opportunity to calculate with accuracy the Earth’s distance from the sun, along with other planetary distances. This expedition proved exceedingly fortunate in terms of the weather, which, after being overcast for days before and after, miraculously cleared on 6 December, shortly before the transit began at 10:18 A.M., and remained clear until it ended at 5:47 P.M. The only problem the observers faced was the strength of the wind. It took four men hanging on ropes to prevent the canvas roof from being torn off the observatory.
On 27 August 1883, considerable disturbances were observed in the barograph and tide gauge traces. It was discovered later that the expedition's instruments had picked up effects following the eruption of the volcano Krakatoa the previous day in Indonesia.

SMS Marie arrived to evacuate the expedition on 1 September. Five days later, the station was abandoned and Marie departed for Montevideo. Although some members of the expedition chose to prolong their stay in South America, Schrader returned to Hamburg on 15 November, accompanied by twenty-one cases of scientific specimens and two boxes of records.

See also: International Polar Years; South Georgia

References and further reading:

Schröder-Stranz, Herbert (1884–1912)
The German explorer Herbert Schröder-Stranz intended to undertake a trial venture to sort out minor problems of equipment and personnel before making an ambitious attempt to explore along the length of the Northeast Passage. But a succession of ill-considered decisions resulted in a situation in which eight out of fifteen men died, with the remaining seven being lucky not to share the same fate.

Eight Die on a Disastrous Expedition to Svalbard, 1912–1913
Born on the family estate at Stranz, Prussia, Herbert Schröder-Stranz traveled widely after his health became impaired when serving with the armed forces in South-West Africa. While traveling across the Kola Peninsula, northern Russia, he conceived the idea of making a transit of the Northeast Passage, something achieved only by Adolf Erik Nordenskiöld thirty years earlier. He planned to winter twice during the voyage, which would enable him to conduct a full scientific program and explore the islands north of Russia. Having never visited the Arctic before, he decided to follow the example of his compatriot Wilhelm Filchner and organize a preliminary expedition to Svalbard. This would allow him an opportunity to test out equipment and give himself and his colleagues some experience in the conditions likely to be encountered.

Schröder-Stranz had recruited Captain W. Berg as captain for the voyage through the Northeast Passage. Berg was familiar with the Kara Sea, but he was needed in Germany to supervise construction of the expedition’s vessel. This led to the appointment instead of Captain Alfred Ritscher to command Herzog Ernst, the 61-ton, two-masted sealing schooner that would be used during the preliminary expedition. The ship was named for the expedition’s principal sponsor, Herzog Ernst von Sachsen-Altenburg. Ritscher had previously served as a second officer with the Hamburg-America Line. With typical ambition, Schröder-Stranz planned the first use of airplanes in the Arctic. Unfortunately, Ritscher was prevented from completing his pilot training after being injured in a plane crash, so no airplane was brought. Other members of the party included the scientists Dr. Max Mayr (geologist), Dr. Erwin Detmers (zoologist), Dr. Walter Moeser (botanist), and Dr. Herman Rüdiger (oceanographer); the artist Christopher Rave; and Schröder-Stranz’s personal secretary, Richard Schmidt. Lieutenant Commander August Sandleben was second-in-command of Herzog Ernst, while engineer Wilhelm Eberhard—originally recruited to look after the airplane—agreed to stay on to care for the twenty-four dogs.

Arrangements were made for the expedition to depart from Tromsø, northern Norway. The party was assembled together for the first time on 1 August, when Schröder-Stranz arrived. He took the opportunity to announce an immediate change in the plans. Fund-raising for the main expedition was slower than anticipated, and to ensure good newspaper coverage it was essential for the preliminary expedition to achieve some dramatic feat. He proposed crossing North East Land, only the second crossing after Nordenskiöld in 1873, and the first from south to north. Two of the party chose this moment to withdraw. There were already signs that Schröder-Stranz’s preparations were less than thorough, and the ambitiousness of this new plan aroused concern. Rave agreed to remain only if excused from participating in the sledge journey, for which he considered himself physically unfit.

On 5 August 1912, Herzog Ernst departed from Tromsø. This was very late in the year to be starting out on an expedition, and Schröder-Stranz warned his men that, contrary to previous assurances, there was a real possibility that they might be forced to winter. After heavy ice thwarted an initial attempt to reach North East Land through Stor Fjord south of Spitsbergen, Herzog Ernst’s course took it along the west and north coasts of Spitsbergen to round North Cape, North East Land, at midnight on 13 August. Three miles beyond, they were halted by continuous ice. There, Schröder-Stranz announced another change of plan. He, Mayr, Sandleben, and Schmidt would disembark and sledge across the ice to North East Land. After crossing to the west coast, they would make their way via Hinlopen Strait and the north coast of Spitsbergen to Cross Bay on the west coast. Those remaining with the ship would establish a depot for the sledding party and conduct oceanographic and other studies on their way to Cross Bay, where they would await Schröder-Stranz until 15 December. On 15 August, Schröder-Stranz set off with three kayaks, two sledges, eight dogs, and food for two months. He was nearly 10 miles from the nearest land.
**Herzog Ernst** made slow progress east through thick ice to arrive at Sorge Bay on 21 August. There, HMS *Hecla* had anchored during Edward Parry’s attempt to reach the North Pole in 1827; onshore could be seen the expedition hut of the Swedish-Russian Arc of Meridian Expedition of 1899–1900. A series of northerly gales drove the pack into the bay. Several fruitless attempts were made to escape before Ritscher concluded on 18 September that the only way to protect *Herzog Ernst* from ice damage was to beach the ship. Some thought this premature and were proved correct the next day when southeasterly winds cleared the bay of ice. Before the ship could be refloated, the ice came in again and they were once more trapped.

Although they had sufficient provisions to winter, the scientists were not keen to remain in Sorge Bay, where there was little for them to do that had not already been accomplished by previous expeditions. Ritscher himself raised the possibility of traveling overland to Advent Bay, where an American company was mining at Longyearbyen. Perhaps because his confidence had been shaken by his premature decision to beach *Herzog Ernst*, or else out of awareness that his Norwegian crew—especially ice pilot August Stenersen—possessed much greater knowledge of the Arctic than he, Ritscher made no attempt to direct action but instead called a ship’s meeting. At the meeting the five Norwegian crew members voted to remain with *Herzog Ernst*, the six Germans to leave. When, however, the Germans had completed their preparations to go, the Norwegians decided to join them. On 21 September, all eleven men set out, with the Germans and Norwegians pulling separate sledges assisted by eight dogs. Progress was exceptionally slow, and the next morning the Norwegians changed their minds again and opted to return to the ship.

The route to Advent Bay involved crossing Verlegenhuken Peninsula to Mossel Bay, then south through Wijde Bay and across the watershed to Dickson Bay and North Fjord. Longyearbyen lay on the opposite side of Ice Fjord. It took five days to travel the 10 miles to Mossel Bay. The next day was spent recuperating in the hut erected by Nordenskiöld in 1872. The difficulty of reaching Advent Bay was now apparent to all. But when the question was raised as to whether it would not be wiser to return to the ship, Detmers and Moeser declared their intention to continue. Traveling light, they hoped to make much better time. Having decided that they too would carry on, the other four first returned to Sorge Bay for addi-
tional supplies. There, they found that three of the Norwegians now wished to join them—Stenersen, Einar Rotvold, and the cook Knut Stave—leaving just the brothers Julius and Jørgen Jensen to remain with Herzog Ernst. After just ten minutes of skiing, Stave changed his mind and returned to the ship.

Beyond Mossel Bay on 29 September, Detmers and Moeser were seen some way ahead, but no attempt was made to join them. They were not seen again. Continuing south through Wijde Bay, they came to a trapper’s hut on 4 October. Rüdiger’s feet were badly frostbitten, and Rave volunteered to stay behind with him, since he clearly could not go on. There were sufficient provisions in the hut to last the two men for five weeks, by which time help should be able to reach them. Ritscher and Eberhard left four days later, one day ahead of Stenersen and Rotvold, who stayed behind to fabricate boots out of reindeer hide. This late in the fall, there was insufficient light for traveling without the moon, and an initial attempt to cross the divide to Dickson Bay was abandoned when they kept stumbling into crevasses. On 24 October, therefore, they returned to a hut in West Fjord, where there were substantial supplies of food. Surprisingly, no attempt was made to exploit the next period of moonlight, and they did not try to reach Dickson Bay again until 18 December. Now Eberhard’s health failed, and Ritscher decided to send him back in the care of the British mining company based in King’s Bay, he organized a four-man party that sledged across the mountains to Wood Bay and south through Wijde Bay to arrive on 19 March at the hut occupied by Rüdiger and Rave, who were no longer there.

Without a sleeping bag and only the barest of provisions, Ritscher climbed up to the glacier to find traveling conditions at last excellent. After a difficult descent to Dickson Bay, he made rapid progress along the valley and over the sea ice in the fjord. Unable to find huts to rest in, he adopted a routine of periodically bedding himself down in the snow with his head in his rucksack, after first setting his alarm clock to ring in fifteen minutes. In temperatures descending to –40°C (–40°F), this helped stave off hypothermia. Frostbite was another matter, but Ritscher kept on, pressing south through North Fjord to see the lights of Longyearbyen ahead. All that remained was to cross Ice Fjord. Disastrously, a broad belt of open water lay across his path. After waiting some time for it to close, he nearly lost his head, thinking that he should abandon Longyearbyen and make instead for Cross Bay. He would never have reached it. Fortunately, the madness passed and he decided to make one more attempt to cross Ice Fjord. The belt of water was now just 200 meters, and by means of several small floes he was able to ferry his dog and himself over to reach the young ice beyond. This was crossed with extreme circumspection, as it bent and buckled under his weight. Jumping across a narrow lead, he went straight through and spent ten minutes in the water as the ice broke off in his hands as he scrambled to get out. After ten hours of continuous skiing, he finally reached Longyearbyen at 2:30 A.M. on 27 December. Several days passed before he was able to provide a coherent account of what had happened to the rest of Schröder-Stranz’s expedition.

Four relief expeditions were organized once Ritscher’s news reached Norway on 6 January 1913. Altogether eleven men required rescue: seven in Wijde Bay; three in Sorge Bay; and four, including Schröder-Stranz, somewhere in North East Land or along the north coast of Spitsbergen. The most urgent priorities were clearly Rüdiger and Rave, whose provisions must by now be exhausted. The first rescue attempt was organized from Longyearbyen. Once sure that Ice Fjord was firmly frozen over, a four-man party set out on 24 January. Led by the mining official Ingvar Jensen, they were forced to turn back on 3 February when the feet of one man became badly frostbitten. The next attempt was made by members of a German expedition wintering at Cross Bay. On 23 January, they had overheard a radio transmission referring to the plight of Schröder-Stranz’s expedition. The leader, Dr. Kurt Wegener, immediately offered his assistance. With the help of the British mining company based in King’s Bay, he organized a four-man party that sledged across the mountains to Wood Bay and south through Wijde Bay to arrive on 19 March at the hut occupied by Rüdiger and Rave, who were no longer there.

What happened to Rüdiger and Rave is an epic in its own right. With Rüdiger incapacitated, everything depended on Rave. He collected driftwood to burn, fashioned candles out of reindeer fat to provide light after the sun disappeared on 20 October, and did what he could to make varied meals out of the salted reindeer meat left behind by the hut’s previous occupants. By early November, they had consumed the last of their chocolate and pemmican and had no more tobacco to smoke. Unless relieved by mid-November, they had determined to attempt the 50-mile journey back to Sorge Bay guided by the light of the moon. The two men set out on 23 November. Rave and a dog pulled the sledge while Rüdiger kept up as best as he could with the aid of a hinged boot, ingeniously fashioned by Rave to protect his injured left foot from further damage. Three days later, they reached Nordenskiöld’s hut at Mossel Bay, where they ate their fill and rested. Resuming their journey on 29 November, they initially had good going over snow frozen hard in the intense cold, and guided by the stars. When the stars became obscured, however, they lost their way and had to lie up in the snow for twenty-two hours before visibility improved and they were able to identify where they were. Soon, they were across the summit and looking down on Sorge Bay, where they arrived at the ship on 1 December.

Rave had left a letter in the hut giving an account of his and Rüdiger’s stay there and their plans to make for Sorge Bay. This was found by Wegener, as were several letters from members of another group he was looking for: Eberhard, Stenersen, and Rotvold. After leaving Ritscher on 18 December, they had arrived in the hut four days later. Eberhard was in very bad shape, both physically and mentally, and his letters expressed concern that he might be left behind by the Norwegians, who were determined to press on with all possible speed, leaving behind their sleeping bags to travel as light as possible. The
three men departed on 24 December. Eberhard was unable to keep up with the other two and was last seen running down a hill some way short of Mossel Bay. Stenersen and Rotvold arrived back at the ship at 2:00 P.M. on Christmas Day.

As soon as Ritscher's news got through, preparations began in Germany for two relief expeditions: an official effort led by the Norwegian Arve Staxrud, and a private venture led by the German journalist and explorer Theodor Lerner. Departing from Tromsø on 19 March 1913, Staxrud had reached Green Harbor on the west coast of Spitsbergen, and was making preparations to sledge across to Sorge Bay, when he learned by radio of the arrival of four of the Norwegians at Advent Bay on 5 April. Sledging along Ice Fjord to confer with them, he was informed that the fifth Norwegian—Stave—had died of consumption on 24 February and that Rüdiger and Rave had moved to Nordenskiöld's hut at Mossel Bay. Eberhard, Detmers, and Moeser were all missing—the first almost certainly dead—and nothing further was known of Schröder-Stranz's four-man party. On the basis of this information, Staxrud decided to head north through Wijde Bay to look for the three men last seen there, then along the north coast, where Schröder-Stranz might be found, and finally to Mossel Bay to pick up the two Germans. Setting out on 12 April with two dogsledges and twenty reindeer sledges, he arrived at Mossel Bay nine days later, having seen no sign of any of the missing men. Since it was possible that Schröder-Stranz had run into difficulties before reaching Spitsbergen, Staxrud hoped to continue east to North East Land but was prevented by open water and broken ice in Hinlopen Strait. Lerner, meanwhile, departed Tromsø on 21 April and had succeeded in anchoring Løwenskjøld 2 miles off Mossel Bay at the edge of the ice. From there, he sent his three best skiers ahead with an offer to transport Rüdiger and Rave south by sea. They preferred the option of traveling overland to Advent Bay with Staxrud, which had the advantage of leaving Lerner free to continue the search for Schröder-Stranz farther east along the north coast of North East Land. Despite a detailed search ranging as far as Cape Platen, no sign was seen of him, leading Lerner to conclude that he and his party had died on the sea ice without ever reaching land. Herzog Ernst was refloated by Stenersen with Staxrud's help and sailed back to Green Harbor by Lerner, when the latter's own vessel sunk due to ice damage. At Green Harbor, Ritscher assumed command for the voyage back to Tromsø, where it arrived on 16 August, the other survivors having returned two months earlier.

This, however, was not the end of the story. In 1937, the Norwegian sealer Amandus Wilhelmsen and his son had gone ashore at Dove Bay, immediately east of Cape Platen, North East Land. There they found the remains of a canvas boat and sleeping bag, along with other items suggesting a depot. The find aroused such interest in Germany that Wilhelmsen was persuaded to revisit the site the following year. Although he was unable to find any documents linking the depot with Schröder-Stranz, the initials DAE—Deutsche Arktische Expedition—were found inscribed on a log. Clearly, Schröder-Stranz had reached land, but farther east than anticipated by the search parties. Depositing nonessential items on the coast, he and his colleagues presumably next attempted to cross the ice cap forming the interior of North East Land, only to lose their lives either on their way across or on the west coast. If the latter, additional finds may one day tell us more about their fate.

See also: Airplanes; Filchner, Wilhelm; Nordenskiöld, Adolf Erik (1872–1873; 1878–1880); North East Land; Northeast Passage; Parry, Edward (1827); Ritscher, Alfred; Spitsbergen; Svalbard

References and further reading:
Die Expeditionen zur Rettung von Schröder-Stranz und seinen Begleitern. Berlin: Dietrich Reimer (Ernst Vohsen).

Scoresby, William, Jr. (1789–1857)
William Scoresby's contributions to knowledge of the Arctic were great. How much greater might they have been had he been entrusted with leadership of a national exploring expedition? A whaler by occupation, a scientist by education and attitude, Scoresby was without doubt better qualified than any other candidate to lead either of two expeditions organized by the British Admiralty in 1818. But because he was not a naval officer, he was excluded from consideration. Although understandable that a naval officer must lead a naval expedition, the refusal to allow Scoresby any kind of appropriate role undoubtedly contributed significantly to the failures of David Buchan and John Ross to achieve more than they did.

Whaler, Scientist, and Explorer, 1803–1823
Scoresby's father, William Scoresby Sr., was himself very much a man of parts. Despite only taking up whaling at the relatively late age of twenty-five, Scoresby Sr. soon established himself as the most successful whaler in the history of Whitby, a small northern English port with a long history of whaling. What particularly singled him out was his unerring skill in keeping clear of ice and his ability to find whales. He was also responsible for inventing the crow's nest, a large barrel placed high on the mast head from which generations of later pilots were able to con whaling and exploring ships through fields of ice in relative comfort, whereas previously they would have been exposed to every blast of icy wind. Scoresby senior himself had no pretensions as an explorer, but on 25 May 1806 he had achieved the record farthest north by ship, reaching 81°30'N north of Svalbard. This surpassed the 80°48'N achieved by Constantine Phipps in 1773, and it
was not bettered until 1868, when Adolf Erik Nordenskiöld reached 81°42’N. Scoresby stated that he could have sailed even farther but chose to turn back to resume whaling, with the sea still open before him.

With whaling the chief industry of his hometown and the great explorer James Cook’s birthplace nearby, Scoresby Jr. was brought up on tales of exploration and the Arctic. Each spring his father sailed north with the whaling fleet to participate in what was known as the Greenland Fishery. Having reached the age of ten, he would stay at home no longer and stowed away aboard his father’s ship to make his first voyage. By the time he was sixteen, he was chief mate, and by twenty-one he captained his first ship. With the exception of 1819, he was to sail north each year between 1803 to 1823. At his father’s insistence, however, Scoresby Jr.’s education was not allowed to suffer. At seventeen he was sufficiently advanced to enroll at the University of Edinburgh, then the most forward-thinking university in the British Isles, where he attended courses on a wide range of scientific subjects.

It was this highly unusual background that enabled Scoresby to contribute so significantly to the development of Arctic knowledge. With his mind sharpened by Edinburgh lectures and debate, where he had become acquainted with some of the most advanced thinkers of his day, each voyage took on some of the characteristics of a scientific cruise. True, he was a whaler, and each voyage had to more than cover its costs through the number of whales taken, but science and whaling were by no means incompatible activities. For example, his careful observations of the nature of sea ice—its distribution and various types—enabled him, like his father, to con his way through the pack to find whales while others remained firmly beset and unable to move.

Scoresby’s unusual qualities received influential recognition. In 1807, he was introduced to Sir Joseph Banks, president of the Royal Society, with whom he was to correspond frequently until the latter’s death in 1820. In 1810, he was elected to the newly created Wernerian Society of Edinburgh, an important forum for the discussion of new ideas. It was to this society that Scoresby presented his first papers, including a seminal paper of 1815 that, in addition to providing one of the first descriptions of the different types of floating ice, included an arresting plan for reaching the North Pole by dogsledge, assisted by Inuit drivers (Scoresby 1980).

From the perspective of polar exploration, one of Scoresby’s most important voyages was made in 1817 as captain of Esk. With few whales to be seen, Scoresby found time to make a very rare landing on Jan Mayen, the first recorded since 1732. More significant, he found the ice so much dimin-

A boat crushed by a whale (Scoresby, W. 1850. The whaleman’s adventures in the Southern Ocean. London: Sampson Low, p. 128)
ished off East Greenland between 74° and 80°N that he was able to approach quite close to that previously inaccessible coast. Other whalers had reported the lack of ice to the newspapers, and as a result of reading one such report Banks wrote to Scoresby for further information. Scoresby confirmed that the conditions had indeed been promising for Arctic exploration. Following consultation with John Barrow, second secretary of the Admiralty, Banks next wrote to Lord Melville, first lord of the Admiralty, suggesting that no time could be more propitious to mount an Arctic expedition. Once permission had been obtained from the prime minister for this to be organized the following year, Banks suggested to Scoresby that he should come to London to see Barrow, with a view toward finding out how he might best be employed. Since this was to be a naval expedition, Scoresby could not have been too surprised to learn that it was to be led by naval officers. But he was surprised when Barrow offered him only the opportunity to serve as pilot in his own ship with his own men—but under the command of a naval officer. This was unacceptable. With the Admiralty unprepared to recognize Scoresby’s value, better prospects were to be had in whaling. That is what he decided to do.

Some years later, in 1822, Scoresby again found unusually little ice off East Greenland. Sailing south, he first identified Hold with Hope, discovered by Henry Hudson in 1607. In mid-July, he was at 71°N off Liverpool Land, where he named numerous features, and on 25 July he entered a very extensive fiord system. This he called Scoresby Sound, but there was insufficient time to conduct a comprehensive survey of its many branches, which reach 130 miles inland. Continuing south to about 69°N, he turned north again on 30 July in the hope of finding whales, extending his coastal survey to around 72°30’N before returning to his home port of Liverpool on 27 August. In all, he had surveyed 400 miles of previously unexplored coast. Following consultation with John Barrow, second secretary of the Admiralty, Banks next wrote to Lord Melville, first lord of the Admiralty, suggesting that no time could be more propitious to mount an Arctic expedition. Once permission had been obtained from the prime minister for this to be organized the following year, Banks suggested to Scoresby that he should come to London to see Barrow, with a view toward finding out how he might best be employed. Since this was to be a naval expedition, Scoresby could not have been too surprised to learn that it was to be led by naval officers. But he was surprised when Barrow offered him only the opportunity to serve as pilot in his own ship with his own men—but under the command of a naval officer. This was unacceptable. With the Admiralty unprepared to recognize Scoresby’s value, better prospects were to be had in whaling. That is what he decided to do.

Significant as were his own explorations and his influence on those conducted by others, Scoresby’s greatest contribution was his peerless 1820 book *An account of the Arctic regions*, of which the first volume was the best general study of the Arctic to date and the second volume the earliest authoritative study of the northern whaling industry. This work forms the foundation of scientific study of the Arctic. Two years after making his last whaling voyage in 1823, Scoresby was ordained a minister of the Church of England. His later life was largely taken up with religious and philanthropic work. Although he was to maintain his interest in science and the Arctic, his days of active participation were over.

**Scott Island (Antarctica)**

Located at 67°24’S, 179°55’E, this is little more than two isolated rocks, the larger one 400 meters long by 200 meters wide, 315 miles northeast of Cape Adare at the northeastern tip of Victoria Land. Situated in the belt of pack ice that surrounds the seasonally open water of the Ross Sea and generally shrouded in fog, Scott Island was discovered on 25 December 1902 by William Colbeck, captain of the *Morning*, which had been sent out by Sir Clements Markham to relieve Robert Falcon Scott’s ship *Discovery*. Colbeck landed on the main island, claiming it for Great Britain and naming it initially “Markham Island” for Sir Clements. It was subsequently renamed for Scott. Although Colbeck was to sight it again the following year, Scott Island was not seen again until 10 December 1928, by Richard Byrd in *City of New York*, by which time doubts had been raised about whether it really existed.

After Colbeck, no further landing was made until 13 January 1960, when a party was landed by helicopter for a reconnaissance survey from the icebreaker USCG *Eastwind*. There have been very few other landings. On 24 November 1981, a party landed to collect geological specimens from the West German vessel *Gotland II*. Shortly afterward, this ship was caught up in the ice off Oates Land and sunk, all aboard having to be rescued by helicopter. Since 1987–1988, routine landings have been made by U.S. Antarctic Program personnel to service the automatic weather station deployed here to replace the now unacceptable nuclear-powered automatic station, originally set up on the island in the early 1960s.

**Scott, Robert Falcon**

(1868–1912)

The British naval officer Robert Falcon Scott led two expeditions to Antarctica. With its unforgettable climate—the tragic death of the five members of the Southern Party having reached the South Pole shortly after the Norwegian Roald Amundsen—Scott’s second expedition forms the most famous episode in the history of polar exploration. In comparison, his first expedition is little known but is also of great significance, being the first to explore Antarctica’s interior.

**Opening up a Continent, 1901–1904**

For the process whereby Robert Scott, torpedo lieutenant in the British Royal Navy, was appointed to lead the British
National Antarctic Expedition, see the entry for Clements Markham. In it may also be found an account of the expedition's objectives and of the decision to construct a purpose-built ship, the 485-ton *Discovery*.

On this expedition, Scott was to be accompanied by second-in-command Lieutenant Albert Borlase Armitage and ship's officers Lieutenants Charles W. R. Royds, Michael Barne, and Ernest Henry Shackleton, with Lieutenant Reginald Skelton as chief engineer. The scientific party consisted of Dr. Reginald Koettlitz (senior physician, botany and bacteriology), Thomas Vere Hodgson (marine biology), Dr. Edward Adrian Wilson (physician, vertebrate zoology, and artist), Hartley Travers Ferrar (geologist), and Louis Bernacchi (physicist). Of these, only Bernacchi had previous experience in the Antarctic, having been with Carsten Borchgrevink, and only Armitage and Koettlitz had Arctic experience, both with Frederick Jackson. The crew included several members who were to distinguish themselves during this and later expeditions, including petty officer Edgar Evans, stoker William Lashly, and able seamen Tom Crean, Ernest E. M. Joyce, Frank Wild, and Thomas Williamson. Following the resignation of Professor John W. Gregory as chief scientist (see Markham, Clements), Scott himself was to provide a surprisingly effective substitute, taking great interest in the work of his scientists, on which he requested regular reports and made intelligent suggestions for further questions to be investigated.

*Discovery* sailed from the Isle of Wight on 6 August 1901, receiving a warm welcome and much assistance in South Africa before reaching Lyttleton, New Zealand, on 29 November. Again, the expedition received generous support, although the ship’s departure was soured when a seaman, Charles Bonner, fell to his death from the top of the mainmast.

*Discovery* departed for Antarctica on 24 December. Entering the pack on 3 January 1902, they made very rapid passage, enabling Scott to land six days later at Cape Adare. There, a note was left informing the relief ship—assuming one was to be sent—of his planned movements. For the same purpose, messages were left on Coulman Island and at Cape Crozier on Ross Island. Scott next sailed along the Ross Ice Shelf, passing the farthest east of James Clark Ross, to find signs of land on 30 January. Land marking the end of the ice barrier became unmistakable the following day; Scott named it Edward VII Land for his king. Heading back along the barrier, the Bay of Whales was entered on 3 February, from where a sledging party led by Armitage reached 79°03’S, 13 miles farther south than Carsten Borchgrevink’s previous record. The following
day, Scott made Antarctica's first balloon ascent. Not having himself attended the training course in England, Scott nevertheless decided that as captain it was his duty to make the first ascent. This was not without its alarming moments, but from a height of 240 meters he obtained extensive views of the ice shelf stretching far south, a route to the Pole if ever there was one. Shackleton ascended next to take Antarctica's first aerial photographs.

Continuing west, McMurdo Sound was found to be free of ice, and Scott was able to establish his winter quarters off Hut Point on Ross Island. In these early weeks, it was very much a case of trial and error, with much to be learned, particularly in skiing and dog-handling. Tragedy was not to be avoided, however: seaman George Vince slipped to his death while returning from an unsuccessful attempt to update the message left at Cape Crozier to indicate the location of Discovery's winter station. Others with him owed their lives to Frank Wild, the only one with the foresight to put nails in his boots, who guided one group to safety before leading a rescue party to the others.

On 23 April the sun set, not to rise again until 22 August. No one had wintered so far south. Throughout the winter, preparations were made for the coming season. Naval discipline was maintained, with officers and men messing separately, though eating the same food. A newspaper, the *South Polar Times*, was edited with his customary enthusiasm by Shackleton. In this as in other duties, Shackleton impressed Scott sufficiently to select him, with Wilson, for his planned southern journey.

By early September, sledging was resumed in preparation for two main journeys: one to the west—and hopefully the South Magnetic Pole—led by Armitage; and one to the south—and perhaps to the South Pole—by Scott. To Scott's considerable concern, signs of scurvy now appeared among the sledging teams. Following common medical opinion that contamination in preserved food was a major cause of scurvy, Scott had ordered regular inspections by his physicians. The importance of fresh meat was also appreciated, but not the reason why. Scurvy is in fact caused by deficiency in vitamin C. Although Scott had made sure that fresh seal meat, which contains plentiful vitamin C, was served three times a week throughout the winter, the cook would only fry it, making it unappetizing to many and largely destroying its vitamin C content.

The Southern Party of Scott, Wilson, and Shackleton left on 2 November with nineteen dogs, preceded by a support party of twelve men led by Barne. When the last of the support party turned north on 15 November, 79°03'S had been passed and a new record farthest south achieved. However, almost immediately afterward they found the dogs unable to pull the more heavily loaded sledges without relaying—that is, pulling each sledge in turn while leaving the others behind. Scott attributed the dogs' failings to their diet of dried fish, believing that the food might have gone bad in the tropics during the voyage south. This was probably true, though it would have helped to have had more dogs and to have included in the expedition an experienced dog handler. This episode was crucial for the planning of Scott's second expedition. On 25 November they reached 80°S. Soon afterward, magnificent mountains could be seen stretching southeast—the western boundary of the ice shelf. Signs of scurvy appeared in late December, with Shackleton being the worst affected. On 30 December, having achieved a farthest south of 82°17'S, Scott decided to turn north. The return journey was exceptionally arduous, with all three now suffering from scurvy. Unwilling themselves to eat the dogs, they killed the weaker ones and fed them to the other dogs. On the featureless ice shelf, a crucial depot was found with difficulty. Had it been missed, the party would not have survived. But replenished by proper rations, the health of all three improved sufficiently for Shackleton to continue unaided and for Scott and Wilson, assisted by only two dogs, to haul the sledges to *Discovery*, which was reached on 3 February. They had traveled 960 miles in ninety-three days.

Armitage's Western Party returned on 19 January 1903, having successfully found a way up through the Transantarctic Mountains onto the polar plateau. They reached it on 3 January—the first men to do so—but had no time to explore (see Armitage, Albert). This was a task for the following season, should there be one.

On 23 January, the relief ship *Morning* (see Colbeck, William) could be seen, separated from *Discovery* by 10 miles of ice. With little prospect of the ice breaking up, Scott prepared to stay on for another year. Stores were transferred from *Morning*, and Scott took the opportunity to reduce his complement. Believing that the mix between Royal Navy and merchantmen had not worked well on the messdeck, he sent home several merchant sailors, in addition to those wishing to discharge themselves and others with medical conditions likely to limit their contribution the following season. Most controversially, Scott included Shackleton among the latter, despite Shackleton's eagerness to stay on. Shackleton was replaced by Lieutenant George Mulock, who took on the role of compiling usable charts from the survey data collected during the previous field season.

With the departure of *Morning* on 2 March, *Discovery* was made ready for the coming winter, which was endured without major incident and more quietly than the previous year. Conforming to Scott's expectation, the messdeck was generally more settled without the disturbing presence of one or two troublemakers. Particularly welcome was the replacement cook Charles Clarke, who prepared much better food than his predecessor, seal meat being a particular success. *South Polar Times* continued to be published, now edited by Bernacchi.

Major sledging journeys were to be made in four directions the next season: west through the Transantarctic Mountains to the polar plateau by Scott; south by Barne and Mulock to investigate the coast sighted from a distance by Scott, Wilson, and Shackleton during their southern journey; northeast by Royds...
and Wilson to Cape Crozier; and southeast, again led by Royds—this time accompanied by Bernacchi—to look for land on the ice shelf. All were instructed to be back by mid-December, so that efforts could then be concentrated on freeing Discovery from the ice.

These parties met with mixed success. Barne and Mulock were able to compile good charts of the coast, mapping more than 200 peaks. Royds and Bernacchi, by contrast, had a dull time with no land to discover—just endless ice. The purpose of Royds’s earlier journey to Cape Crozier was to enable Wilson to collect eggs from the emperor penguin colony, previously discovered by Skelton, in order to test his theory of a close relationship between these presumed primitive birds and reptiles. In the event, they were too late, finding chicks but no eggs. Wilson was famously to undertake a winter journey—“the worst in the world”—during Scott’s next expedition for the same purpose, but this time with success (see Wilson, Edward). Scott’s Western Party followed Armitage’s route through the Transantarctic Mountains up the Ferrar Glacier. Ferrar’s party separated to conduct geological studies, culminating in Scott’s discovery of the Dry Valleys (see Victoria Land). With some of his party weakening, Scott went on with Evans and Lashly, sending the others back to the ship with Skelton. Reaching far out onto the featureless polar plateau, Scott now experienced considerable anxiety in finding his way back to the head of the Ferrar Glacier, the only way down. His difficulty arose from the loss of his invaluable navigation tables, blown away by a sudden gust of wind. Despite this, the glacier was found with some good fortune, with near-disaster following soon afterward when both Scott and Evans fell into a deep crevasse. Lashly could only brace himself to prevent the sledge, to which Scott was attached, from entering the crevasse as well. Scott managed to climb up the rope and then helped Lashly to pull up the very heavy Evans. It was a close call.

On returning to Discovery, Scott found his men engaged in a futile attempt to cut a channel through the ice in preparation for the return of Morning, which had appeared with Terra Nova on 5 January 1904. Scott was dismayed to receive orders that Discovery was to be abandoned unless it could be freed from the ice. Apparently against the odds, it was free by 14 February and made its way into the open sea accompanied by the two relief ships—though not without first surviving a considerable scare when it was blown onto a shoal while negotiating Hut Point. Scott now sailed north along the coast of Victoria Land to the Balleny Islands, then across regions controversially marked as land by Charles Wilkes. Turning away from Antarctica on 5 March, he reached Lyttleton on 1 April and England on 10 September.

Despite the somewhat embarrassing circumstances of Discovery’s relief (see Markham, Clements, and Colbeck, William), the expedition was treated as a triumph on Scott’s return to Great Britain, easily eclipsing the solid but less spectacular results of the contemporary German and Swedish expeditions, to which it was inevitably compared. Although the South Pole had not been reached, a practical route for doing so had been identified, and the polar plateau had been reached for the first time. Much valuable science had been carried out, and polar expertise acquired by a cadre of personnel who were to provide the backbone of many future Antarctic expeditions—not least those of Shackleton and of Scott himself.

The South Pole Tragedy, 1910–1912
Scott had long planned to return to Antarctica. Organization of his second expedition was delayed by his duties as an officer in the Royal Navy, as well as by the happy circumstances of his marriage. In 1907, he had required Shackleton to sign an undertaking not to winter in McMurdo Sound, since Scott himself planned soon to base an expedition there. In the event, Shackleton had found himself obliged to break this promise, considerably worsening the already uneasy relationship between the two men. They were now unwilling rivals, both seeking the same goals and applying to the same sponsors for the means to achieve them. In June 1909, Shackleton returned triumphantly to London, having come within 97 nautical miles of the South Pole. Realizing now that he must go south soon or never, Scott announced his own plans three months later for an attempt on the Pole.

This, however, was not just to be a Pole-hunting expedition. As an objective, the Pole was essential in order to generate sufficient public support, but for government backing the expedition needed to conduct scientific work as well. Scott and his appointed second-in-command, Lieutenant Edward “Teddy” Evans, toured the country, giving fund-raising lectures. Obtaining £20,000 from the British government, Scott bought the 400-ton steam-whaler Terra Nova, which had performed impressively during the Discovery relief expedition (see Colbeck, William).

While Scott remained behind to continue fund-raising and to finalize arrangements, Terra Nova sailed from Cardiff on 15 June 1910. Joining the expedition in South Africa, at Melbourne Scott was to receive a disturbing telegram from the Norwegian explorer Roald Amundsen: Amundsen too had set out for the South Pole. Terra Nova reached Lyttleton, New Zealand, on 4 November, and the final members of the expedition came on board: the photographer Herbert George Ponting, Lieutenant Wilfred M. Bruce—Scott’s brother-in-law—and the dog handler Cecil Meares. Meares and Bruce brought with them nineteen Siberian ponies and thirty-four dogs along with two Russians, Anton Lukich Omel’chenko and Dmitriy Semenovich Girev, to help with the ponies and dogs, respectively.

With more than 8,000 volunteering to join, Scott had been able to choose a strong team. In addition to second-in-command Teddy Evans, the ship’s officers included Lieutenants Victor L. A. Campbell, Henry Robertson Bowers, Harry L. L. Pennell, Henry E. de P. Renick, and Bruce. Led by Dr. Edward Wilson, Scott’s great friend and support during his first expe-
dition, the scientific team consisted of Frank Debenham, Raymond Priestley, and Thomas Griffith Taylor (geology), Denis G. Lillie and Edward W. Nelson (biology), George C. Simpson (meteorology), and Charles Seymour Wright (physics). Two members joined in return for contributing £1,000: Apsley Cherry-Garrard to help Wilson as assistant zoologist, and an army captain, Lawrence Edward Grace Oates, to take charge of the ponies. Other members with special responsibilities included the naval surgeons Edward L. Atkinson and G. Murray Levick, Bernard C. Day (motor mechanic), and the Norwegian ski instructor Tryggev Gran. Of these, only Wilson had been with Scott on his first expedition. Teddy Evans had been with William Colbeck on the Morning’s relief expedition, and Priestley and Day with Sir Ernest Shackleton. Four petty officers—Tom Crean, Edgar Evans, William Lashly, and Thomas Williamson—had also been with Scott on Discovery.

Terra Nova sailed from Port Chalmers, New Zealand, on 29 November. Encountering a force-10 gale soon afterward, the heavily overloaded ship was kept afloat only by throwing 10 tons of coal and other much needed supplies overboard. Oates and Teddy Evans, in particular, performed heroically, Oates doing whatever he could to keep the ponies alive—two died—Evans spending hours up to his waist in water clearing the pumps of coal dust.

On 9 December, Terra Nova entered the pack ice, taking all of twenty-one days to get through, in the process using up much valuable coal. Cape Crozier was Scott’s first choice to winter, since it offered ready access to the Ross Ice Shelf—the route to the South Pole—as well as being close to an emperor penguin colony that Wilson wished to study. Finding himself unable to land either here or off Hut Point, he instead selected Cape Evans, 13 miles north of Hut Point, which Terra Nova reached on 4 January 1911.

Stores were rapidly unloaded and a large hut erected, 15 meters by 8 meters and 5 meters high in the center. As the expedition had been delayed so long in the pack, speed was now essential. Parties were to be sent out to the south, west, and east in the remaining weeks of the sledging season before winter set in. (This entry will concentrate on the southern journeys, culminating in the journey to the South Pole. The activities of the western and eastern, later northern, parties in this and subsequent seasons, are described in the entries for their leaders, Thomas Griffith Taylor and Victor Campbell.)

Leading the Southern Party, Scott set out on 26 January with ten sledges, thirteen men, and twenty-six dogs in an attempt to lay a large depot at least as far south as 80°S. The first depot was laid at Safety Camp close to the edge of the Ross Ice Shelf; the next, Corner Camp, was 35 miles from Hut Point. With the ponies sinking deep into the soft snow, Scott chose to travel at night when surfaces were harder, though temperatures colder. A third depot was placed at Minna Bluff, from where three men and the weakest three ponies were sent back. On 17 February, concluding that his party could reach no farther without sacrificing dogs or ponies, which would be needed for the next season, Scott reluctantly decided to establish One Ton Depot at 79°28’S, 30 miles short of its planned location at 80°S. This decision was one of several that would later contribute to the loss of the Polar Party.

Returning to Cape Evans, Scott learned of Amundsen’s presence in the Bay of Whales, where Terra Nova had found the Norwegians when reconnoitering suitable places to land Campbell’s Eastern Party. Immediately appreciating the advantages of Amundsen’s position, some 60 miles nearer the Pole, Scott decided that he could make no alterations to his own plans.

Further journeys to Safety and Corner Camps were led by Scott and Teddy Evans before winter set in. On the first of these, six ponies were lost on sea ice, which broke up, nearly taking out to sea Bowers, Cherry-Garrard, and Crean as well. This reduced the number of ponies available for the attempt on the South Pole to ten.

By 13 May, the entire party was at Cape Evans. Modeled on a British naval ship, the hut in which the men were to winter was divided by a wall of packing cases into a wardroom for the sixteen officers and scientists, with a messdeck for the nine seamen. It was staffed largely by naval personnel, and such an arrangement appeared natural, though most other polar expeditions mucked in together without formality. In addition to all the preparatory work for the coming sledging journeys, lectures were given three nights a week—an excessive number according to some, though Ponting’s beautifully illustrated lectures were particularly enjoyed—and the tradition of producing an expedition magazine was maintained, with Cherry-Garrard acting as editor of South Polar Times. In late June, Wilson, Bowers, and Cherry-Garrard set out on their famous midwinter journey to the emperor penguin colony at Cape Crozier (see Wilson, Edward), from which they returned on 1 August.

Following short sledging journeys undertaken to reinforce depots for the southern and western parties, all was ready on 24 October for the attempt on the Pole. The first to depart was the motor-sledge team led by Teddy Evans with Day, Lashly, and the steward F. J. Hooper. Although Amundsen feared that Scott’s motor-sledges might give him a great advantage, Scott himself was doubtful of their effectiveness. Indeed, both sledges soon broke down with mechanical problems and overheating engines, though they did enable the ponies to travel with light loads to Corner Camp. On 1 November, Scott set out with ten ponies led by himself, Atkinson, Bowers, Cherry-Garrard, Crean, Edgar Evans, Patrick Keohane, Oates, Wilson, and Wright. Last to leave were Meares and Girev with two sledges and twenty-six dogs. With Teddy Evans and the motor-sledge team now man-hauling, all three groups met up at their agreed rendezvous at 80°32’S on 21 November.

As they proceeded slowly across the Ross Ice Shelf, they laid
a series of depots, each with food and fuel for one week, spaced 60–70 miles apart. Scott hoped that most of the ponies would survive until the foot of the Beardmore Glacier, where they were to be killed and their meat depoted. By 4 December, they were only 13 miles from the Beardmore when they were held up for four days by a blizzard, upsetting Scott's finely balanced calculations. Only on 9 December were they able to move south again. That night at "Shambles Camp," the remaining five ponies were shot. Scott was now seriously behind the times achieved by Shackleton in 1908–1909, against which Scott was constantly comparing his own progress. Two days later, the dogs were sent back. They had performed much better than Scott had expected, but he wanted them conserved for next year's sledding journeys. After making initially slow progress up the Beardmore, a good route was found above 600 meters, and in fine weather they made good speed, catching up again with Shackleton's times. On 21 December at Upper Glacier Depot, one sledding party consisting of Atkinson, Cherry-Garrard, Wright, and Keohane was sent back, leaving just two sledges to go on. They were now on the polar plateau and were making good progress toward the Pole. On 4 January, Scott chose four men to go on with him—Wilson, Bowers, Edgar Evans, and Oates—sending back Teddy Evans, Crean, and Lashly. Confident of reaching the Pole, Scott chose to include an extra man in his party—probably Oates—but this meant improvising arrangements, which had been planned for four, with food packages having to be split up and redistributed and an extra man to accommodate in the tent. Bowers too had to trudge on foot, his skis having been depoted previously, while the other four found the going much easier on skis. On 9 January, Shackleton's farthest south was passed. Now, they must reach the Pole, but disappointment lay ahead. On 16 January, Bowers saw a black object where all should have been white. It was a marker flag left by the Norwegians. Amundsen had beaten them to the Pole. The next day, they too were at the Pole, where they found a tent left behind by the Norwegians with a note addressed to Scott and another that Scott was asked to take to the Norwegian king in the event of Amundsen's failure to return. Observations were made to ensure that the Pole had indeed been reached, with Scott and Amundsen's positions differing by only a half-mile—a remarkably small difference. Photographs were taken, and Scott's dispirited party braced themselves for the 800-mile march back to Cape Evans.

Setting out on 18 January, they initially made rapid progress, though Evans was troubled by a cut hand that would not heal. Approaching the Beardmore, they again met bad weather. There, Evans, visibly weakening, was concussed after hitting his head in a heavy fall. Oates too was in difficulties, feeling intense cold in an old war wound. On 4 February, Bowers made the last entry in his diary. On 8 and 9 February, in an area of intriguing geology, Wilson found time to collect specimens, including many splendid fossils that he thought likely to be of considerable scientific interest. Weighing almost 16 kilograms, these rocks were added to the sledge loads. By 12 February, they were on very short rations after getting lost among crevasses, but they fortunately found the midglacier depot the next day. By now, Evans was causing serious concern, lagging behind the others and slowing them down. On 17 February, he collapsed and soon afterward died, probably due to brain damage incurred in his fall.

Reaching "Shambles Camp" the next day, they were back on the level surface of the Ross Ice Shelf with plenty of horsemeat to eat and only four months to feed. By now they should have accomplished the most dangerous part of their journey, but they were to encounter almost uniquely bad weather—exceptional cold with winds unusually blowing into their faces from the north. The depots laid out across the ice shelf were adequate only if the party was able to average 10 miles a day, but this they could not do, pulling through intractable sandlike snow into the constantly contrary winds. Even when the depots were reached, there were inexplicable shortages of paraffin. Wilson's last diary entry is dated 27 February. Oates now was the one slowing them down. Crippled by a frostbitten foot, which had become gangrenous, he seemed to take hours each morning to ready himself; once moving, he could do so only painfully slowly. Realizing that there was no hope for the others as long as he was with them, he left the tent during a blizzard on 16 March with the words, "I am just going outside, and may be some time" (Scott 1996, 430). He never came back.

By 19 March, despite their slow progress, Scott, Wilson, and Bowers were just 11 miles from the major depot at One Ton Camp. If they could reach it, they should be safe. Scott's right foot was now badly frostbitten. With food for two days and fuel for just one, they were held up by a blizzard. This continued for at least ten days. They never left the tent. Scott's last diary entry is dated 29 March: "We shall stick it out to the end, but we are getting weaker, of course, and the end cannot be far. It seems a pity, but I do not think I can write more. Last entry. For God's sake look after our people" (Scott 1996, 432).

No episode in the history of polar exploration has been more analyzed than the loss of the Polar Party on Scott's last expedition. They fell just 11 miles short of safety; many decisions, had they been different, might have saved all except Evans. Of course, it is easy to be wise after the event, and mistakes were made. No expedition has ever been without them. Scott's death was not the end of his expedition, which continued under the leadership of surgeon Edward Atkinson. The Atkinson entry should be read for a description of the expedition's final winter and the finding of the bodies of Scott, Wilson, and Bowers.

**See also:** Amundsen, Roald (1910–1912); Armitage, Albert; Atkinson, Edward; Borchgrevink, Carsten; Campbell, Victor; Colbeck, William; Drygalski, Erich von (1901–1903); Edward VI Land; Farthest South; Jackson, Frederick (1894–1897); Magnetic Poles; Markham, Clements; Nordenskjöld, Otto; Ponies; Ross Ice Shelf; Ross Island; Shackleton, Ernest (1907–1909); South Pole; Taylor, Thomas Griffith; Transantarctic Mountains; Victoria Land; Wilkes, Charles; Wilson, Edward
Sealing and Antarctic Exploration

Unlike whaling, sealing is a land-based activity, as seals are generally killed on the land and not at sea. Thus, the search for new sealing grounds is the search for new land—especially for isolated islands such as those still to be found close to Antarctica in the late eighteenth and early nineteenth centuries. During that period, sealers were responsible for a number of important new discoveries, as well as for making the first detailed explorations of discoveries made by others.

James Cook may appear to be an unlikely founder of the South Sea sealing industry, but his widely read journals contained two observations that were to prove highly influential. The journal of his third voyage recorded the lucrative potential trade in sea otter pelts obtained in Northwest America and sold for vast profits in China; during his second voyage he had noted observing many fur seals on South Georgia. The first sealers came to South Georgia in 1786, but it was not until after 1792 that they came in large numbers following the decimation of the larger and more accessible seal populations on the Falkland Islands and Juan Fernandez. By 1802, few fur seals were to be found on South Georgia. The same pattern—exploitation followed by exhaustion of stocks—was repeated on many other islands through the nineteenth century, most notably on the South Shetlands Islands following their discovery in 1819.

Two types of seal were of interest to sealers: elephant seals for oil, and the much more valuable fur seals for pelts. Being so valuable and so easily hunted, successive fur seal populations were wiped out, with the sealers showing no interest in conserving stocks to ensure future livelihoods. Indeed, competition was so intense that any measures to restrict killing would almost certainly have been ineffective. Once found, fur seals were easy to kill in large numbers on the beaches, where they hauled out to breed. Thousands of seals might be found on a single beach, and all would be killed, even the little pups, which had no chance of survival once their mothers were dead. A skilled sealer could kill and skin sixty fur seals in an hour. Being less valuable and tending not to aggregate in such numbers, elephant seal populations were less reduced than those of the fur seal. The elephant seal was very much second choice for the sealers. If the hold could not be filled with sealskins, then elephant seal oil could make up the difference. When fur seals became almost impossible to find, then the elephant seal became the main object of sealing on particular islands, especially Heard and Kerguelen during the mid-nineteenth century, that type of sealing being often conducted in combination with whaling.

Sealing vessels were typically small with shallow draft to better negotiate shoals and hidden rocks, and relatively broad in the beam to accommodate large holds. They frequently sailed in company for safety and to pool resources, such fleets generally including smaller shallops, whose role was to ferry men, provisions, and sealskins between the beaches where shore parties were landed and the larger ships anchored in comparatively sheltered harbors. Shallops were also used to look for new seal rookeries and better harbors and were thus responsible for the majority of exploratory voyages undertaken by sealers: Nathaniel Palmer’s Hero is a good example of such a vessel. Shore parties might be landed for extended periods depending on the numbers of seals on nearby beaches. In the South Shetlands, the season ran generally from November to early March, and sealers did not overwinter except by misfortune. On other islands, however, where the season was longer and winter conditions less harsh, sealers might remain on shore for years on end.

Put briefly, and more or less in chronological order, the contributions of the sealing industry to Antarctic discovery are these: discovery of the Auckland Islands (Abraham Bristow), as well as Campbell and Macquarie Islands (both by Frederick Hasselburg); thorough exploration, though not first discovery, of the coastal areas of all the sub-Antarctic islands and the South Shetland Islands; further reconnaissance but not discovery of the Antarctic Peninsula (Nathaniel Palmer and others); the first continental landings (John Davis and Andrew McFarlane); discovery of the South Orkney Islands (George Powell and Nathaniel Palmer); the first deep penetration of the Weddell Sea (James Weddell); and a series of discoveries clearly indicating Antarctica’s continental nature (John Biscoe, Peter Kemp, and John Balleny). A number of fine charts were compiled (by George Powell, James Weddell, and others), as well as useful sailing directions to the dangerous waters in which they sailed (Robert Fildes and George Powell). Finally, although one sealer—Benjamin Morrell—was unfortunately responsible for introducing a new mythical island (“New South Green-land”), through their exhaustive searches for islands—however doubtfully reported—the sealers did more than any other group to remove nonexistent islands from the maps.

There may appear to be some contradiction between this contribution to geographical discovery and the widely held view that sealers liked to keep discoveries secret (for obvious reasons, since a newly discovered island might yield a profit in

References and further reading:
many thousands of sealskins—as long as others did not hear about it). In practice, it appears that secrecy was more easily achieved within than between seasons; there was little to prevent news of a discovery spreading rapidly in ports where seamen from different vessels mixed freely. Although seamen were not allowed to know the latitudes and longitudes of where they had been, they had other means of knowing locations to some degree of accuracy, and once taken on by a new ship, their loyalties were clearly no longer to their previous captain. The same applied also to the ship's officers, who did have access to precise coordinates. Even when crew members remained with the ship, there were other obligations at play likely to result in leaks of information. The ship most probably had several proprietors. They naturally expected to be kept informed of significant developments, but as proprietors they might also have stakes in other ships to which the information would then be passed. Whatever the means, it is undoubtedly the case that few sealing secrets remained well-kept over a period of years. Of course, when a geographical discovery resulted in no discovery of seals, there was no reason not to announce it to governments and to bodies such as the Royal Geographical Society.

Much more remains to be learned about sealing discoveries in the Antarctic, in particular in the vicinity of the Antarctic Peninsula. Two logs found as recently as the 1950s document John Davis's landing on the continent, the first known. They also record a twenty-two-day voyage in December 1820 and January 1821 by Robert Johnson to 66°S, 70°W, where he found no land or seals but plenty of ice. At that location, he would have been far from the coast, but he presumably sailed as close as possible to the west coast of the islands forming the Palmer Archipelago in order to get there. There is less convincing evidence of another voyage in the same season to 66° or 68°S, possibly made by Nathaniel Palmer and/or Benjamin Pendleton, though there may be some confusion here with Johnson's voyage. Unfortunately, Palmer's log casts no light on the matter, and we have no log for Johnson. The log, however, that might prove to be most interesting of all if rediscovered would be that of the British sealer Andrew McFarlane of the brig Dragon. From Robert Fildes's log, we know that McFarlane was in the South Shetlands at the latest by very early November 1820. McFarlane Strait (between Livingston and Greenwich Islands) is named for him, presumably because he was
the first to investigate it. In that case, he must have preceded Palmer, who was there toward the end of November 1820. He may also have been to Deception Island and explored its harbor before Palmer. Most intriguing of all is the real possibility that McFarlane's landing on the continent, which Fildes reports, may have taken place prior to Davis's landing on 7 February 1821.

From the perspective of the sealers, the most important expeditions were those of James Cook and William Smith. Both triggered intense sealing activity on South Georgia and the South Shetlands, respectively. Other discoveries—many made by the sealers themselves—were less significant simply because the land discovered was too far south for many, or often any, fur seals to be found—for example, the South Orkneys, the Balleny Islands, and along the continent itself, even the relatively mild Antarctic Peninsula. Had it been otherwise, there is little question, despite the difficulties of approaching it, that the coastline of Antarctica would have been explored in detail much earlier. As it was, there was no commercial value in undertaking such investigation and indeed every prospect of financial ruin, with vessels frequently uninsured and conditions such as to make shipwreck likely.

See also: Antarctic Peninsula; Balleny, John; Biscoe, John; Cook, James; Cooper, Mercator; Davis, John (fl. 1820); Enderby Brothers; Hasselburg, Frederick; Heard Island; Kemp, Peter; Kerguelen Islands; Morrell, Benjamin; Palmer, Nathaniel; Pendleton, Benjamin; Powell, George; Smith, William; South Georgia; South Orkney Islands; South Shetland Islands; Weddell, James

References and further reading:
The literature on Antarctic sealing is extensive. Many relevant works are listed under the entries given above.

**Sedov, Georgiy**
(1877–1914)
The Russian naval officer Georgiy Sedov had already made a distinguished contribution toward opening the Northeast Passage to shipping when he determined to lead an expedition to the North Pole. Considering that Russia's honor was at stake—there had been no previous Russian attempt on the Pole—he was undeterred by the opposition of his fellow officers and lack of government support, and having once reached Franz Josef Land, he could not be dissuaded from committing himself to a polar journey from which he had no prospect of returning. If ever an attempt on the Pole looked like suicide, this was it.

**Sedov Achieves Martyrdom in Franz Josef Land, 1912–1914**
At a time when the imperial navy of Russia was primarily officered by scions of the aristocracy, Georgiy Yakovlevich Sedov was an anomaly. The son of an illiterate fisherman from the Azov Sea and with minimal formal education, he had qualified, by extreme application, as a navigator and then enrolled as a student at the prestigious Naval College in St. Petersburg. There his aptitude, and industry singled him out and he passed out ahead of higher-born candidates, many of whom were to bear him a lasting grudge for having forgotten his natural place in society.

By 1912, Lieutenant Sedov had extensive experience in the Arctic, having participated in several hydrographic expeditions, two of which (in 1909 and 1910) he had led to the Kolyma River and Novaya Zemlya, respectively. In recognition of his excellent work, he had been made a member of the Astronomical Society and Geographical Society of St. Petersburg, both of which had invited him to lecture. Some years earlier, in 1906, he had published an article extolling the possibilities of the Northeast Passage for the development of Siberia and had proposed an expedition to explore its eastern section from the Yenisey to Bering Strait. A detailed hydrographic survey would be conducted, navigation beacons laid, and meteorological and other information gathered relevant to the needs of shipping. In a second paper, he stressed the strategic importance of the Northeast Passage and suggested that icebreakers be used to escort convoys of naval and merchant shipping. Although he had been unable to obtain funding for his expedition, the work that he was able to carry out on the Kolyma and Novaya Zemlya served much the same cause, with his detailed hydrographic survey of the mouth of the Kolyma in particular demonstrating its potential use by seagoing vessels.

With every prospect of a successful career in hydrographic survey ahead of him, why did Sedov suddenly decide in 1912 to lead an expedition to the North Pole? This remains something of a mystery, but Sedov's interest in the Pole was longstanding, dating back at least to 1903 when Anthony Fiala's North Pole expedition had anchored at Archangel to take on dogs and ponies. Sedov had gone aboard America to speak with Fiala and had been much influenced by the experience. Fiala's attempt had been made from Franz Josef Land and had been completely unsuccessful despite being exceptionally well-resourced. When Sedov submitted a memorandum to the Central Hydrographic Directorate on 22 March 1912, he was asked how he expected to succeed when Fiala, despite every advantage, had failed. Other explorers had decided that Franz Josef Land was unsuitable as a starting point, the ice offshore being too rough and the very pronounced westerly drift making the return journey hazardous. Although Sedov received very little support among his fellow officers, the public at large—particularly the scientific and artistic communities—were enthusiastic. When a government grant failed to be approved, the newspaper Novoye Vremya ran a fund-raising campaign, and sufficient money was raised for Sedov to lease the 273-ton wooden sealing bark St. Foka, powered by a 100-horsepower engine.

Since Sedov was determined to set out this year, there was very little time for preparations, and the naval authorities soon made it clear that they were not going to help what they...
regarded as an unwelcome private venture. No radio operator would be made available, and since no one else could be found to operate one, no radio was taken. Much of the equipment and provisions supplied were of doubtful quality and were loaded unchecked. Sufficient coal could be obtained for only three to four weeks of steaming. Since Sedov did not intend *St. Foka* to冬天 in the Arctic, this did not cause him great concern; nor did the fact that he could afford only fourteen sets of winter clothing when there would be twenty-seven men on board. *St. Foka* was not ready to depart from Archangel until 24 September 1912, and only then after Sedov had ordered all the on-deck cargo overboard, regardless of contents, in a drastic action to satisfy port officials, who refused to let the vessel sail with its waterline not showing.

Sedov was used to overcoming such obstacles, but even he was unable to reach Franz Josef Land so late in the year, being forced instead to winter on Novaya Zemlya's northern island. There, a range of scientific studies were conducted through the winter, and in March 1913 a four-man sledging party led by geographer Vladimir Yul'evich Vize crossed the island to survey the east coast, traveling south to the farthest point reached by Petr Pahktusov in 1835. This first documented crossing at such a high latitude—76°N—also demonstrated that much of the island's interior was occupied by an ice cap. Meanwhile, Sedov, accompanied by seaman Inyutin, surveyed the coastline north to Cape Zhelaniya and around to Cape Flissingenskiy. Together, these surveys represented a significant increase in knowledge of a highly inaccessible region, and Sedov sent the results back to the mainland with five men led by Captain N. P. Zakharov, whose services were no longer required.

On 16 September the ice broke up, releasing *St. Foka* to head northwest for Franz Josef Land. With virtually no coal remaining, blubber, ropes, and old sails were used to fuel the boilers. Ten days later, Northbrook Island was reached, and Sedov landed at Cape Flora to take on the small quantity of coal left behind by Fiala, at the same time dismantling for timber several buildings erected by Frederick Jackson in 1894. His hope now was to reach Rudolf Island, the northernmost island in the archipelago. But faced with unbroken ice in British Channel and with coal for barely 15 minutes' steaming, he was lucky to make Hooker Island, where winter quarters were established on 1 October in Tikhaiya Bay.

Throughout the winter, while his scientists maintained a regular routine of meteorological, magnetic, and other measurements, Sedov completed his preparations to reach the Pole. The fact that he had no previous experience sledging over sea ice, and lacked the means to transport sufficient provisions, did not deter him. Nor was he dismayed by the outbreak of scurvy. The machinist I. A. Zander died from it, and Sedov himself was among the worst-affected. Indeed, he was far from recovered on 15 February 1914 when he set out with three sledges and twenty-four dogs accompanied by seamen G. V. Linnik and A. I. Pustoshniy. They had sufficient food to get to the Pole, but not to return. Far from getting better as he had hoped, Sedov's health grew rapidly worse until he had to be pulled on a sledge, still insisting on heading northward. On 5 March, 2 miles short of Rudolf Island, he collapsed and died.

Linnik and Pustoshniy returned to Hooker Island with news of Sedov's death. Command now passed to the medical officer, Dr. P. G. Kushakov. Scientific studies continued as they waited for the ice to break up, M. A. Pavlov making a geological survey of the island while Vize studied the ice cap. The fuel situation was so desperate that the bulwarks and the inner decks were now sawn up—the cabin partitions had long ago been burned—and when it sailed on 30 July, *St. Foka* 's immediate destination was Cape Flora, where alone more materials might be found to burn. For Valerian Ivanovich Al'banov and Aleksandr Konrad, this was indeed a happy chance. As *St. Foka* approached the shore, two men were seen putting out in a kayak. They had an incredible tale to tell. Their ship, *St. Anna*, captained by Lieutenant Georgiy Brusilov, had been beset 70 miles north of Rudolf Island, and they alone had reached safety. Others, however, might still survive nearby. With *St. Foka* virtually without fuel, Kushakov was able to make only a brief search before heading south for Archangel, arriving on 6 September, having returned most of the way under sail.

During the Soviet era, Georgiy Sedov was widely regarded as an authentic Arctic hero, particularly admired for his prophetic advocacy of the Northern Sea Route. Throughout his career he had faced intense class-based antagonism from many in the imperial naval establishment, culminating in a conspiracy to impede his polar expedition in every way possible. Sedov himself was thus held blameless for his expedition's many inadequacies and the manner in which he finally found himself placed in a situation where he believed that his career could not survive the dishonor of failure thus was viewed as emblematic of corrupt prerevolutionary Russia.

*See also:* Brusilov, Georgiy; Fiala, Anthony; Franz Josef Land; Hooker Island; Jackson, Frederick (1894–1897); North Pole; Northbrook Island; Northeast Passage; Novaya Zemlya; Pakhtusov, Petr

*References and further reading:*


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**Seven Islands (Svalbard)**

Located at 80°30'N, 20°30'E, this group of small islands lies off North Cape, North East Land. The official Norwegian name is Sjuøane. Their exact date of discovery is unknown, but they are first depicted on a Dutch chart of 1663. The three largest islands are Phipps (Phippsøya), Parry (Parryøya), and Martens (Martensøya). Other members of the group are Nelson Island (Nelsonøya), Walden Island (Waldenøya), Table Island (Tavleøya), and Little Table Island (Vesle Tavleøya). Nelson and Walden are named for members of Constantine Phipps's expedition of 1773 (Phipps, of course, being named...
for its leader). Martens Island is named for Friedrich Martens, a German physician who visited Spitsbergen in 1671, and Parry Island for Edward Parry, who laid caches on Walden and Little Table Islands to assist his sledge journey toward the North Pole in 1827.

It is probable that the first landings were made by walrus hunters in the late seventeenth or early eighteenth centuries. The earliest documented landing, however, was that of Skeffington Lutwidge on Phipps Island on 30 July 1773. During the same expedition, a landing was also made on Walden Island on 5 August.

Following Parry, the Seven Islands became the favored departure point for expeditions attempting to reach high latitudes over the pack from Svalbard. But the heavily pressured condition of the ice offshore, and the difficulty of reaching the islands in the first place, meant that none got far. Otto Torell knew from Parry's experience that he must reach the islands early in the year, when the pack was still compact and firm. Unfortunately, ice and contrary winds delayed his arrival on Parry Island until 29 July 1861, by which time it was too late. He also landed on Martens and Phipps Islands to conduct brief scientific surveys. Adolf Erik Nordenskiöld was a member of this expedition. On 8 September 1868, Nordenskiöld returned to Parry Island to appraise its suitability for wintering. Following Torell's experience, he judged that the only way an expedition could set out from the Seven Islands before the polar pack began to melt was to winter there. In the event, when he sought to do this in 1872–1873, he was forced to winter instead in Mossel Bay, northeast Spitsbergen. He arrived at Phipps Island only on 17 May 1873, by which time the ice was clearly impassable. Unlike Torell and Nordenskiöld, Walter Wellman at least began his attempt on the Pole, setting out from Walden Island on 24 May 1894. Soon afterward his ship Ragnvald Jarl was crushed by ice pressure, forcing him to return to Walden, where he sheltered in a hut built out of the wreckage.

One of the few precautionary measures taken by the balloonist Salomon Andrée in 1897 was to have a depot laid for him on these islands. Five years later, T. Rubin of the Swedish-Russian Arc of the Meridian Expedition established trigonometric points on Little Table and Walden Islands. In 1913, Theodor Lerner searched here for signs of the missing explorer Herbert Schröder-Stranz. The islands figured most recently in exploration history when two members of Wally Herbert's party landed briefly on Little Table Island on 29 May 1894 to complete the first crossing of the Arctic Ocean.

North of the Seven Islands lies Ross Island (Rossøya), the northernmost island in the Svalbard Archipelago. This island, at 80°50'N, 20°E, was discovered by Parry on 13 June 1827 and named for Lieutenant James Clark Ross. Benjamin Leigh Smith landed there on 10 September 1871. Subsequent visits were made by Rubin to establish a trigonometric point on 28 August 1902, and by Adolf Hoel on 21 August 1923.

See also: Andrée, Salomon; Herbert, Wally; Hoel, Adolf; Nordenskiöld, Adolf Erik (1868, 1872–1873); North Pole; Parry, Edward (1827); Phipps, Constantine; Ross, James Clark; Schröder-Stranz, Herbert; Torell, Otto; Wellman, Walter (1894)

Severnaya Zemlya (Russia)

Lying in the Russian Arctic between the Kara and Laptev Seas, this major archipelago was discovered in 1913 and not fully explored until the 1930s. It is separated from Cape Chelyuskin and the Taymyr Peninsula by the 40-mile-wide Vil'kitskiy Strait. The four main islands are: October Revolution (5,471 square miles), Bolshevik (4,368 square miles), Komsomolets (Young Communist) (3,477 square miles), and Pioneer (449 square miles). The archipelago was discovered on 3 September 1913 by the Arctic Ocean Hydrographic Expedition led by Boris Vil'kitskiy, who claimed it for the Russian tsar and named it "Emperor Nicholas II Land." Vil'kitskiy charted the eastern coast as far as its northernmost point of Arctic Cape (Cape Arkticheskiy) at 81°07'N but was prevented by heavy ice from establishing just how far west the land extended. He was also unable to determine whether it formed a single landmass or an archipelago. The first landings were made on 4 September at Cape Vaygach and Cape Berg. Vil'kitskiy succeeded in charting the southern coast the following year, when conditions were much more favorable. A landing was made at Cape Neupokoyev, on the southwestern tip of the archipelago.

In January 1926 it was renamed Severnaya Zemlya (North Land). In the interim, several proposals had been made concerning further exploration, but no funding was available within the Soviet Union, and all foreigners were refused access. In August 1930, Otto Schmidt discovered Shmidt Island and the Sedov Archipelago during a cruise undertaken in the icebreaker Sedov to probe Severnaya Zemlya's westerly extent. On 22 August 1930, a four-man party led by Georgiy Ushakov was landed on Domashniy Island in the Sedov Archipelago. During the next two years, he and his colleagues conducted a comprehensive survey of the islands. The first aerial photographs were obtained in 1931 from the airship Graf Zeppelin on the expedition led by Hugo Eckener. Demonstrating the existence of at least one narrow strait, these proved that Severnaya Zemlya was not a single landmass. Ushakov's survey was soon to show the presence of four major islands. On 14 August 1932, Schmidt returned to collect the completed map, with the aid of which Sibiryakov entered the Laptev Sea by sailing around the northern coast of the archipelago, the first vessel to do so. Ushakov's party was picked up by Rusanov the next day, a new team being left behind to report on weather and ice conditions at Domashniy Island. Other stations were established later at Cape Oloyvanniy, Arctic Cape, Cape Neupokoyev, Cape Peschanyy, Krasnoflotskiy Island, Solnechnaya, and Little Taymyr Island. Navigation conditions in Shokal'skiy Strait were of particular interest, with stations being set up on both shores to investigate its potential as an alternative to the fre-
quent ice-blocked Vil’kitskiy Strait. Others followed Shmidt in exploring the route north of Arctic Cape. Only two stations remained open by 2000: Srednîy (79°20’N, 90°10’E), a military base with an airfield, and the small meteorological station Golomyannîy, both in the Sedov Archipelago. Srednîy is known today as a logistics center for expeditions starting out from Arctic Cape across the Arctic Ocean (see Adventurers). At 612 miles from the Pole, Arctic Cape is 125 miles more distant than Arctic Cape across the Arctic Ocean (see Adventurers). At 612 today as a logistics center for expeditions starting out from Golomyannîy, both in the Sedov Archipelago. Sredniy is known particularly when ocean crossings are attempted.

See also: Adventurers; Eckener, Hugo; Shmidt, Otto; Ushakov, Georgiy (1930–1932); Vil’kitskiy, Boris

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**Seymour Island (Antarctic Peninsula)**  
Located at 64°17’S, 56°45’W, this island to the east of the Antarctic Peninsula—10 miles long and 5 miles at its widest—was first sighted on 6 January 1843 by James Clark Ross. He named Cape Seymour after Rear Admiral (later Admiral of the Fleet) Sir George Francis Seymour (1787–1870), a lord of the Admiralty at the time of Ross’s voyage. Insularity was proved by surveys conducted by Carl Anton Larsen in 1882–1893 and 1893–1894. On 4 December 1892, Larsen made the first landing, collecting the first fossils found off continental Antarctica. (The first Antarctic fossils were collected in the South Shetland Islands by James Eights in 1830; see Pendleton, Benjamin). Otto Nordenskjöld considered wintering here but chose Snow Hill Island instead, a decision later regretted when he found relatively few fossils on Snow Hill but made important finds here, including a penguin over 1.5 meters high and weighing probably more than 68 kilograms.

The Argentine station Vicecommodoro Marambio was opened in the 1969–1970 season. Equipped with an airstrip, this is the major logistics center for the Argentine Antarctic Program. Geologists from the U.S. Antarctic Program have worked here since the 1975–1976 season, in 1981–1982 discovering fossils from the Early Tertiary marsupial (*Polydolops* sp.), the first mammal remains found in Antarctica.

See also: Antarctic Peninsula; Argentina; Larsen, Carl Anton (1882–1893, 1893–1894); Nordenskjöld, Otto; Pendleton, Benjamin (1829–1832); Ross, James Clark (1839–1843); Snow Hill Island

**Shackleton, Ernest**  
(1874–1922)  
The most charismatic of all polar explorers, the British explorer Ernest Shackleton participated in four Antarctic expeditions, three of which he led. Although his achievements were great, particularly on his first expedition, when he reached 88°23’S and came within 97 nautical miles of the South Pole, he is best remembered for his unsuccessful second expedition, during which he overcame incredible odds to bring all of his party back to safety.

Ernest Henry Shackleton had more than ten years’ experience at sea in the British merchant navy when he joined Robert Falcon Scott’s first Antarctic expedition (1901–1904) as third officer of *Discovery*. Impressively, Scott with his energy and irrepressible enthusiasm, Shackleton had been selected as one of a party of three—with Scott and Edward Wilson—for the major sledge journey south, during which a new farthest south had been achieved. Of the three, Shackleton had been worst affected by scurvy and as a consequence was invalided home after the first season—though more than a little unwillingly.

**Almost to the South Pole, 1907–1909**  
Shackleton soon determined to go south again, and with his former leader apparently planning no imminent return, he decided to organize his own expedition. He raised funds primarily from private sources, though later he received substantial help from the Australian and New Zealand governments. For his vessel, he purchased the 200-ton veteran sealer *Nimrod*, more than forty years old and not in the best condition. But it was to prove a good ice ship. In command, he appointed Lieutenant Rupert G. England, who had been first officer of the *Morning* (see Colbeck, William).

On 7 August 1907, *Nimrod* sailed from Torquay, reaching Lyttleton, New Zealand, on 23 November, from where it left for Antarctica on 1 January 1908. Excessively overloaded and with its freeboard just over 1 meter above the water, it carried thirty-nine men, ten ponies, nine dogs, and Antarctica’s first motor car, a 12–15-horsepower Arrol-Johnston—in addition to all the supplies needed to provision thirty-nine men for one year. Shackleton planned for the eventuality that *Nimrod*—like *Discovery* during Scott’s voyage—might become iced in and unable to return north. For the first 1,500 miles, it was towed by the steamer *Koonya* to save coal. *Koonya* turned back on 15 January, *Nimrod* soon afterward meeting the zone of pack ice, through which it made rapid passage to the open water of the Ross Sea.

Shackleton’s course was designed to take him to the Bay of Whales, an embayment in the Ross Ice Shelf 60 miles nearer the South Pole than any other known possible winter station and not far from Edward VII Land, which he also planned to explore. However, the bay was almost unrecognizable from what he knew from Scott’s expedition. Much ice had evidently broken away recently, and with more probably soon to follow, he considered the risk too great that his winter station would also disappear into the sea. Edward VII Land was Shackleton’s second choice, but here he was stopped by ice at 162°14’W. Before leaving England, he had signed an undertaking with
Scott not to winter in McMurdo Sound, to the west of Ross Island, in order to leave the latter free to pursue his own plans for an expedition with this as his base. With extreme reluctance, Shackleton now found himself forced to break this promise, for he knew of no other possible site. On 29 January, *Nimrod* was in McMurdo Sound. Scott’s anchorage at Discovery Inlet was unreachable beyond 20 miles of ice, so Shackleton opted instead for Cape Royds, where he found a natural ice dock.

Fifteen men were to winter in a hut 10 meters by 5.8 meters and 2.4 meters high. Although Shackleton’s major objective was to reach the South Pole, he had brought with him a strong scientific party led by T. W. Edgeworth David, professor of geology at Sydney University. Others with scientific responsibilities included Lieutenant Jameson Adams (meteorology), Sir Philip Brocklehurst (assistant geologist), Dr. Alistair E. Mackay (physician), Dr. Eric Marshall (physician), Dr. Douglas Mawson (physicist), James Murray (biologist), and Raymond Priestley (geologist). The other members of the wintering party were the artist George Marston, cook William Roberts, Bertram Armytage, Bernard C. Day, Ernest Joyce—in charge of ponies, motor vehicle, and dogs, respectively—and Frank Wild, in charge of provisions. Only Shackleton, Joyce, and Wild had any previous experience in Antarctica, all having wintered with Scott.

On 22 February, *Nimrod* sailed north, Lieutenant England carrying with him a sealed letter of dismissal, which he was instructed to open upon arrival in New Zealand. Shackleton had found England, on his first command, overcautious when sailing near ice. He felt that the establishment of the winter station had been unnecessarily delayed by England’s reluctance to approach close inshore. For the next season, Lieutenant Frederick P. Evans, captain of *Koonya*, would take his place.

Although in most respects a good wintering site, Cape Royds was not ideal in that the Ross Ice Shelf could only be reached once the sea separating it from Hut Point had frozen. Unable yet to establish depots farther south, Shackleton sent a party led by Adams to attempt to climb the towering volcano Mount Erebus. (For an account of this ascent, see Adams, Jameson.)

No winter spent with Shackleton would be dull. Aware that not even all the preparations required for the coming sledging season would be sufficient to keep everyone fully occupied through the inevitably monotonous Antarctic winter, he had taken care to bring along a printing press. Writing and illustrating articles for the expedition’s publication *Aurora Australis* did much to maintain morale.

From 1 September, supplies began to be moved over the sea ice to Hut Point, which was to serve as the forward base for the Pole attempt. On 25 September, a party consisting of David, Mawson, and Mackay began laying depots for the planned journey toward the South Magnetic Pole (see David, Edgeworth). Three days before, Shackleton and five others had departed to establish a depot 100 miles south of Hut Point, returning on 13 October. All was now in place for the attempt on the Pole.

In light of his experiences during Scott’s expedition, Shackleton had decided to make no use of either dogs or skis, neither then proving particularly successful, while the motor
vehicle was found unusable on the ice shelf. Instead he would rely on man-hauling assisted by four sturdy Manchurian ponies. On 29 October, Shackleton, Adams, Marshall, and Wild set out accompanied for the first ten days by a support party of Joyce, Marston, Priestley, Armarygate, and Broklehurst. In all, they had food for ninety-one days but planned to supplement this by eating the ponies, the first one being shot on 21 November. At 82°18.5'S on 26 November, they had passed Scott's farthest south of 1902. All was going well, though Shackleton was increasingly concerned by the eastward inclination of the great mountain range to his west. He had hoped to reach the Pole across the relatively even surface of the Ross Ice Shelf, but it was now becoming clear that he would have to find his way up through the mountains. With the path south barred, the party on 4 December climbed to 840 meters on Mount Hope to scout for a route through the Transantarctic Mountains. To Shackleton's intense relief, down below could be seen a great glacier of apparently low gradient and unbroken surface. In Shackleton's words, the Beardmore Glacier—named for William Beardmore, the expedition's most generous sponsor—offered them “an open road to the South” (1999, 303).

Scarred by treacherous crevasses, the glacier in fact proved extremely difficult to ascend. On 7 December, the last pony—Socks—was lost down a crevasse, all but taking his handler, Wild, with him. With the pony scheduled for slaughter that night, the loss was slight as far as transport but considerable in terms of food stocks. For a while, pony maize had to substitute for pony meat, though the implications were more worrying for the return journey. By 14 December, they had ascended to 1,500 meters and, six days later, to 2,400 meters. As they climbed, breathing became more difficult and the cold became intense. Not till over 3,050 meters by their reckoning was the polar plateau reached on 1 January 1909, at 87°65'S and 172 miles from the Pole.

There, the surface was again relatively level but conditions were harsh. Far from the “quick pull to the Pole” they had hoped for, they contended with a strong headwind and were further slowed by soft snow and frequent blizzards. The cold was almost unendurable, and food stocks were dwindling to dangerously low levels. On 4 January, recognizing the inevitable, Shackleton ordered all nonessential items depotted, his plan being now not to reach the Pole, which was clearly impossible, but to come at least within 100 miles of it. Even this soon appeared beyond him, as they were held in their tent by blizzards on 7 and 8 January, and not until the next day could the attempt be made. Leaving their food, tent, and sledge behind, they rose at 4 A.M., taking just the British flag and a brass cylinder to mark their claim. By 9 A.M., benefiting for once from a good surface, they were at 88°23'S, 97 nautical miles from the Pole. They remained only for a few minutes, raising the flag and photographing themselves besides it. A rapid snack was eaten, and then they headed north as fast as possible. In all, they traveled 41 miles that day, but now their race against time was desperate.

Good fortune was needed if they were to reach safety. To find their way back to the first depot, they had only their footsteps to mark the way. Luckily, they had not been obliterated in the recent blizzards, and the depot was found. Now the relentless wind blowing north off the polar plateau helped them, filling the sail on their sledge and impelling them onward. In less than a week, they were at the head of the Beardmore Glacier. On 24 January, they had just two days' food left and one day's biscuits, with 40 miles to cover across crevasses before the next depot. Fortunately, the weather was good, and although time and again they fell into crevasses, the distance was made. Four days later, they had completed their descent of the Beardmore and were back on the Ross Ice Shelf. Making their way north, they could not afford to miss one depot—but how to find them in the featureless ice plain? Wisely, these had been clearly marked by high snow mounds, and they were picked up one by one, though often by the narrowest of margins. By 23 February they were nearing safety, having reached the large Bluff Depot where they could eat their fill, but four days later Marshall collapsed with dysentery. Leaving Adams behind to look after Marshall, Shackleton went on with Wild to Hut Point. Instructions had been given that if the Southern Party had not returned by 1 March, all members should be presumed dead and the ship should leave. At Hut Point a note was found stating that Nimrod would wait offshore until 26 February. It was now 28 February. Signaling his presence by lighting a candle flair, Shackleton was enormously relieved when Nimrod appeared in the distance. Placing Wild on board, Shackleton led a rescue party back to Adams and Marshall.

The achievements of this expedition were considerable. Not only had Shackleton’s Southern Party achieved a farthest south; his Northern Party had reached the South Magnetic Pole (see David, Edgeworth), and a mountaineering party the summit of Mount Erebus (see Adams, Jameson). Significant work had also been conducted. Reaching New Zealand on 25 March, Shackleton then returned to England on 14 June to a hero's welcome and knighthood.

**Enduring against All Odds, 1914–1916**

Shackleton returned from his first expedition to great honor but with heavy debts. Before he could go south again, the debts had to be paid off and additional funds raised. Meanwhile, the South Pole was reached, first by the Norwegian Roald Amundsen, then a month later by Scott. With the Pole achieved, some new objective was needed to catch the public’s imagination. In 1908, the Scottish explorer William Speirs Bruce had put forward a plan to cross Antarctica via the South Pole but had been unable to obtain sufficient funding. Shackleton now adapted Bruce's plan, though typically his Imperial Trans-Antarctic Expedition was to be even more ambitious. Establishing a base at Vahsel Bay in the Weddell
Sea, where the German explorer Wilhelm Filchner had wintered, two men would be left behind in the hut. The remainder would be divided into three groups: a party of three, to head west toward Graham Land; another party of three, to head north toward Enderby Land; and a party of six led by himself, to head south to the South Pole. From the Pole, this last party would continue along the route he had pioneered in 1908, descending the Beardmore Glacier to Ross Island, where a supporting party would also be established. The role of the Ross Sea party would be to lay depots as far as the foot of the Beardmore Glacier, thus reducing the loads carried by the crossing party. In all, the crossing party would have to travel 1,800 miles, a great distance, but not so much more than the 1,600 miles to the South Pole and back, which had already been achieved by Amundsen and Scott. The planned routes of the Weddell Sea parties were carefully chosen to throw light upon any of these questions, which were only later to be resolved. 

Funding from private sources, together with limited support from the British government and Royal Geographical Society, enabled Shackleton to buy two ships: the 350-ton Endurance, recently built specifically for polar travel by a consortium including many experienced Antarctic hands. On the eve of sailing, war was declared, and Shackleton felt honor-bound to offer his men, stores, and ships to the British war effort. The response of Sir Winston Churchill, first lord of the Admiralty, was immediate: “Proceed.” Shackleton's was the only Antarctic expedition to take place during World War I.

Endurance sailed from Plymouth on 8 August 1914. Shackleton himself joined the ship at Buenos Aires with the photographer Frank Hurley and sixty-seven dogs from Canada. The stowaway Perce Blackborow also boarded here, hoping to be taken back to London. With so many applying to join, Shackleton and his second-in-command, Frank Wild, had assembled a strong party. Endurance was commanded by the expert navigator Frank Worsley, with Lionel Greenstreet, Tom Crean, Alfred Cheetham, and Hubert Hudson as ship's officers. The scientists were headed by James Mann Wordie (geology), with Robert S. Clark (biology), Leonard D. A. Hussey (meteorology), and Reginald W. James (physics). Others with specific responsibilities included the physicians Alexander H. Macklin and James A. Mcllroy, the photographer Hurley, and the artist George Marston. Captain Thomas Orde-Lees was seconded from the Royal Marines to act as motor specialist and ski instructor. In all, twenty-eight men were on board, including five besides Shackleton with very extensive Antarctic experience: Wild, Cheetham, Crean, Hurley, and Marston.

Reaching South Georgia on 26 October, Shackleton learned from the whalers there of extensive ice farther south. They advised him to head far east in the Weddell Sea and to delay his departure for another month. Thus, it was not until 5 December that Endurance sailed south. Within two days it was in pack ice, which was found exceptionally far north. Despite having to negotiate their way through the ice, by 10 January 1915 Coats Land was sighted at 72°02’S; beyond this, the Caird Coast was discovered between Coats Land and Filchner’s Luitpold Coast. On 12 January, Endurance was close to a possible landing place, but at 74°04’S, 22°48’W it was not sufficiently far south for Shackleton, who decided to continue on. This was the expedition’s one chance to land. On 19 January, at 76°34’S, 31°30’W , a six-day northeast gale closed up the ice around the ship, into which it was firmly frozen as the temperature dropped. It was never released. Sixteen miles away, land was within view while Vahsel Bay, Shackleton’s chosen destination, was within one good day’s sail. Repeated efforts were made to free the vessel, but all to no avail. On 22 February, they reached their farthest south at 77°00’S, 35°W, with land still in sight. Shackleton now declared Endurance his winter station and made arrangements to winter in the ice.

By mid-March it was clear that the ice-drift was taking the ship northwest, away from land. Shackleton had grave misgivings about its strength to withstand the ice pressure, especially once the sun returned in late July. As temperatures rose, icebergs frozen into the floes through the winter would move more freely, cracking the sea ice and forcing up pressure ridges. A succession of squeezes was experienced through the winter, but none as bad as on 30 September. At 69°11’S, 51°05’W , the ship began to leak badly after another heavy gale. Pitching their five tents initially close to the ship, they found a safer site having to negotiate their way through the ice, by 10 January 1915. Shackleton now declared Endurance his winter station and made arrangements to winter in the ice.

Shackleton ordered it abandoned, and camp was made upon the ice. Pitching their tents initially close to the ship, they were forced to move them three times in one night as pressure ridges repeatedly broke through the camp. On a more solid floe, 200 meters from Endurance, they found a safer site at Dump Camp, where they unloaded what they could from the ship.

Endurance finally sank on 21 November. Shackleton’s course of action was now far from clear. Whaling stations at Deception Island and South Georgia were the inhabited settlements nearest his current position deep in the Weddell Sea. Nearer than either, though still 346 miles away, was Paulet Island, where stores had been depot by relief expeditions assisting the Swedish explorer Otto Nordenskjöld. As the per-
son responsible for sending out those stores, Shackleton knew precisely what they contained. Selecting Paulet as the first destination, his next question was how to get there; another issue was the state of morale among the men. Here he was helped by having so many experienced Antarctic hands, but others were not so obliging. The carpenter, Henry McNish, argued with Shackleton that with the ship sunk he no longer could command. McNish’s insurrection was promptly put down but not forgotten, or forgiven, despite the carpenter’s otherwise sterling contribution. Only a united party under clear leadership could hope to survive. Although aware that the ice-drift was taking them north and that they would ultimately be released into open water, Shackleton, in order to maintain morale as well as to approach as close as possible to land, made two abortive attempts to haul provisions and heavy boats across the ice, establishing first Ocean Camp and then the aptly named Patience Camp. The point made, they would have to sit it out until release came.

On 8 April 1916, pressure cracked their ice floe, with the ice evidently now opening up around them. The next day they took to their boats. Paulet was no longer reachable, being more than 60 miles to their west. Instead, just two islands remained as places of possible safety: Elephant Island and Clarence Island. To miss them would mean being swept out into the empty waters of the South Atlantic and certain death. Conning their way through narrow leads as floes opened and shut unpredictably by day, each night they hauled the three boats onto the most substantial floe they could find to pitch camp. One camp proved less secure than they had hoped, cracking underneath them and dropping seaman Ernest Holness into the lead. Ever alert to danger, Shackleton saw a body in the water and heaved Holness out in his sleeping bag just before the lead. Ever alert to danger, Shackleton saw a body in the water and heaved Holness out in his sleeping bag just before the two halves of the floe snapped shut.

Through more open but increasingly stormy waters, they left behind the zone of continuous pack ice, with course set for Elephant Island. Thirteen men sailed with Shackleton in James Caird, ten with Worsley in Dudley Docker, and five with Crean and Hudson in Stancomb Wills—the boats being named for the expedition’s most generous sponsors for want of new discoveries to be named for them. After laying to through the night to ensure that the island was not missed in the dark, on 15 April they landed at Cape Valentine on a narrow strip of beach beneath cliffs rising more than 300 meters—their first land since South Georgia sixteen months ago. Since it was clear that the beach would be underwater at high tide, Wild was sent out the next morning with four of the fittest men to find a safer camp. It was not until after nightfall that they returned, having located a suitable sandy spit 7 miles to the west. They battled the next day through a raging sea to “Cape Wild,” the engineer Louis Rickinson collapsing with a heart attack upon reaching the beach. Half their food supply began to disappear the following morning as the chinstrap penguins migrated away, but fortunately the gentoo penguins remained. Reasoning that the chinstrap colony must be above the water level reached during the worst storms, Shackleton chose it as a safe but odorless campsite.

No one would find them on Elephant Island. After a brief period for recuperation during which McNish accomplished wonders strengthening the largest boat, the James Caird, with the mast from Stancomb Wills and constructing a deck to keep out water with canvas and packing cases, Shackleton set out on 24 April for South Georgia, 800 miles away. With him sailed the indispensable navigator Worsley, the reliable Irishmen Crean and Timothy McCarthy, and two good seamen but potential troublemakers McNish and John Vincent. Wild was left in command of the remaining twenty-two men on the island. (For their story, see Wild, Frank.)

On this do-or-die effort, supplies were taken for just one month with two casks containing 164 liters of fresh water. Once out beyond the reefs and pack ice fringing Elephant Island, the tiny James Caird—just 6.86 meters long—was exposed to the towering rollers of the South Atlantic. For more than thirteen hours each day, they sailed in darkness, keeping alternate watches of three men: one at the tiller, one minding the sails, and one bailing. Meanwhile, the others attempted sleep in sodden sleeping bags, crammed in beneath the improvised deck with the food, equipment, water casks, and ballast of gravel bags and loose boulders. By the sixth day, ice was building up dangerously and had to be chipped away as they clung on precariously. After ten days in a gale, Shackleton thought the sky was clearing when he saw a white streak form across the sky. This was not the sky but the breaking crest of an enormous wave, which smashed down upon them. Only after ten minutes of furious bailing was their boat restored to life. A very rare sight of the sun the next day enabled Worsley to get a good fix on their position. They were within 100 miles of South Georgia. With supplies of fresh water almost exhausted—one cask had been punctured when carried out to the James Caird—and with both McNish and Vincent largely incapacitated, Shackleton decided that the inhabited north coast of the island was unreachable and that they must land wherever they could. Thirteen days out, McCarthy caught a brief glimpse of cliffs through the clouds and spray—their first sight of the island. With waves breaking over offshore reefs, it was clear that they must wait for morning before attempting a landing. That night, another storm arose, which drove them toward the island. As the boat closed rapidly with the high cliffs, suddenly the wind eased and the pin locking their mast in place fell out. Had this happened even minutes earlier, their fate would have been sealed—another miracle. By now, they were completely without water and were determined to land the next day come what may. On the sixteenth day of their voyage, on the fifth attempt, James Caird was piloted to safety through the reefs enclosing King Haakon Bay.

There, on 10 May, they found shelter in a cove beside a stream from which they now drank their fill. With young alba-
tresses providing delicious eating, they recuperated before sailing to the head of the bay, where James Caird was upturned to form Peggotty Camp. McCarthy was to remain to look after the two invalids while Shackleton, Worsley, and Crean prepared themselves for their next endeavor.

South Georgia is a mountain range half-buried in the ocean. No one had penetrated more than a mile into its interior, and certainly no one had contemplated crossing from coast to coast as Shackleton and his colleagues must now do. Their destination, the whaling station Stromness, was at least 22 miles away, and they would have to cross mountains 1,200 meters high and innumerable glaciers. Wearing the clothes they had worn for the last seven months and without specialized mountaineering equipment, all they could do was fasten screws from James Caird into their boots to form primitive crampons and trust to luck. Luck had brought them a long way already.

At 2 A.M. on 19 May, their path lit by moonlight in a clear sky, they set out up the steep slopes into the interior. Having made a rapid initial climb, they soon realized the formidable nature of the land to be traversed. With Stromness some way to their east, they had to climb along the spine of the island, taking care not to cross down the other side too soon, a path that would take them through belts of crevasses on the many descending glaciers. On a high ridge now known as the Trident, they sought a way down, first trying three separate crests before deciding, in desperation, to launch themselves for their next endeavor.

The Imperial Trans-Antarctic Expedition did not end with the rescue of his men from Elephant Island. Shackleton had learned that his Ross Sea party was also having difficulties, and he would not rest until he had seen them to safety as well. (For a description of the Ross Sea party and its rescue, see Mackintosh, Aeneas.) Once retrieved, all members of the expedition volunteered for the war effort. Shackleton was commissioned first to aid recruitment and then to assist General Sir Charles Maynard’s campaign in northern Russia, where it was thought that his polar experience would prove useful. With the war ended and with the Red Army triumphant over the Whites in the Russian civil war, Shackleton found himself free to plan new expeditions. Most promising was the possibility of collaborating with Vilhjalmur Stefansson to explore for possible new lands north of North America. By the time Canadian government support was withdrawn, Shackleton had already purchased a vessel, the 125-ton ketch Quest, and had reassembled many old hands from Endurance. Other sponsors had also withdrawn their support, but their loss was made good by John Quiller Rowett, who would underwrite the expedition’s costs.

By now it was too late in the season to go to the Arctic, and Shackleton changed his plans to another Antarctic expedition. After three months’ hurried preparations, Quest sailed on 17 September 1921, manifesting many faults during its voyage to Rio de Janeiro, reached on 22 November. Shackleton decided on a major overhaul. The time required meant that the expedition would not be able to reach far into the Antarctic that season but instead would have to confine its activities to the vicinity of South Georgia.

Thus it was to the whaling station Grytviken that Shackleton came on 4 January 1922. The many problems of his ship had depressed his customarily optimistic nature. But now, with South Georgia’s magnificent panorama before him, Shackleton felt revived and full of hope for what his expedition might achieve. After going ashore to meet the whalers, he turned in for an early night, summoning Dr. Macklin to his room for a chat some time after 2 A.M., then again some minutes later. Shackleton was in pain and soon afterward collapsed and died from a heart attack. Fittingly, at his wife’s request, he was buried in the whalers’ cemetery at Grytviken, where his grave
and a memorial cross may be seen today. The Shackleton-Rowett expedition did not end with Shackleton’s death—nor would he have wanted it to. Frank Wild took over command, and the expedition’s story is told in the entry under his name.

See also: Adams, Jameson; Amundsen, Roald (190–1912); Bruce, William; Colbeck, William; David, Edgeworth; Elephant Island; Filchner, Wilhelm; Farthest South; Gerlache, Adrien de; Mackintosh, Aeneas; Magnetic Poles; Mawson, Douglas (1911–1914); Nordenskjöld, Otto; Ponies; Ross Ice Shelf; Ross Island; Scott, Robert Falcon; South Georgia; South Pole; Stefansson, Vilhjálmur; Transantarctic Mountains; Weddell Sea; Wild, Frank

References and further reading:

Sheffield, James

(fl. 1820s)

James Sheffield’s voyage of 1819–1820 is notable as the first by an American sealer to the South Shetland Islands. Had not William Smith discovered these Antarctic islands in February 1819, it is likely that Sheffield would have discovered them early in 1820 since, indeed, he had been sent specifically to look for them.

A Sealing Voyage to the South Shetland Islands, 1819–1820

Captain James P. Sheffield was an experienced sealer with extensive knowledge of the South Atlantic when he was appointed to command the 131-ton brig Hersilia sailing out of Stonington, Connecticut, in late July 1819. Sheffield’s instructions from the veteran sealer Edmund Fanning were to look for new sealing grounds, in particular the Aurora Islands—supposedly near South Georgia—and then farther south where Dirck Gerritsz had reported land in 1600. Fanning believed that the many icebergs drifting to South Georgia from the southwest indicated extensive land in this direction.

Sheffield found Shag Rocks close to the reported position of the Aurora Islands, but their steep cliffs held no fur seals. On return to the Falkland Islands to pick up second mate Nathaniel Palmer, left behind to obtain fresh meat, Sheffield learned from Palmer of rumors that land had been discovered to the south in the very region in which Fanning had directed him to look.

A southwest course was set for Staten Island, off Tierra del Fuego, from where Hersilia was steered to the south. The high mountains of Smith Island were sighted on 18 January 1820 and anchorage found in Hersilia Cove, Rugged Island, on 23 January. Also anchored here was Espírito Santo, from Buenos Aires, already engaged in sealing. It was from this ship that Palmer had learned of the new discovery, and with seals enough for both ships on nearby Livingston and Snow Islands, Hersilia was made welcome. In all, 8,868 seal skins were taken, the most that could be salted and stored, though thousands of more fur seals could be seen on the beaches. On 7 February, Sheffield set sail back to Stonington with a full cargo.

Sheffield’s arrival on 21 May generated enormous interest, confirming rumors of an important discovery in the far south Atlantic, where seals were to be found. Sealing fleets were made ready in several New England ports, and thirty American vessels reached the South Shetlands the next year. Again sailing in Hersilia, Sheffield was joined by four other ships from Stonington, under the overall command of Benjamin Pendleton. With exploration left to the smaller vessels, Sheffield’s role during this voyage was purely sealing, and he made no further contribution to Antarctic exploration. An interesting footnote, however, is Hersilia’s capture on its return voyage from the South Shetlands on 13 May 1821 off the west coast of Chile. Sheffield and most of his crew escaped, but Hersilia was turned into a warship in the war of independence against Spain.

See also: Gerritsz, Dirck; Palmer, Nathaniel; Pendleton, Benjamin (1821–1822); Sealing and Antarctic Exploration; Smith, William; South Shetland Islands

References and further reading:

Shirase, Nobu

(1861–1946)

Few people know that three, and not two, expeditions set out to reach the South Pole in 1910. The British expedition of Robert Falcon Scott and the Norwegian expedition of Roald Amundsen are well known; not so Nobu Shirase’s Japanese expedition.

The First Japanese Expedition to Antarctica, 1910–1912

In 1893, Nobu Shirase, a lieutenant in the Japanese army, joined an expedition led by Captain Gunji to the Kuril Islands, north of Japan, to put an end to the poaching of sea otters and arctic foxes. A total of fourteen men overwintered in the Northern Kurils, but only Gunji and Shirase survived, having dug themselves an ice cave on Shumshu Island. Shirase remained in the Kurils until October 1895. It was an experi-
ence that prepared him well for polar exploration, though his initial aim was to mount an expedition to the North Pole. Like Amundsen, he turned his sights to the South Pole only when he heard in 1909 of the claims of Frederick Cook and Robert Peary to have reached the North Pole.

Shirase experienced considerable problems in obtaining backing for his expedition. Not only had Japan no tradition of exploration; under the Tokugawa Shogunate (1603–1867), even to leave Japan was punishable by death. Although government support was unavailable, sufficient money was eventually raised thanks to Count Okuma and other private sponsors to enable him to buy the 204-ton schooner Kainan-maru (Southern Pioneer).

Placed under the command of Captain Nomura, who had experience in navigating ice in the waters around the Kuril Islands, Kainan-maru sailed from Tokyo Bay on 29 November 1910 with twenty-seven men on board, reaching Wellington, New Zealand, on 8 February 1911. Having taken on fresh supplies, coal, and drinking water, the expedition departed for Antarctica three days later. Already, however, it was very late in the season, and they were further delayed by continuous bad weather. To compound the misfortune, most of the sledge dogs died during the outward voyage. On 26 February, the first iceberg was seen, and on 6 March they were within sight of Victoria Land’s mountainous coast. The original plan seems to have been to land in the vicinity of Edward VII Land, winter there, and set off for the South Pole in September 1911, returning to rendezvous with the ship in the McMurdo Sound region in February 1912. However, Kainan-maru was unable to approach within 6 miles of the coast, and on 12 March, at 74°16’S, 172°7’E, near Coulman Island, strong gales and heavy ice forced Shirase to abandon his plans and turn about. Kainan-maru was not equipped to winter, and he could not risk the chance of being frozen in.

Sydney was reached on 1 May after a very rough passage. At this time there was widespread prejudice against the Japanese in Australia. At first the idea that an Antarctic expedition should seek to winter in Sydney aroused considerable suspicion, but the Antarctic veteran Sir T. W. Edgeworth David intervened on their behalf. Kainan-maru was accorded the status of a foreign government ship, exempted from harbor dues, and given excellent berthing facilities. Captain Nomura left for Japan to report on affairs and to try to raise more funds; the expedition’s hut was erected at Parsley Bay Reserve in a wealthy suburb, attracting crowds of visitors and some mixed newspaper comment. While in Sydney the members of the expedition insisted on a very frugal lifestyle, as they were trying to conserve what funds they had for a second attempt at landing in Antarctica. Nomura returned in October with fresh supplies, followed soon afterward by new expedition members to replace those who had to be invalided home. Twenty-nine fresh dogs from Sakhalin arrived with them.

Kainan-maru sailed from Sydney on 19 November. Shirase realized that an attempt on the South Pole was now beyond him. Instead, he would land a party on the Ross Ice Shelf and also explore Edward VII Land farther east. Crossing the Antarctic Circle on 21 December, Kainan-maru was off the Ross Ice Shelf in difficult ice conditions by 10 January 1912. A suitable landing place was at last found on 16 January, when a party of four led by Takeda, the chief of the scientific staff, landed briefly at Kainan Bay but had to be withdrawn when the way south was found barred by impassable crevasses. Turning westward, they spotted a ship in the distance. At first, this was thought to be a pirate ship—and what a hiding place! However, it was in fact Amundsen’s Fram in the Bay of Whales, waiting for his return from the Pole. Visits were exchanged, but with few words of shared language, little could be communicated.

Kainan-maru was moored near the entrance to the Bay of Whales, where the top of the ice shelf could be reached only up a 60-meter ice cliff. Though everything had to be carried up a path cut in the cliff, just forty hours after making fast to the ice edge the supplies for seven men and thirty dogs had been taken up onto the Barrier. Two men were left here at Base Camp, while Shirase led Takeda and medical officer Miisho on the Dash Patrol, taking two sledges driven by the Sakhalin Ainu

Nobu Shirase (Scott Polar Research Institute)
dog handlers Hanamori and Yamabe. The Dash Patrol made 172 miles in just over eight days, achieving a farthest south of 80°5’S, 156°37’W on 28 January. Naming this region “Yamato Yukihaara” (the Japan Snow Plain), the Japanese flag was raised and the emperor saluted with three shouts of “Banzai!” Standing at an elevation of 300 meters, they correctly inferred that land lay deep beneath the ice. Conditions were better for their return journey, and by 31 January they reached the Bay of Whales, where they awaited the return of Kainan-maru, which had meanwhile sailed on to Edward VII Land. Two shore parties had been landed in Sulzberger Bay (76°56’S, 155°55’W), being the first to land on this coast, with one party reaching the foothills of the Alexandra Mountains. Kainan-maru then sailed to 76°06’S, 151°20’W, a record farthest east in these Japanese polar exploration.

They had been given a good sendoff when leaving Japan in 1910, but it was nothing compared to the hero's welcome that greeted them on their return to Tokyo on 20 June 1912. Although not all of its aims had been achieved, Shirase's expedition had proved itself to be a worthy progenitor of later Japanese polar exploration.

See also: Amundsen, Roald (1910–1912); Cook, Frederick (1907–1909); David, Edgeworth; Edward VII Land; Peary, Robert (1908–1909); Ross Ice Shelf; Scott, Robert Falcon (1910–1912)

References and further reading:

Shmidt, Otto (1891–1956)

Outside Russia, Otto Yu'evich Shmidt is known to few. During much of the 1930s, however, the heavily bearded Shmidt personified Soviet exploration of the Arctic. He was the leader of two pioneering voyages through the Northeast Passage in Sibiryakov and Chelyushkin; he was also the organizer of the expedition that set up an ice station at the North Pole.

Born in a well-to-do family of Baltic-German descent, Otto Shmidt was a professor of mathematics at Moscow State University prior to the outbreak of the Russian Revolution in October 1917. Originally a member of the Menshevik Party, he had joined the Bolsheviks in 1918 and was to do distinguished work during the civil war for the People's Commissariats of Finance and Food Production. Subsequently, he was made chairman of the State Publishing House, head of the Central Statistical Administration, and editor in chief of the Great Soviet Encyclopedia.

By the late 1920s, Shmidt had established a reputation as an administrator of exceptional competence and dynamism and a reliable member of the Communist Party. Following participation in a joint Soviet-German expedition to the Pamirs in 1928, he was given a succession of appointments designed to train him for a future leadership role in the Arctic. In 1929, he led an expedition in the icebreaker Sedov to Franz Josef Land, where Soviet sovereignty was challenged by Norway. A race developed between the two countries to establish the first station. Whereas Shmidt succeeded in reaching Hooker Island, where a station was constructed at Tikhaya Bay, the Norwegian vessels Hvalrossen and Thorsnes I were unable to penetrate heavy ice surrounding the archipelago. After landing a seven-man construction party on Hooker Island, Sedov headed north through British Channel as far as 82°14’N to identify a second site suitable for a station on Rudolf Island. This station was built in 1932. In 1930, Shmidt returned to Franz Josef Land in Sedov before continuing on to Novaya Zemlya and Severnaya Zemlya, where a four-man party led by Georgiy Ushakov was landed to establish a station and make the first survey of those islands. In the same year, Shmidt was appointed director of the All-Union Arctic Scientific Research Institute (ARI).

The First Single-Season Transit of the Northeast Passage, 1932

Prior to 1932, only three transits had been made through the Northeast Passage—by Adolf Erik Nordenskiöld, Boris Vilkitskiy, and Roald Amundsen—and all had been forced to spend at least one winter en route. Shmidt appreciated that a single-season transit would constitute the most public of declarations that the Northern Sea Route was now open for business, as well as effectively demonstrating newfound Soviet mastery of the Arctic. He proposed that since the ship could also serve as a mobile research platform, the transit would mark a fitting culmination to the Soviet contribution to the Second International Polar Year. In January 1932, the scheme received government approval, with 1 million rubles being set aside for the purpose. The transit would be made in the 2,600-ton icebreaker Aleksandr Sibiryakov. Originally built for the Newfoundland sealing trade, it was strongly built and equipped with a 2,000-horsepower engine. But it was by no means one of the most powerful ships in the fleet, having previously been used more for ice reconnaissance purposes than actual icebreaking. It was to be commanded by Vladimir Voronin, a highly experienced navigator and the captain of Sedov during its voyages in 1929 and 1930.

On 28 July 1932, Sibiryakov set out from Archangel. In addition to its crew of thirty-six, it carried an expedition party of twenty-seven consisting of ten scientists led by ARI's Vladimir Vize, a film crew, journalists, and an artist. Supplies were sufficient to last eighteen months. The initial stages of the voyage proved uneventful as Sibiryakov crossed the Barents Sea to Novaya Zemlya and then entered the Kara Sea through Matochkin Strait. At Dikson Island, at the mouth of the Yenisey,
it was delayed one week to allow the collier Vagland to catch up, then proceeded on toward Severnaya Zemlya. Shmidt had decided that instead of passing south of these islands through the well-known Vitkitskiy Strait, he would instead attempt to round them to the north, which no one had previously attempted. Before doing so, however, he needed to obtain a copy of Ushakov's newly compiled map of the archipelago and therefore landed at Domashniy Island on 14 August. The polar pack was encountered at 81°28′ N, some 12 miles north of Arctic Cape. From there Sibiryakov turned southeast to follow a coastal polynya east of Komsomolets Island before resorting to explosives to blast a passage through to the open water of the Laptev Sea on 22 August. Having thus established the possibility of a high-latitude shipping route, Shmidt on 30 August took Sibiryakov into the newly established docks of Tiksi, east of the Lena Delta, for recoaling. Hardy an ice floe was seen from there to the New Siberian Islands, where contact was made on 3 September with a convoy escorted by the icebreaker Litke. Litke's captain advised Shmidt to expect heavy ice farther east and that Sibiryakov should keep as close to the coast as possible. The expedition was to have been equipped with an aircraft for the purposes of ice reconnaissance, but it had been left behind following engine problems. Up until now this had hardly mattered, but from 5 September on multiyear ice was encountered with increasing frequency. Sibiryakov's course close to the coast took it through the worst of the ice, whereas a plane would have shown that farther north, near Wrangel Island, conditions were considerably better. Slow progress was made with the aid of explosives, but on 10 September half of the propeller blades were sheared off in very heavy ice. To raise the screw above the water level for repair, Shmidt ordered all coal and food moved as far forward as possible to weigh down the bow. After two days of exhausting labor, the screw was as close to the surface as could be managed without endangering the ship, and a rapid repair was effected in the near freezing water. By 16 September, the coal and food had been restored, and Sibiryakov was ready to continue. Worse followed two days later when the entire propeller shaft broke off after the ship collided with a large underwater floe. Just 100 miles short of Bering Strait, Sibiryakov was now entirely without motor power. For several days, it drifted helplessly with the ice, first encouragingly southeast toward the strait, then back again as the wind changed direction. On 26 September, the ice began to break up in a strong northwest wind. A crude sail was fashioned using tarpaulin and hoisted on a makeshift mast. The remainder of the voyage was completed under sail at an average speed of 9 miles a day until, on 1 October, Sibiryakov at last passed through Bering Strait. Now able to claim that the mission had been accomplished, Shmidt allowed Sibiryakov to be towed first to Petropavlovsk, Kamchatka, and then to Yokohama, Japan, for repairs. With other members of the expedition party, he crossed to Vladivostok by steamer and then returned to Moscow by means of the Trans-Siberian Railway.

**Rescued from the Ice: The Voyage of Chelyuskin, 1933–1934**

Although only partially successful as a demonstration that shipping could pass through the Northeast Passage in one season, Sibiryakov's voyage was portrayed as a triumph and did much to stimulate government and public interest in the Northern Sea Route. The most immediate result was the creation of the Chief Administration of the Northern Sea Route (Glavsevmorput', or GUSMP) on 17 December 1932. Shmidt was appointed head. One of his first decisions was to repeat Sibiryakov's transit the following year to prove that it was not simply the result of unusually favorable conditions and to do so not in an icebreaker but in the prototype ice-strengthened freighter Chelyuskin. Voronin was again appointed captain.

On 12 July 1933, Chelyuskin departed from Leningrad. One hundred and twelve were on board, including fifty-three crew, twenty-nine scientists, eighteen polar station staff, and a construction brigade consisting of twelve men. The aviator Mikhail Babushkin was to provide ice reconnaissance in an Sh-2 flying boat. Again, the early stages of the voyage proved relatively uneventful, though it took eighteen days to cross the Kara Sea, with some ice damage incurred to the bow plating. By 1 September, Chelyuskin was through Vitkitskiy Strait and into the Laptev Sea. All continued well until it entered the East Siberian Sea. There, Shmidt had been promised assistance from an icebreaker, but unfortunately none was available. Instead, Voronin had to pick a course with the utmost care through 90 percent ice cover. Conditions failed to improve in the Chukchi Sea. If anything, they got worse as the temperature fell noticeably as winter approached. To preserve coal stocks, Shmidt ordered heating reduced in all cabins, characteristically insisting that his own cabin should be the coldest. By mid-October, Chelyuskin was firmly beset off Cape Serdeste-Kamen', just over 100 miles north of Bering Strait. On 4 November, it actually drifted through the strait into the Bering Sea, thus completing the transit at least in name, but immediately afterward the direction of the drift reversed, taking it back to the northwest. Radio messages were sent requesting help, but no vessel could get within 35 miles of the ship. The Chelyushkinites would have to winter in the ice.

The greatest threat to any beset vessel comes not during the coldest part of the winter but when temperatures begin to rise and the ice as a result becomes less firmly locked together in a single mass. Leads open and floes move apart, only to collide again as winds, tides, and currents dictate. Even an ice-strengthened vessel such as Chelyuskin had no hope of withstanding such forces, and on 13 February 1934 the hull was ripped wide open. There were just two hours to evacuate all that was needed off the stricken vessel before it dropped beneath the water. One hundred and four people, including a young girl and a baby born during the voyage, were left on the ice, where a makeshift camp was hurriedly erected. Some now argued that those fit enough to do so should make for the coast...
of Chukotka, leaving the others behind. This suggestion was firmly put down by Shmidt, who threatened to shoot anyone disobeying his orders, which were that they would remain together and wait for rescue.

With no prospect of any icebreaker reaching “Camp Shmidt” before late spring and only four aircraft stationed in Chukotka, rescue was clearly going to be difficult. The GUSMP’s deputy head, Ushakov, was flown out to coordinate the operation. American offers of help were rejected by the Soviet government, which was, however, prepared to allow pilots Mavriki Slepnev and Sigismund Levanetskiy to operate from Alaska. Other aircraft would fly from Vankarem and Willem on the north coast of Chukotka. Meanwhile, at Camp Shmidt, the twelve-man construction brigade, assisted by all those who could be spared from other duties, leveled several landing strips, each 150 by 60 meters. Life at the camp was presented as a microcosm of all that was best in Soviet life. Edifying lectures were held each night by Communist Party activists, as others engaged in cultural and sporting pursuits. The camp newspaper was titled We will not surrender!

The airlift finally began on 5 March when Aleksandr Liapidevskiy landed on his twenty-ninth attempt to evacuate the women and children. Five other pilots managed to land afterward—Mikhail Vodopyanov, Ivan Doronin, Nikolay Kamanin, Mavriki Slepnev, and Vasily Molokov. Shmidt had reserved place 104 in the evacuation list for himself but was ordered out on 11 April with a high temperature resulting from the aggravation of childhood tuberculosis. Two days later the evacuation was complete.

The rescue of the Chelyushkinites was portrayed as one of the most heroic episodes in Soviet history, and a special medal—the Order of Hero of the Soviet Union—was struck for the most heroic episodes in Soviet history, and a special medal—the Order of Hero of the Soviet Union—was struck in honor of the seven pilots. This later became the most prestigious of all Soviet awards. As Shmidt and his colleagues made their way back to Moscow, they were greeted by enthusiastic crowds, first at Vladivostok, and then all along the Trans-Siberian Railway wherever the train stopped. Shmidt himself received the Order of Lenin before being dispatched with Ushakov on a tour around the United States and Europe—the living embodiment of Soviet Arctic expertise and heroism.

It was while observing the Chelyushkin airlift that Shmidt was persuaded of the possibility of establishing a station at the North Pole. Clearly, aircraft were capable of operating from sea ice. All that was needed was a floe sufficiently strong and large enough to serve as a landing strip. The story of North Pole–1 (NP-1) is told under the name of its leader, Ivan Papanin.

The establishment of NP-1 in May 1937 marked Shmidt’s greatest achievement. It was followed by a series of setbacks, beginning in August when Levanetskiy, one of Chelyushkin’s hero-pilots, was lost near the North Pole on an attempted transpolar flight. Bad as this was, worse was to ensue when an inept search effort dragged out over eight months and diverted much-needed aircraft from ice reconnaissance duties along the Northern Sea Route. As a direct result, twenty-six vessels were forced to winter in the ice, including seven out of eight of GUSMP’s operational icebreakers. Shmidt was held responsible for GUSMP’s failure to meet targets for cargo transport set by the Second Five-Year Plan and resigned following an internal power struggle with Papanin. He was to take no further part in Arctic exploration, but he had the good fortune to escape a worse fate at a time when many others died during the Stalinist purges. His later life was devoted to his many academic interests, including editorship of the Great Soviet Encyclopedia, a task for which no one could have been better qualified.

See also: Amundsen, Roald (1918–1925); Drifting Ice Stations; Franz Josef Land; International Polar Years; Nordenskiöld, Adolf Erik (1878–1880); North Pole; Northeast Passage; Papanin, Ivan; Russia; Severnaya Zemlya; Ushakov, Georgiy; Vil’kitskiy, Boris

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Shparo, Dmitriy (1941–)

During the last years of the Soviet Union, the adventurer Dmitriy Shparo led a series of expeditions sponsored by the newspaper Komsomol’skaya Pravda. His many achievements include being the first to reach the North Pole by skis unaided by dogs or snowmobiles, and the first to do so from Eurasia; the first crossing of the Arctic Ocean by these means, and the first from Eurasia to North America; the first to reach the northern Pole of Inaccessibility over the ice; and the first modern crossing of Bering Strait.

By profession a mathematician and senior lecturer at the Institute of Steel and Alloys in Moscow, Dr. Dmitriy Igorevich Shparo’s adventurous career began with long-distance hiking tours undertaken with friends from the university. Motivated by his personal motto “the harder, the better,” these journeys became increasingly ambitious until 1969. Together with four colleagues, he skied 190 miles through the northern Ural Mountains between Vorkuta and Amderma. Many explorers have cultivated close relationships with newspapers, offering accounts of enthralling exploits in return for funding and publicity. Shparo’s reports of this expedition and its successor in 1970 to the Taymyr Peninsula were published in the youth.
newspaper *Komsomolskaya Pravda*, where they proved so popular that the editor in chief was persuaded to set up the Komsomolskaya Pravda Permanent Expedition. As the official publication of the Young Communist League, *Komsomolskaya Pravda* had great influence, and its support gave semiofficial status to Shparo’s expeditions, ensuring favored treatment from the Soviet authorities. This was to be a highly significant factor that enabled him to visit strategically sensitive places, such as the ice stations and High Arctic islands, generally off-limits to others. Government agencies also provided logistical support, finding space for his expeditions on flights usually dedicated to transporting relief staff and supplies to the polar stations. Vladimir Snegiryev, reporter and later deputy editor with *Komsomolskaya Pravda*, became an integral part of the team as Shparo skied across Severnaya Zemlya in 1971; over the sea ice of Long Strait between Chukotka and Wrangell Island in 1972; and across the New Siberian Islands in 1973. He then explored the northwest coast of the Taymyr Peninsula looking for relics of historic expeditions. Among many discoveries, his most notable find was the depot left by Eduard von Toll in 1900 in Middendorff Bay.

Shparo believed no one could go anywhere in the Arctic on skis, or “northern deer,” as he called them. Snowmobiles were more limited and expensive. Dogs had had their day. He and his colleagues used standard Beskyd skis manufactured by the Mukachev Ski Factory. They also served as tent struts.

From 1976, Shparo decided to specialize in the exploration of drifting ice. Drifting ice made up 4 percent of the Earth’s surface and yet remained virtually unexplored apart from the immediate vicinity of the North Pole and the route to it from Ellesmere Island. In 1976, he and five colleagues sledged 190 miles from Wrangell Island to the drifting station NP-23, thus becoming the first expedition to reach an ice station from land.

**The First Expedition to the North Pole from Eurasia, 1979**

By 1979, Shparo considered his team of polar skiers capable of reaching the North Pole. Previous explorers had reached the Pole from Ellesmere Island. His would be the first attempt from Eurasia. It would also be the first on skis without assistance from dogs or snowmobiles. For a departure point he selected Henrietta Island in the De Long Islands. Although nearly twice as far from the Pole as Ellesmere—930 miles as against 475 miles—Shparo reckoned that his skiers would derive considerable benefit from the Transpolar Drift, carrying them to the northwest just as it had carried Fridtjof Nansen’s *Fram* many years earlier.
On 16 March 1979, Shparo's seven-man team set out from Henrietta Island. All had considerable experience in polar travel, especially the navigator and chief of scientific research, Yuri Khmelevskiy, who had accompanied Shparo on all his previous expeditions. Other members were Vasily Shishkarev, Vladimir Ledenev, Anatoly Melnikov, Vladimir Rakhomov, and Vadim Davydov. Although they had known each other for many years and were good friends, they found their coordinates using the COSPAS-SARSAT international naval rescue system, an early form of GPS. Skiing for up to ten hours each day, with breaks of ten minutes every hour, they did not speak to each other and arrangements had to be made for them to be in daily communication with psychiatrists in Moscow. Despite these tensions, the Pole was reached on 31 May via the ice station NP-24.

**On Skis to the Pole of Inaccessibility, 1986**

Having achieved the Pole, Shparo next proposed making the first crossing of the Arctic Ocean from Eurasia to America. Always politically astute, he considered that Canadian cooperation could best be achieved by including Canadian members in his team. He approached the experienced polar traveler Laurie Dexter, among others. It all came to nothing, however, when the Soviet Union invaded Afghanistan, Canada boycotted the Summer Olympics in Moscow, and Shparo and his colleagues were refused entry visas to Canada.

Shparo was busy making preparations for an expedition to the South Pole when he learned that two drifting ice stations were coming close together not far from the Northern Pole of Inaccessibility. This was too good an opportunity to miss. Whereas the Pole of Inaccessibility had been visited from the air, no one had reached it previously over the ice. On 29 January 1986, Shparo's eleven-man party set out from NP-26, then at 82°N, 174°55’W. Four of the team had been with him in 1979: Khmelevskiy, Shishkarev, Ledenev, and Melnikov. This would be a journey through the polar night. In near darkness until the sun reappeared on 14 February and in temperatures descending to −50°C (−58°F), they navigated by the stars when they could see them. When none were visible, they found their coordinates using the COSPAS-SARSAT international naval rescue system, an early form of GPS. Skiing for up to ten hours each day, with breaks of ten minutes every hour, they were at 84°N, 175°W, the Pole of Inaccessibility, by 15 February. There, the Red Flag was raised and a message radioed to “Komsomol’skaya Pravda,” which as usual was publishing daily reports of their progress. Continuing on, they arrived at NP-27 at 85°14’N, 147°E on 7 March, after a journey of 440 miles in thirty-eight days.

**Polar Bridge: Across the Arctic Ocean on Skis, 1988**

It might have been politically impossible for a primarily Soviet expedition to cross the Arctic Ocean in 1980, but eight years later the international situation had been transformed by the reforms of the Soviet leader Mikhail Gorbachev. “Polar Bridge” was to be a symbol of the Soviet Union’s improved relations with the West, and with Canada in particular, its neighbor across the Arctic Ocean. The original intention was to have equal numbers of Canadians and Russians, but some of the former dropped out after a preliminary training exercise, and several of those participating in Shparo’s previous expeditions refused to be excluded. Those taking part again included Khmelevskiy, Shishkarev, Ledenev, and Melnikov, together with four more members of the 1986 expedition: Anatoly Fedyakov, Mikhail Malakhov, Pyodor Konyukov, and Alexandr Belyayev. The outnumbered Canadians were Dexter, Richard Weber, Christopher Holloway, and Max Buxton.

Shparo’s veterans by now had a well-established routine, which they had followed with minimal variation through numerous successful expeditions. Accommodating themselves to the same practices did not always come naturally to the Canadians, who had their own ideas on how to conduct a polar expedition. Nevertheless, the two groups managed to rub along, with the diplomatic Malakhov doing much to diffuse tensions whenever they arose. He and Weber were later to form a highly effective team on their own expedition to the North Pole and back in 1995. Setting out from Arctic Cape, Severnaya Zemlya, on 1 March 1988, the thirteen-man party skied between seven and ten hours each day, stopping for ten minutes every fifty minutes. While those at the front enjoyed a full ten-minute break, those toward the rear might get no rest at all depending on how far behind they were. The Canadians were technically more adept as skiers but had less experience on drifting ice, apart from Weber, who had accompanied Will Steger to the North Pole in 1986. With the aid of four airdrops, they reached the Pole after fifty-three days on 26 April and Ward Hunt, Ellesmere Island, after ninety-one days on 1 June.


The 1989 Soviet-American Bering Bridge Expedition sought to do for Soviet-American relations what Polar Bridge had done for those between the Soviet Union and Canada. Although Shparo had long considered the possibility of skiing across Bering Strait, the 1989 expedition was the original idea of Paul Schurke, Steger’s coleader on the 1986 North Pole expedition. Schurke’s symbolic journey involved a party of twelve—including Americans, Russians, Chukchi, and Inuit, men and women—visiting native communities in Chukotka before crossing the strait to visit more communities in Alaska. Shparo was the natural choice as Soviet coleader. On reaching the strait, they found too much open water to permit crossing by ski and therefore attempted instead to row across in a baidarka—a large kayak made from walrus skin. Having reached Little Diomede Island, Shparo found himself placed in an awkward situation when two Soviet border guards from Big Diomede Island used the opportunity to defect. The remainder of the journey was made by air.

Shparo made two more attempts to ski across Bering Strait, in 1996 and 1997, accompanied by his sons, Matvey and...
Nikita, but each time they had to be rescued by helicopter some way short of the American coast. He finally succeeded in March 1998, when he and Matvey took twenty-one days to reach Cape Thompson from Uelen.

Men such as Shparo never retire unless forced into it. In 1990, he set up the Moscow Adventure Club, which specializes in organizing polar and mountaineering expeditions, including disabled participants. Although Shparo himself continues to take charge of organizational arrangements, leadership in the field is delegated to Matvey. In 2000, wheelchair-bound Igor Kuznetosov became the first severely disabled person to cross the Greenland ice sheet on a three-man expedition led by Matvey.

**See also:** Adventurers; Arctic Ocean; Bering Strait; De Long Islands; Drifting Ice Stations; Fiennes, Ranulph (1893–1896); New Siberian Islands; North Pole; Poles of Inaccessibility; Severnaya Zemlya; Steger, Will (1986); Toll, Eduard von (1900–1903)

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**Signy Island (South Orkney Islands)**
Located at 60°43’S, 45°38’W, this small island, 4 miles long and 3 miles wide, lies just south of Coronation Island, the largest member of the South Orkney Islands. It was discovered in January 1823 by Matthew Brisbane, who was engaged in compiling a rough chart of the South Orkneys under the direction of James Weddell. Further charting work was not carried out until 1912–1913, when the whaler Petter Sørle named the island for his wife, Signy Sørle.

Borge Bay provides the best anchorage in the South Orkneys and, being also well-supplied with fresh water, was much used by whaling vessels from 1911 through to 1930. In 1920–1921, the Norwegian company Tonsbergs Hvalfangseri established a whaling station here, which operated until 1925–1926, when it was closed due to the severity of the weather, which prevented access to the harbor until relatively late in the whaling season. The station operated in conjunction with a floating factory ship, which continued to anchor at Borge Bay after the station’s closure until 1929–1930. About 3,500 whales were taken between 1921 and 1929, chiefly fin, blue, and humpbacks.

In March 1947, the British Base H was established by the Falkland Islands Dependencies Survey. Later known simply as “Signy,” a long-term research program has been carried out at the station by the British Antarctic Survey into the island’s freshwater lakes. Since 1996, Signy has been operated during the summer only.

**See also:** British Antarctic Survey; Signy; Whaling and Antarctic Exploration

**References and further reading:**

**Simpson, Jim**
*(1911–2002)*

Part military exercise and part scientific undertaking, the British North Greenland Expedition led by Jim Simpson was the largest expedition to leave Great Britain since the days of Scott and Shackleton. Its mission was to find out as much as possible about the ice sheet of north Greenland and, in particular, the mountainous region of Queen Louise Land.

The son and grandson of admirals, Commander James Woore Cortlandt Simpson had an ambition to restore the British Royal Navy’s proud tradition of polar exploration. The relevance of training in the techniques required for cold-warfare had been amply demonstrated during World War II. Not only had significant military action taken place in the Arctic, including East Greenland, where Simpson’s expedition was to go, but even in Europe—and especially the Soviet Union—cold-weather expertise was essential for winter operations. The U.S. Navy had attached sufficient priority to the need to organize the massive Operation Highjump immediately after the war in 1946–1947. A task force with more than 4,000 servicemen had been sent to Antarctica and considerable knowledge was acquired in operating ships, airplanes, and men in the most rigorous environment on the planet.

Simpson thus had persuasive arguments to muster in his campaign for a major British polar expedition, and in 1950 he received permission to visit North Greenland as the guest of Count Eigil Knuth’s Danish Peary Land Expedition. While flying north, he saw mountains far inland, which he was sure were not shown on any British map. Asking what they were, he was told that this was Queen Louise Land and that it was still largely unexplored. Simpson now knew where he would lead his expedition. During his visit, he made a 100-mile solo trek through the mountains to the ice sheet and back, gaining useful experience in using flying boats for logistical support. The following summer, he returned to make a three-month reconnaissance of Queen Louise Land, accompanied by Captain Mike Banks of the Royal Marines and Lieutenants Dick Brooke and Angus Erskine. Simpson was particularly interested in whether a lake in the northern part of the region could be relied upon for open water from which flying boats might operate. Queen Louise Land was cut off by an encircling stream of heavily crevassed ice 20–30 miles wide, a formida-
ble obstacle that could be largely circumvented if an air facility might be established on the lake. Fortunately, this looked promising, and a nearby glacier provided access to the ice sheet. Simpson made his decision: the British expedition would be based at Britannia Lake, and Britannia Glacier would provide its route onto the Inland Ice.

Queen Louise Land, a region where nunataks and mountains appear above the Inland Ice of northeast Greenland, extends some 100 miles from north to south and 40 miles across between 75°45' and 77°30'N. Although no comprehensive survey had as yet been undertaken, slogging parties had approached its margins during the expeditions of Ludvig Mylius-Erichsen (1906–1908) and Ejnar Mikkelsen (1909–1912); Johan Peter Koch had wintered nearby and then passed through the region on his crossing of the ice sheet in 1912–1913.

The British North Greenland Expedition, 1952–1954

Simpson submitted plans for his proposed expedition to the three service ministries. Impressed by his detailed preparation, the army and navy agreed to provide men and stores, with the Royal Air Force (RAF) offering transport to Britannia Lake from Young Sound (74°30'N). Since Weasels were too heavy to be taken by plane, it was hoped that they could be landed farther north in Dove Bay, from where they would drive across the ice stream to Queen Louise Land.

In addition to giving the navy experience in operating on the ice, and the RAF experience in Arctic airdrops and landings, extensive scientific studies were planned to complement those being undertaken of the ice sheet south of 74°N by Paul-Émile Victor. Thus, included in the twenty-five man expedition were nine civilian scientists, led by second-in-command Richard A. Hamilton, who had visited the Arctic twice previously, with Sandy Glen in 1935–1936 and with David Haig-Thomas in 1937–1938. Hamilton’s team included glaciologists Hal Lister and Peter F. Taylor, geologists J. Douglas Peacock and Peter Wyllie, geophysicist Dr. Colin B. B. Bull, seismologist George F. Cadd, chemist Dr. C. G. Malcolm Slessor, and physicist Dr. Harold Ellis Lewis. On Hamilton’s departure at the end of the first year, meteorologist Lieutenant Graham Rollitt would take over as second-in-command and Bull as chief of scientific staff. Among the service personnel, Erskine took charge of the dogs, Banks led one of the two Weasel teams, and Brooke would assist Captain Hans A. Jensen, the sole Danish participant, with the compilation of a topographical map of Queen Louise Land and the adjacent coast at 1:250,000 for the Danish Geodetic Institute.

On 8 July 1952, Simpson sailed from London in the 600-ton Norwegian sealer Tottan. After picking up dogs in southwest Greenland, they reached Young Sound on 29 August, where equipment and supplies were unloaded at Zackenberg before being airlifted to Britannia Lake by RAF Sunderland flying boats. Unfortunately, this was a bad ice year in Dove Bay, and Banks and the eight Weasels had to be landed instead at Cape Rink, 150 miles farther south. There they had to wait until the sea froze over before beginning their journey several weeks later. Britannia Lake proved even windier than anticipated, causing problems for the small boats and dinghies, which were all they had apart from a 10-meter lifeboat. This last was dropped by parachute, unfortunately during a sudden squall. It went end down into the lake and was badly damaged. Simpson was lucky to escape from drowning after his dinghy capsized in the abortive attempt to salvage it.

The airlift was completed by 20 August. With the base hut also nearly now complete, Simpson and three colleagues set out on the following day with dog teams to find a way up Britannia Glacier to the Inland Ice, where the field station Northice was to be established about 230 miles farther west. Located close to the center of the Inland Ice, Northice’s chief function was as a meteorological station, though it also provided a petrol dump for the Weasels engaged in the seismic and gravity surveys. Having reached close to the agreed location, Simpson radioed the U.S. air base at Thule on 14 September to begin the airlift of additional stores and equipment. This was to be undertaken by two RAF Hastings aircraft. Following the experience of Victor’s French expedition, Simpson had decided that all but breakable items should be free-dropped from aircraft flying just above the ice sheet. Inevitably, this would involve some minor losses of food and fuel, but most loads should be recoverable from the soft snow. Scientific instruments and other fragile items would be dropped by parachute. The first flight went well, but the second plane was not so lucky. Just as the pilot was completing a free drop from a height of about 10 meters, he ran into a whiteout and crashed. None of the twelve crew members were seriously injured and, for several days, they joined Simpson at Northice before being flown back to Thule. Airdrops continued until 9 October. Simpson, Hamilton, and Erskine remained nine more days to help Rollitt’s three-man wintering team with final preparations before sledging back to Britannia Lake.

Meanwhile, with the help of the Danish Sledge Patrol, Banks had managed to drive the Weasels to Danmarkshavn, where they were left through the winter at the meteorological station together with two of the mechanics. Other field parties had established depots to assist their work the coming spring.

At this latitude, the period of darkness lasted from late November to mid-February. But this was far from an idle time, as scientific studies continued through the winter and preparations were made for the long journeys soon to be undertaken. Fieldwork was resumed in early March. Among the first to depart were the two surveyors, Jensen and Brooke, who set out across the wide ice stream separating Queen Louise Land from the coast to link their triangulation with stations set up during Mylius-Erichsen’s expedition, the only previous ground survey north of 76°N. On 2 April, the two men separated when descending a mountain. Brooke, the more experienced mound-
taineeer, took a shortcut to glissade down a snow gully, leaving Jensen to follow a safer, more circuitous route. Jensen never made it back to camp. From where his body was found on the mountainside, it was clear that he had slipped while attempting to cross a short snow traverse. Erskine was seconded from other duties for the remainder of the season to help Brooke complete his work.

Getting the W easels from Danmarkshavn to Queen Louise Land proved exceptionally difficult, but eventually a way was found across the great ice stream, following the many river valleys dissecting its surface, now conveniently filled by deep snow drifts. On reaching Britannia Lake, the first task for the seismic team's four W easels was to relieve Northice, which they succeeded in doing on 18 May, but not without numerous scares on the way with crevasses. Northice was deeply buried in snow, and only its chimneys and a 10-meter tower, built to hold instruments, could be seen above the snow. Three W easels were assigned to the gravity team. Led by Banks, they began a slow westward traverse of the ice sheet along the 78th Parallel, during which Bull's gravimetric survey measured the thickness of the ice sheet.

As spring moved into summer, travel became more difficult, with the snow melting to reveal bare rock surfaces across which they could not sledge. The first RAF Sunderland arrived at Britannia Lake in early August with stores for the second year. Several of the party, including second-in-command Richard Hamilton, were unable to stay on, and five new members were flown in to replace them, together with the surveyor Keith C. Arnold to assist Brooke, following Jensen's sad loss. Supplies were also dropped at Northice.

Survey work and science continued through the second year, as the expedition members worked hard to complete their ambitious programs. During the fall, the seismic team continued using explosives as they attempted to measure the thickness of the Inland Ice. They were to be more successful farther west, where at last the necessary reflections were obtained. The W easels by now had taken a considerable beating, and Simpson was concerned to keep as many of them in the field as possible. It was unsafe to operate with any less than three in a team, because if one fell into a crevasse, most likely two would be needed to extricate it. By winter, they had just five W easels, with another W asel lost when its engine

A Weasle drawing a sledge load of gear (Scott Polar Research Institute)
explored the following spring. One way or another the mechanics kept the remaining four machines going until the seismic and gravity surveys were completed and Northice relieved. On 6 August, the final evacuation began, as they were flown out to Young Sound and, from there, to Iceland.

In almost every respect, the expedition had proved an outstanding success. The loss of an airplane was regrettable, and that of Jensen tragic, but Simpson’s scientists returned with sufficient work to keep them fully occupied for another two years. Much too had been learned about the use of aircraft and motor vehicles in conditions of extreme cold, lessons that were almost immediately put into effect by Vivian Fuchs during his epic crossing of Antarctica in 1955–1958. Simpson himself was to undertake no further expeditions, but he did continue to involve himself in polar affairs, encouraging others in their plans to explore the Arctic, especially Greenland.

See also: Fuchs, Vivian; Glen, Sandy; Greenland, Inland Ice; King Frederik VIII Land; Knuth, Eigil (1947–1950); Mikkelsen, Ejnar (1909–1912); Mylius-Eriksen, Ejnar (1909–1912); Operation Highjump; Victor, Paul-Émile (1948–1953)

References and further reading:

Siple, Paul
(1908–1968)

Appointed to command the first scientific party to winter at the South Pole, the American scientist and explorer Paul Siple first visited Antarctica when he was selected from 826,000 Boy Scouts to join an expedition led by Richard Byrd. Soon held in the highest regard by Byrd, Siple was to take a leading role in all subsequent Antarctic expeditions in which Byrd was involved, including command of West Base during the U.S. Antarctic Service Expedition (1939–1941).

Paul Allman Siple was only nineteen when Byrd’s expedition set out in 1928. As taxidermist and dog driver, he was to spend much of his time skinning penguins and training dogs for others to take out on sledging journeys. Byrd, however, found him exceedingly conscientious, always carrying out thoroughly any task assigned to him. His one failure was in being unable to bring back any live emperor penguins for American zoos, none surviving the long voyage home.

Before the departure of Byrd’s second expedition in 1933, Siple worked as his personal aide for six months, learning much about the organization of expeditions, a field in which he was later to develop great expertise. Now an experienced Antarctic hand, Siple was appointed leader and navigator of the four-man Marie Byrd Land party, sledging with dog teams to the Ford Ranges, where he conducted useful biological and geological work. This time, Siple succeeded in bringing back alive ten emperor penguins. These were the first ever to reach the United States, though unfortunately all died soon afterward from mycosis.

West Base, Little America III, 1940–1941

The background to the U.S. Antarctic Service Expedition is given in the entry for Richard Byrd. In the years preceding 1939, when Byrd appointed him to take charge of all logistical aspects for what was to be the largest Antarctic expedition to date, Siple had established a reputation as an expert on polar clothing and equipment with his doctoral thesis Adaptation of the explorer to the climate of Antarctica. In addition to overseeing logistics, he was to command West Base, one of two major stations to be established for possibly permanent future occupation.

On 14 January 1940, USNS North Star and USS Bear entered the Bay of Whales on the Ross Ice Shelf. This was by no means Byrd’s preferred site for West Base but was adopted when no suitable site could be found farther east. Given the expedition’s covert territorial agenda (see Byrd, Richard), a location would have been preferable beyond the limits of the British-claimed Ross Dependency, which extended to 150°W. This would also have served to shorten the long flights required to explore the 1,700 miles of unsurveyed coast between the Ross Sea and the Antarctic Peninsula, the expedition’s primary objective. In the event, however, West Base had to be constructed just 3 miles northeast of Byrd’s old station at Little America.

On 24 January, North Star sailed for Chile; Bear finally departed on 1 February after first sailing east to discover new land in the Pacific Sector coast (see Byrd, Richard). Siple was left in command of thirty-three men, equipped with seventy dogs, two aircraft, a light U.S. Army tank, and a T-20 International Harvester tractor. By far the most impressive piece of equipment, however, was the specially constructed Snow Cruiser. Designed by Dr. Thomas C. Pouler, second-in-command of Byrd’s second expedition, on the basis of experience with tractors and snowmobiles during this expedition, the Snow Cruiser was intended as a self-supporting unit, capable of providing living accommodation for four on journeys of up to 5,000 miles and of one year’s duration. The vehicle was 16.8 meters long, 6.1 meters wide, and 4.9 meters high. Able to operate in very low temperatures, it could cross crevasses up to 5 meters wide with ease, and a Beechcraft Staggerwing monoplane carried on its top equipped it with an air reconnaissance capability. The wheels were 3 meters in diameter but, ingeniously, could be retracted to allow the Snow Cruiser to slide down steep slopes. It was because of difficulties in unloading this 30-ton monster that Byrd had been forced to abandon his attempts to locate West Base farther east in either Kainan or Okuma Bays. Now, its failure was to be ignominious. Promising so much, it took weeks even to move it off the bay ice and up the slope to the ice shelf and West Base. The
problem was that the huge tires and electric motors were simply inadequate to provide sufficient traction to move the cruiser through the snow, which collapsed under the enormous weight. Siple decided to cut his losses. Once at West Base, walls of snow were built around it and the Snow Cruiser was abandoned.

In contrast, Siple's Curtiss-Wright Condor biplane was tried and tested in Antarctic conditions, being similar to William Horlick, which had provided such sterling service during Byrd's second expedition. The Condor's flight crew consisted of pilot James C. McCoy, copilot and radio operator Walter R. Giles, with Orville Gray as plane captain. Siple was to participate in all major flights as navigator, as would photographer Charles C. Shirley. Theodor A. Petras piloted the much smaller Beechcraft, which became available for general operations with the failure of the Snow Cruiser.

Following the Condor's first flight on 9 February, to the Ford Ranges and Ruppert Coast for the purpose of conducting an aerial survey from which a sledging map could be constructed for the following season, the next two major flights were to the west. Although President Franklin Roosevelt's instructions were for West Base's investigations to concentrate on the region east of the Ross Ice Shelf, permission was granted to explore as far west as the 180th Meridian should time allow. Finding weather conditions unfavorable for eastern flight on 13 and 29 February, Siple therefore organized two flights to examine unresolved issues relating to the Ross Ice Shelf and the Transantarctic Mountains. Although the front of the Ross Ice Shelf had been surveyed on several occasions, and sledging journeys made across the west and east sides of the shelf to the mountains by parties from Scott and Amundsen onward, the central area of the shelf remained essentially unexplored, with the exception of a sledging party led by Charles Royds in 1903 during Robert Falcon Scott's first expedition, and a brief flight by Byrd in 1929. On the basis of a complete series of photographs of the front of the shelf from Ross Island east to Edward VII Land, Siple was now able to demonstrate that much of it was aground, with only certain areas afloat. On 29 February, the Condor flew southwest directly inland toward Beardmore Glacier, along the way giving Siple excellent views of the zone of serious crevassing between 81° and 82°S, which had caused such difficulties for Roald Amundsen and for Byrd's previous expeditions. Soon afterward high mountains could be seen, dominated by the 4,085-meter Mount Wade. A photographic circle was flown over Beardmore Glacier, capturing on film many of the peaks discovered by Ernest Shackleton in 1908, before paralleling the mountains southeast. Soon uncharted ranges were in view, cut through by the spectacularly steep-sided Shackleton Glacier. Proceeding onward to the Liv and Axel Heiberg Glaciers before turning north back across the Ross Ice Shelf, Siple succeeded during this flight in linking Shackleton's discoveries with those of Amundsen to prove the existence of one vast range—the Transantarctic Mountains.

While preparations continued for the coming sledging season, a midwinter party consisting of physicists Roy G. Fitzsimmons and Murray Wiener, together with Sergeant Felix L. Ferranto, set out on 10 July to a camp 15 miles west of West Base, accompanied by the tractor to haul their equipment and stores. In temperatures reaching ~57.28°C (~71.1°F), they remained for one week conducting auroral studies, which were coordinated simultaneously with similar observations at West Base.

A period of intense cold delayed the start of the sledging season until 18 September, when the tractor and tank set out to build up a cache of food and fuel in the Rockefeller Mountains, 105 miles east of West Base. One month later, three parties departed with dog teams. The Edsel Ford Mountains Biological Party (Jack E. Perkins, Ernest E. Lockhart, Luis P. Colombo, and Harrison H. Richardson) was to investigate areas of these mountains lying to the north of the region explored by Siple's Marie Byrd Land Party during Byrd's second expedition. The area to the south and east was to be explored by the Edsel Ford Mountains Geological Party (Lawrence A. Warner, Charles F. Passel, Harold P. Gilmour, and Loren Wells). Equipped with West Base's strongest dog teams, the Pacific Coast Survey Party (Leonard M. Berlin, Jack Bursey, and Richard S. Moulton) was to proceed still farther east in order to establish ground control as far as Mount Hal Flood on the Ruppert Coast. All three parties proceeded first along the trail to 105-mile Depot, near a seismic station established on Mount Franklin, and then continued east to Mount Grace McKinley, from where the tractor returned and the sledging parties continued to their respective destinations. The tractor team, consisting of Ferranto and Clyde Griffith, then returned for aviation fuel to build up a cache at Mount Grace McKinley, remaining nearby afterward to report on meteorological conditions and assist the other parties as required. A fourth sledging party—the Rockefeller Mountains Geological Party—set out on 15 November. Consisting of Dr. F. Alton Wade and Dr. Russell G. Frazier, this unit was organized after the failure of the Snow Cruiser, which was to have been commanded by Wade. With the exception of the biological party, which reached West Base on 25 December, all the other sledging units arrived in a single convoy from 105-mile Depot on 7 January 1941, with much useful work being accomplished.

Using caches of aviation fuel established at 105-mile Depot, Mount Grace McKinley, and Mount Rea, five major flights eastward were made between 13 November and 18 December. With ground control provided by the sledging parties, the aim was to map the coast and inland features to 123°W, though one flight reached as far east as 128°30’W over the easternmost outliers of the Flood Range. When the results of these flights were combined with those from the three main western flights, in all 2,600 oblique photographs were obtained, providing unbroken coverage from 167°E east to 123°30’W, along the coast and inland some 200 miles, an area comparable in size to California.
The outbreak of World War II prevented President Roosevelt from persuading Congress to vote for an extension of funds to the U.S. Antarctic Service. When Bear and North Star returned to the Bay of Whales in January 1941, their aim, therefore, was to evacuate the station rather than relieve it with a consignment of new men. With all West Base personnel on board, the two ships sailed north on 1 February through the pack ice surrounding the Ross Sea and then eastward toward the Antarctic Peninsula, where East Base also was to be evacuated.

At the conclusion of his work at West Base, Siple could report that much of southern Marie Byrd Land—unknown before 1929—could now be considered better known than any other Antarctic region, excepting South Victoria Land and the Antarctic Peninsula.

Siple’s Later Involvement in Antarctic Exploration

During World War II, Siple worked for the U.S. government, chiefly in the Office of the Quartermaster General on the design and testing of clothing suitable for various parts of the world, particularly those experiencing seasons of intense cold. In 1939, he had invented the wind chill index, derived by multiplying subfreezing temperatures and wind velocity. On the U.S. Antarctic Service Expedition and during the war, Siple further refined his ideas, developing scales measuring “relative comfort,” which took into account the effect of different types and combinations of clothing. This work resulted in the redefinition of wind chill as the rate at which heat is removed per hour per square meter of surface exposed to the atmosphere. With further refinements by Siple and later scientists, this scale remains in use more than sixty years later.

With the war over, Siple was to participate in three more expeditions to Antarctica. As senior representative of the U.S. Army during Operation Highjump (1946–1947), he was assigned with Admiral Byrd to Central Group and based at Little America IV. On Operation Deep Freeze I (1955–1956), he served as director of scientific projects and as Byrd’s deputy. In the following season, he was appointed to lead a team of nine civilian scientists who were first to winter at the South Pole in the newly constructed Amundsen-Scott Station.

With his own unrivaled expertise in the organization of expeditions, Siple must often have wondered at the transformation in Antarctic logistics that he observed during his long polar career: a dog trainer on his first expedition, he had witnessed firsthand the systematic use of airplanes in Antarctica, both independently in air reconnaissance and as support to land parties; the failure of Poulter’s overambitious monster, the Snow Cruiser; and after World War II, the application of the full panoply of technology in an attempt to subdue the continent in Operations Highjump and Deep Freeze. The fact that he remained a master of logistics throughout his career says much for his adaptability and open-mindedness. No one made a greater contribution to laying a secure foundation for the continuing American presence in Antarctica through the U.S. Antarctic Program.

Sledges and Sleds

Sledges, and their close relatives sleds, have shown considerable evolution since they were first developed more than 16,000 years ago. They remain as essential today as ever for travel over snow and ice.

Sledges are the oldest vehicles known to man; their origins are unknown. Early primitive types found in Scandinavia, as well as in southern parts of Russia and Siberia, were man-hauled and used only for cargo; they included hollowed-out logs, skins, and Y-shaped tree branches. During warmer spells in the last Ice Age, glaciers melted, and during the Pleistocene and Paleolithic periods man moved north, exploring down the great Siberian rivers. These people were illiterate; archaeological evidence is scarce, but they did leave cave paintings in the Lake Baykal area. The sledge remains that have been found show advanced construction with a bed built up above the runners. They were used over a wide area, being well-established by 3,000 B.C. in the lower Ob’, on Wrangel Island, and in Greenland. Carbon-dated remains suggest even earlier use in the New Siberian Islands around 6,000–7,000 B.C., along the Amur River around 10,000 B.C., and in Kamchatka around 12,000–14,000 B.C.

By historic times, two distinct types had evolved: the sledge, where the bed rested directly on the edge runner; and the sled, which probably developed from the sledge, where the bed was raised above the ski-runner. The latter was used on snow, the former on snow-covered ice. A close relationship appears to have existed between sledges and primitive boats, possibly a solution to crossing bogs; a hollowed-out log was used for both purposes and eventually developed into the reindeer-drawn boat-sled with a single central runner used in Scandinavia. It is not known when dogs were first used as draught animals. The oldest archaeological evidence for using dogs is in Siberia, and dogsledging likely occurred along the Amur River during the Neolithic period. Other draught animals, including reindeer, came later.
Constructive design was dependent on terrain, load, draught animals available, and the materials at hand, which included wood, bone, whale jawbone, baleen, and antlers. Flexible joints made with a cut notch and lashed with sinew or skin proved to be the strongest construction. Runners were shod for a faster and smoother ride but were not used over rough surfaces—bone, antler, baleen, or mud and ice were applied to give a smoother surface. Some sleds had a brush bow in front; others had one at both ends (Amur) and a vertical one as well (Kamchatka). If the load was of small pieces such as fish, a net or rails surrounded the bed, from which the modern basket sled developed. In the late seventeenth and early eighteenth centuries, the Russians invented a larger sled capable of carrying passengers as well as cargo.

The draught aspect started with a single trace or rope wound around a man’s shoulder, harnessing that was adapted to both reindeer and dogs. Different Arctic peoples developed various methods, and the Russians introduced elements of the horse harness. An arrangement of straps crossing the dog’s chest invented by Inuit peoples proved the most efficient, and a variant on this design is still used today. Hitching also varied, from taking a length of rope, tying it around each dog’s neck in turn, and then to the sled (Amur); to one length of rope with the dogs harnessed to it in pairs (Russian); or each dog having a single trace from its harness to the sledge (Inuit fan hitch). The Russian method is best when traveling on narrow trails or in forested areas, whereas the fan hitch and its variants are more appropriate for travel over sea ice or crevassed areas. The various elements are joined together with a series of rope loops, toggles, and knots. Other equipment used in different areas include the dog whip, a braking stick or ropes, and a directional stick. During the eighteenth century, the Russians took their methods to Alaska, where Inuit methods continued to be used along northern sea coasts across Alaska and Canada to Greenland. The Greenland sledge was short, with handle bars at the rear, whereas the Inuit komatik was a longer sledge. Both were typically made from driftwood and lashed with bearded seal skin.

These were the first sledges European Arctic explorers came across, but the Europeans were slow to adopt local methods and often preferred man-hauling. They experimented with a variety of sledge types, such as the toboggan as used by North American Indians, a device that dated to about the sixteenth century and was good in deep snow, the Greenland...
sledge, and boat-sleds, nearly all of which had metal-shod runners. Attempts at using dogs were not successful initially due to lack of knowledge in handling them. Edward Parry, George Lyon, James Clark Ross, and Elisha Kent Kane, among others, tried dogs, but the tendency was to revert to man-hauling when no Inuit were available to help them. Parry also tried reindeer but found that they could not cope with ice. A significant exception was Roald Amundsen, who wintered with an Inuit community on King William Island, spending his time learning all he could about dogsledging from the Inuit. This proved much to his advantage when he visited Antarctica.

Fridtjof Nansen derived his “Nansen sled” design from the Inuit komatik, of which he made a careful study. Considering the Inuit sledges as too heavy, Nansen wanted a strong but lighter design. Looking at the problem scientifically, he produced a sled with broad-based ski runners to prevent it from bogging down in deep snow, as the Greenland sledge was inclined to do. The Nansen rode high in loose snow and moved easily over all kinds of surfaces. The main body was made from ash and the runners of elm shod with steel. It was 2.9 meters long and about a half-meter wide; all the joints were lashed. Some, including Erich von Drygalski, considered it too light for ice conditions, but the Nansen design became the model for all future sleds in the Antarctic.

Early Antarctic explorers relied heavily on the experiences and advice of Nansen, and later Amundsen, for sled design and dog handling, but they could not know the conditions they would meet. Strong winds made it much colder than the Arctic, and ice rather than snow was the rule underfoot. Neither would meet. Strong winds made it much colder than the Arctic, and advice of Nansen, and later Amundsen, for sled design and dog handling, but they could not know the conditions they would meet. Strong winds made it much colder than the Arctic, and ice rather than snow was the rule underfoot. Neither did they appreciate that different sled-dog breeds worked with rough ice. Ernest Shackleton on his first expedition took Inuit sledges as too heavy, Nansen wanted a strong but lighter design. Looking at the problem scientifically, he produced a sled with broad-based ski runners to prevent it from bogging down in deep snow, as the Greenland sledge was inclined to do. The Nansen rode high in loose snow and moved easily over all kinds of surfaces. The main body was made from ash and the runners of elm shod with steel. It was 2.9 meters long and about a half-meter wide; all the joints were lashed. Some, including Erich von Drygalski, considered it too light for ice conditions, but the Nansen design became the model for all future sleds in the Antarctic.

Carsten Borchgrevink took dogs from northwest Siberia, Samoyed types that were accustomed to pulling light sleds on snow and living in their owners’ tents. Their feet could not grip the ice, with often fatal results, and they were not strong enough to pull a loaded heavy sled. Drygalski took Kamchatka dogs but found their native sled too heavy and his Nansen sled not strong enough, so he lost much time making repairs. But his dog handling was better, as was his feeding, so the dogs performed well. Robert Falcon Scott on his first expedition appreciated his lack of experience in dog handling and so experimented by working dogs and men together. This proved unsatisfactory chiefly because of their differing speeds of operation. Scott took Siberian dogs bred in New Zealand and twenty sleds made in Norway, but they performed poorly in the rough conditions; the German silver runner shoes were found to be too soft, and the timber detachable guard runners were an unnecessary complication. Scott concluded that plain wooden runners were best for most conditions, with detachable steel ones for glaciers and rough ice. Ernest Shackleton on his first expedition took Nansen sleds, based on his experience with Scott. He took spare iron runners and used ponies, taking only nine dogs with him. Otto Nordenskjöld had experienced dogsledging in Greenland, so took Greenland sledges and dogs of mixed and Greenland breeding. He found this satisfactory, but along the peninsula he had a less severe climate to contend with. Nobu Shirase’s little-known Japanese expedition brought Ainu dog handlers, who were accustomed to working individually with their dogs, Akitas, which were used to assist their owners in pulling the fish catch home on light Amur sleds.

Amundsen planned his expedition in meticulous detail based on his experiences of dogsledging in North America. He took Nansen sleds made from Norwegian ash with hickory runners shod in steel and carried spare runners under the sleds. On his polar journey he took only the best and most experienced of his ninety-seven Eskimo dogs. By contrast, Scott took just thirty-three dogs total from southeastern Siberia and used the lightweight Amur-type sleds, low to the ground with a brush bow at each end, which were not satisfactory. For the next season, he had Nansen sleds sent out from Norway.

The Nansen sled became the accepted norm among Antarctic explorers. The basic design was perfected by John Rymill during the British Graham Land Expedition (1934–1937), when Edward Bingham set the standards for dog hauling. The age-old problems of obtaining sufficient dogs, and the time factor required to learn how to handle them, were solved by the British, who established permanent bases for overwintering, where dogs were bred and knowledge of handling them was passed on from one generation of scientists to the next. Today, Nansen sleds are still used in Antarctica, where resin runners are used and Skidoos provide the haulage. Other refinements are tried from time to time. For example, in 1993 Sir Ranulph Fiennes and Dr. Mike Stroud experimented with fiberglass sleds.

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See also: Amundsen, Roald; Borchgrevink, Carsten; British Antarctic Survey; Dogs; Drygalski, Fridtjof; Erich von; Fiennes, Ranulph; Hayes, Isaac; Indigenous Peoples; Inuit Contribution to Polar Exploration; Kane, Elisha Kent; Lyon, George; McClintock, Leopold; Man-hauling; Nansen, Fridtjof; Nordenskjöld, Otto; Parry, Edward (1821–1823; 1827); Ross, James Clark; Rymill, John (1934–1937); Scott, Robert Falcon; Shackleton, Ernest (1907–1909); Shirase, Nobu

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Smith, Benjamin Leigh (1828–1913)
The British yachtsman Benjamin Leigh Smith did not discover the High Arctic archipelago of Franz Josef Land, but he did something almost equally significant: he found a practical means of reaching it. In so doing, he prepared the way for other explorers who were soon to consider this the most promising location of all from which to mount an expedition to the North Pole.

Life as an Arctic explorer began at forty-three for the wealthy English yachtsman Benjamin Leigh Smith. Possibly inspired by the widely reported voyages of James Lamont (1828–1913), who between 1858 and 1871 visited Svalbard, Novaya Zemlya, and East Greenland primarily to hunt but in the process made some minor discoveries, Smith investigated the northern coasts of Svalbard in 1871 in his 85-ton ketch Samson. In an exceptionally favorable year, he reached 81°24′N, one of the highest latitudes ever achieved in this region, and was able to prove that North East Land extended farther east than previously thought. The following year, he made a rare landing on the volcanic island of Jan Mayen, where he conducted a brief survey and discovered some new craters. The ice this year was much thicker than in 1871, and Samson’s bow was damaged in an attempt to force its way through north of Spitsbergen. There were limitations to what could be achieved in a small ketch, so in 1873 Smith chartered Lamont’s screw-steamer Diana to accompany Samson on another voyage to Svalbard, where he hoped to explore King Charles Land, an all but inaccessible group of islands south of North East Land. Again it was a bad ice year, and after delivering much needed supplies to Adolf Erik Nordenskiöld’s North Pole expedition, Diana was briefly beset before Smith turned back.

The Route to Franz Josef Land Discovered, 1880
For his next expedition, Smith commissioned construction of the 360-ton steam-powered barque Eira, with a 50-horsepower engine specially converted to run on seal blubber as well as coal. Smith was among those who believed that in a sufficiently favorable season and in the right vessel, it would be possible to reach very high latitudes north of Svalbard, possibly even to the Pole itself. On 22 May 1880, Eira sailed from the Scottish port of Peterhead, Smith keeping his options open. He might explore Jan Mayen, East Greenland, Svalbard, or indeed—if really lucky—make that attempt to reach the Pole. Another possibility was Franz Josef Land, an archipelago east of Svalbard, discovered by the Austro-Hungarian expedition of Julius Payer and Karl Weyprecht in 1873 and unvisited since. Where he would go would depend on conditions, and when they proved unfavorable for his first four objectives, he settled on the fifth.

Whereas Payer and Weyprecht had reached Franz Josef Land from the east after becoming beset off Novaya Zemlya and drifting north and west for eleven months, Smith wished to investigate reports from sealers and others familiar with the northern Barents Sea that this new land might be reached from the west in late summer or early fall. The likely correctness of this opinion became apparent when Eira did not meet the pack until 77°10′N at 40°E on 6 August. Forcing a path through the ice, land was in view eight days later; on the same day, W.J.A. Grant, naturalist and photographer, was able to scramble ashore on a small island accompanied by a seaman. At 54°E, Smith was some way west of the land charted by Payer, and all that he could see was his to discover. Through waters studded with great tabular icebergs, more characteristic of the Antarctic than the Arctic, Eira was carefully navigated west past Hooker and Ethridge Islands to Northbrook Island, where early on the morning of 18 August Smith and Grant made the first landing at Cape Flora, so named for its surprising profusion of plant life. A few hours later, safe anchorage was found in Eira Harbor between Bell and Mabel Islands some 12 miles farther west. During the next few days spent nearby, Grant collected plants and rocks while two polar bear cubs were captured for London’s Zoological Gardens; an attempt to seize a young walrus failed after the mother holed its attackers’ boat. Two attempts to steam farther west along the southern shore of “Alexandra Land” were brought up short by heavy ice. At Eira’s farthest west on 24 August at 44°52′E off Cape Neale, land could be seen stretching into the far distance to the northwest, which Smith conjectured might just possibly extend to the Pole. Wishing to unite his discoveries in the west of the archipelago with those of Payer and Weyprecht, Smith now determined to head east toward Wilczek Island, which was reached on 30 August. Along the way, ice could be seen surrounding islands formerly clear, and with the season for exploration evidently drawing to a close, Smith made up his mind to return to Svalbard while he still could. In all, he had explored 110 miles of new coastline.

Although too reserved himself to report his discoveries to the Royal Geographical Society, a task that fell instead to the Society’s secretary, Sir Clements Markham, Smith’s achievements attracted considerable interest and were recognized by the award of the Patron’s Gold Medal. Indeed, Markham considered this “the most important summer cruise that has ever been made in the Arctic regions” (1881, 139). Others at the meeting were particularly excited by the prospect that at last a feasible route to the North Pole might have been found. This possibility received further encouragement from Smith’s mistaken belief, based on the vast size of the icebergs seen, that Franz Josef Land was much larger than it actually was, possibly even continental in scale and stretching far toward, if not across, the Pole.

Shipwrecked at Cape Flora, 1881–1882
On 14 June 1881, Eira again left Peterhead, provisioned for fourteen months and with twenty-five men on board. Smith’s objectives were to extend his survey of Franz Josef Land and
to assist in the search for the lost expedition of George De Long, who two years earlier had entered the Arctic Ocean via Bering Strait in an attempt to reach the Pole. Nothing further had been heard of him, and it was possible that he had reached Franz Josef Land.

He sought to reach the archipelago much earlier in the summer than in 1880 and not surprisingly encountered the pack considerably farther south, at 72°45’N, on 22 June, then following it east to Novaya Zemlya. Finding no channel leading north, Smith next sought unsuccessfully to enter the Kara Sea through Kara Gate before turning back to discover an opening on 13 July, through which Eira forced its way to come within sight of Franz Josef Land ten days later. It was some way west of its approach on the previous voyage, affording Smith a better view of the southern coast of Alexandra Land. Fog and closely packed ice meant that he was unable to sail farther north. Instead, a landing was made at Gray Bay on George Land, where the expedition remained to hunt walrus and collect natural history specimens until 2 August, when the ice withdrew sufficiently to allow Eira to make for Bell Island and Eira Harbor. There, a storehouse—Eira Lodge—was erected before Smith set out east on 15 August to search for De Long.

Eira was not past Northbrook Island before its course was blocked by ice. Expecting that this would soon clear, Smith anchored off Cape Flora, where he landed to add to his collections of plants and fossils. On 21 August, ice brought in by the tide pinned Eira against shore ice. A thick splinter pierced its hull, and it founded as water poured in too rapidly for the pumps to clear. Before it sank, all its crew and a good quantity of provisions were brought ashore. With Bell Island and newly built Eira Lodge unreachable, 12 miles away beyond an ice-choked channel, Smith had no option but to winter at Cape Flora.

Living initially in a tent made from sailcloth and spars, they fashioned a rough hut with stone and turf walls and sails for the roof. It was divided down the middle to separate officers and men. It was cold and drafty, even more so after 8 January 1882, when they ran out of coal. Fortunately, they were not short of food, having recovered 680 kilograms of flour, 180 kilograms of bread, and extensive supplies of salt and preserved meat before Eira went down. These supplies were supplemented by polar bears and walrus, which were shot in significant numbers thanks largely to Bob, a black retriever, with an unerring knack for locating the animals. Plentiful fresh meat meant that there was no outbreak of scurvy. Despite the inadequacies of the hut, with access to quantities of alcohol, as well as books, cards, and musical instruments for amusement, winter was hard but not unbearable. A full meteorological register was maintained throughout, though Smith was to regret that without sledges he was unable to explore.

On 21 June 1881, they set out in four boats for Novaya Zemlya, Smith having first thought to leave behind six bottles of champagne for future visitors. Northwesterly winds had opened up the pack, and initially good progress was made under sail, the pack not being reached until they were 80 miles out from Cape Flora. Soon after they entered it, the wind changed to the north, closing up the ice around them and forcing them to haul the boats onto a floe to escape being nipped. At least they had the satisfaction of knowing that this wind was blowing them south and that no doubt soon they would be released into open water. Most of July was spent in the pack, through which they slowly worked their way whenever the opportunity arose until, on 1 August, the edge of the ice was reached and they were in open sea. The next day, land was seen for the first time in forty-three days, and they were able to haul their boats ashore near the entrance to Matochkin Strait, Novaya Zemlya. They did not have to wait long for deliverance. The Dutch expedition ship Willem Barents was moored in the strait along with two British vessels, Hope and Kara, which had been sent to search for them. A lookout from the Willem Barents spotted them scrambling ashore, and soon they were on board Hope and heading back to Great Britain, where they arrived on 20 August.

Smith was now fifty-four; this was to be his last Arctic expedition. In discovering a navigable route to Franz Josef Land, he had not simply opened up this archipelago to exploration but had provided the means whereby others might make use of his discoveries to push on toward the Pole. For the next two decades, Franz Josef Land was judged by many to offer the most promising location from which the Pole might be reached. The first to set out with this intention was Frederick Jackson.

See also: De Long, George; Franz Josef Land; George Land; Jackson, Frederick (1894–1897); Jan Mayen; King Charles Land; Markham, Clements; Nordenskiöld, Adolf Erik (1872–1873); Northbrook Island; North East Land; Payer, Julius von; Svalbard

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Smith Island (South Shetland Islands)
Located at 63°00’S, 62°30’W, this westernmost member of the South Shetland Islands is 18 miles long and 5 miles wide, rising to 2,105 meters at Mount Foster, with Mount Pisgah at 1,860 meters also a prominent feature. It is separated from Snow Island to the northeast by Boyd Strait. In October 1819, it was discovered and roughly charted from the north by William Smith during the third of four voyages, during which he first discovered and finally proved to initially skeptical...
British naval officers at Valparaiso, Chile, that he had made an important discovery far to the south of any land previously known. Most appropriately, this island takes its name from him. The southern coast was charted in February 1821 by Fabian von Bellinghausen, who called it “Borodino Island” for the Russian victory over the French in 1812. The first recorded landing was made in 1820 at Cape James by the British sealing captain James Weddell, the second by John Davis on 1 February 1821.

Smith Island’s dauntingly impressive mountains have attracted several mountaineering expeditions. The first attempt ended in disaster when the converted tug En Avant was lost at sea, probably wrecked on the Sea Lion Islands, with the loss of all expedition members, including the leader, Simon Richardson, and the veteran mountaineer and sailor Harold W. Tilman. Following an unsuccessful attempt on Mount Foster by a British Joint Services expedition in 1990–1991, a second Joint Services expedition led by John Kimbrey reached Smith Island on 10 December 1994, remaining until 26 January 1995. The expedition’s two major aims were to carry out a thorough geological survey and to make a first ascent of Mount Foster. In the event, unfavorable weather prevented the latter, though a first ascent was achieved for Mount Kathryn-Jane (1,720 meters). Mount Foster was finally climbed on 29 January 1996 by B. Dowrick, G. Landreth, D. Mannix, and R. Thompson, who had reached Smith Island in the yacht Northanger.

See also: Bellinghausen, Fabian von; Davis, John (fl. 1820); Sealing and Antarctic Exploration; Smith, William; South Shetland Islands; Weddell, James

References and further reading:

Smith Sound
See Nares Strait

Smith, William
(1790–1847)
Predating the first sighting of the Antarctic continent itself by almost one year, British seaman William Smith’s discovery of the South Shetland Islands precipitated a series of events leading not to the first sighting itself but to the second sighting just three days later. It also led to a series of exploration and sealing voyages. As a result, the South Shetlands, as well as the northern part of the Antarctic Peninsula and the nearby Palmer Archipelago and South Orkney Islands, were discovered and roughly charted. Thus, Smith’s discovery of the South Shetlands—the first truly Antarctic land to be discovered—must be considered among the most important events in the history of Antarctic exploration.

The Discovery of the South Shetland Islands, 1819
William Smith, from the same part of the world and with a similar background as James Cook, was master and part-owner of the 25-meter brig Williams of Blyth, northeast England. As the South American countries increasingly asserted their independence from Spain, opportunities were created for vessels of other nationalities to participate in the lucrative coastal trade between South American ports. While engaged in this trade, carrying a valuable cargo including hats, musical instruments, books, and cutlery from Montevideo to Valparaiso, Smith decided to sail far south of Cape Horn to avoid contrary winds. Because Smith had been a whaler in the Greenland Fishery, ice did not worry him as long as a careful watch was maintained. On 19 February 1819, his masthead lookout reported land far to the south of any previously known at 62°17’S, 60°12’W. Staying just long enough to confirm that land had indeed been sighted, Smith continued on his voyage to Valparaiso, Chile, where he reported his discovery on 11 March to Captain William H. Shirreff, the senior naval officer for the west coast of South America. Unconvinced, and particularly critical of Smith’s failure to take soundings that would have provided indisputable proof of land, Shirreff suggested that he might have been misled by an iceberg. Smith retorted indignantly that he certainly knew land from an iceberg and determined to prove his discovery beyond doubt on his return voyage. On 16 May 1820, however, with winter nearing and the conditions of his insurance policy ruling out cover for “undue deviation,” he was forced to turn back by ice at 62°12’S. On reaching Montevideo, Smith found that rumors of his discovery were already widely circulated, but he refused offers of money to take American sealers there and instead sailed south on a third voyage, again intending to reach a high southern latitude while taking his cargo to Chile. On 14 October, the South Shetland Islands were reached once more, and the next two days were spent sailing east-northeast along the coast as far as North Foreland, the northeastern tip of the island chain, where he landed and took possession for King George III of Great Britain. These discoveries were again reported to Shirreff, who now wasted no time chartering the Williams with Smith as master and under the command of the naval officer Edward Bransfield, to return to the South Shetland Islands, where a full survey was to be carried out. In particular, Shirreff instructed Bransfield to ascertain “whether it be merely an island or part of a Continent.”

The Discovery of the Antarctic Peninsula, 1819–1820
In brief, the South Shetland Islands were reached on 16 January 1820 and rough charting carried out from Start Point, Livingston Island, east-northeast to North Foreland. (A full account of Smith’s fourth voyage will be found under the entry Bransfield, Edward.) On 22 January, a landing was made at King George Bay on the southern coast of what Bransfield now named King George Island. From there, Williams coasted west-southwest in foggy conditions as far as Deception Island and then south to where Tower Island and the northern coast
of the Trinity Peninsula were sighted on 30 January. This was the second sighting of the Antarctic continent, occurring only three days after Bellingshausen's first sighting. Smith and Bransfield continued northward past the largely fogbound peninsula and then along the edge of the pack ice until they discovered Elephant and Clarence Islands, landing on the latter on 4 February. Smith himself landed on the Seal Islands, a small group of islands off Elephant Island, where he killed ninety fur seals—a portent of things to come. Further excursions south and east failed to discover more land, and *Williams* turned toward Valparaiso, reaching it on 15 April.

Smith made one further voyage to the South Shetlands, but for the purpose of sealing rather than exploration. He made a highly successful voyage in 1820–1821, obtaining 30,000 fur seal skins. Unfortunately, rather than making his fortune, he returned to discover that his business partners were bankrupt. *Williams* was seized along with its cargo, and Smith was also declared bankrupt. Like many others contributing to the exploration of Antarctica at this date, Smith's later years were hard. For several years, he worked as a pilot between London and Harwich. In 1827, through the influence of his friend James Weddell, he was made master of a whaling ship engaged in the Davis Straits Fishery. In this trade, he experienced mixed success until 1830, when he returned with a "clean ship" (i.e., having taken no whales at all) and was not appointed again. Clearly now down on his luck and aged before his time, Smith was applying unsuccessfully for accommodation in an almshouse by 1838. In 1840, he submitted two petitions to the Admiralty seeking financial recognition for his discovery, from which some of our knowledge of his expeditions derives. By 1847 he was dead.

See also: Antarctic Peninsula; Bransfield, Edward; Cook, James; Sealing and Antarctic Exploration; South Shetland Islands; Weddell, James

References and further reading:
Miers, J. 1950. *Account of the discovery of New South Shetland, with observations on its importance in a geographical, commercial, and political point of view*. *Polar Record*, 5(40), 546–575.

**Snow Hill Island (Antarctic Peninsula)**

Located at 64°28'S, 57°12'W, this island to the east of the Antarctic Peninsula was first sighted by James Clark Ross on 6 January 1843 and roughly mapped as forming, with James Ross Island, part of the Trinity Peninsula rather than a separate island. It was named by Ross "Snow Hill" because no rock was visible through the cover of snow and ice. Otto Nordenskjöld led a six-man party that spent two winters here from 12 February 1902 to 11 November 1903. The expedition carried out a full program of meteorological and magnetic observations. The planned extensive sledging journeys were greatly hampered by poor weather and by deficiencies in the dog team, which consisted partly of Greenland huskies and partly of whatever dogs could be obtained in the Falkland Islands. In the event, Nordenskjöld sledged to the Borchgrevink Nunataks at 66°5'S and made further journeys to Seymour Island, and then west and north to discover Crown Prince Gustav Channel, separating James Ross Island from Trinity Land.

On 8 November 1903, Snow Hill was the scene of the most remarkable series of coincidental meetings in the history of polar exploration. Unknown to himself, Nordenskjöld's expedition had become separated into three wintering parties in 1903—at Snow Hill, Hope Bay, and Paulet Island—when his ship *Antarctic* was crushed in the Weddell Sea, leaving three men marooned at Hope Bay and the remaining eighteen crew members, led by Carl Anton Larsen, at Paulet Island. The Snow Hill and Hope Bay parties were reunited at Vega Island. Returning to Snow Hill, they arrived on the same day as an Argentine relief expedition (see Irízar, Julián), from whom they learned for the first time that all was not well with the *Antarctic*; that same day, Snow Hill was also reached by Larsen and five others from Paulet Island, from whom Nordenskjöld learned the fate of the remaining members of his expedition.

In 1934–1935, Lincoln Ellsworth attempted to make the first transantarctic flight from here. Continuous bad weather restricted him to a short flight along the Nordenskjöld Coast, piloted by Bernt Balchen. Two Argentine refuge huts—Betbeder and Suecia—were erected in the 1953–1954 season, with biological, geological, and other surveys carried out from there in 1958–1959.

See also: Andersson, Gunnar (1902–1903); Antarctic Peninsula; Argentina; Ellsworth, Lincoln (1934–1935); Hope Bay; Irízar, Julián; Larsen, Carl Anton (1902–1903); James Ross Island; Nordenskjöld, Otto; Paulet Island; Ross, James Clark (1839–1843); Seymour Island; Trinity Peninsula

References and further reading:

**Snow Island (South Shetland Islands)**

Located at 62°47'S, 61°23'W, this low-lying island—10 miles long and 5 miles wide—is separated from Livingston Island to the northeast by Morton Strait and from Smith Island to the southwest by Boyd Strait. First sighted by William Smith on 19 February 1819, this was one of the first of the South Shetland Islands to be discovered. It was also one of the first to be visited by sealers when *Espírito Santo* and *Hersilia* anchored at nearby Rugged Island in January 1820. The south coast was roughly charted in February 1821 by Fabian von Bellingshausen, who named the island "Little Yaroslavetz" for
the town northwest of Moscow. Its current name is descriptive, the island being completely covered by an ice cap.

See also: Bellingshausen, Fabian von; Livingston Island; Sealing and Antarctic Exploration; Sheffield, James; Smith Island; South Shetland Islands

Somerset Island (Canada)

Located at 73°15'N, 93°30'W, this island extends south from Barrow Strait to the Boothia Peninsula, from which it is separated by Bellot Strait. It lies between Prince of Wales Island and Baffin Island, being divided from the former by Peel Sound and from the latter by Prince Regent Inlet. It is 160 miles long and 22–105 miles wide, with an area of 9,570 square miles. Together with Boothia, this island marks the division between Canada's Eastern and Western Arctic.

Long visited by Inuit hunting parties, it was first seen by an exploring expedition in August 1819, being noted from a distance by Edward Parry, who named it "North Somerset" for his native county. Parry returned to Prince Regent Inlet on his third expedition. After wintering on the opposite shore, he inspected the island's east coast while waiting for the ice to clear farther south, in the process naming Elwin, Batty, and Cresswell Bays. On 1 August 1825, HMS Fury was wrecked on Fury Point, where a large cache of supplies and equipment was left behind together with three boats. Next to visit was John Ross. Like Parry, Ross was looking for channels leading west, but he unaccountably missed Bellot Channel on his way south in 1829 and again on his way back in 1832. Ross's fourth winter (1832–1833) was spent at Fury Beach in Somerset House, built out of planking and canvas stripped from the wreck of HMS Fury.

Sir James Clark Ross was based at Port Leopold, on the northeastern extremity of the island, between 11 September 1848 and 29 August 1849. In May and June 1849, he conducted the first survey of the north coast and of the west coast as far as Four River Point at 72°38'N. At the same time, another sledging party led by Frederick Robinson charted the east coast south to Cresswell Bay. On his departure, Ross left behind a house, steam launch, provisions, and stores for use by members of Sir John Franklin's expedition in case they had encountered difficulties. Partly because of this depot, but also because of its convenience as a mailbox—messages usually being left in the boiler of Ross’s steam launch—Port Leopold was visited frequently during the period of the Franklin search.
Charles Forsyth landed briefly in 1850. William Kennedy’s visit was more extended. Determined to see whether any messages had been left reporting progress in the search, Kennedy insisted on landing despite heavy ice offshore and then found himself cut off. He remained there for five weeks, between 9 September and 17 October 1852, before being rescued by his second-in-command, Joseph-René Bellot, who in the meantime had established winter quarters at Battery Bay. On 7 April 1852, Kennedy discovered Bellot Strait, proving Somerset to be an island and not part of continental America. Leopold McClintock visited Port Leopold briefly on 19 August 1858 before heading south to Bellot Strait. Unable to penetrate farther west, he spent the winter of 1858–1859 at Port Kennedy. From there, second officer Allen Young conducted the first survey of the island’s southwest coast.

Several expeditions visited Port Leopold in the first decade of the twentieth century. Captain Cooney of Windward left a cache here for Roald Amundsen in 1904. In the same year, Albert Low left a proclamation asserting Canadian sovereignty. Two years later, Joseph-Elzéar Bernier erected a shelter and depoted within it emergency provisions for three months.

An account of the Hudson’s Bay Company trading post Fort Ross (1937–1948) is given in the entry for Bellot Strait. Some Inuit families were relocated here from Arctic Bay, Baffin Island, but after Fort Ross closed, all but a few moved on to Spence Bay, Boothia. The island was circumnavigated for the first time by HMCS Labrador in 1957.

See also: Bellot Strait; Bernier, Joseph-Elzéar; Kennedy, William; Low, Albert; McClintock, Leopold; Northwest Passage; Parry, Edward (1819–1820, 1824–1825); Ross, James Clark (1848–1849); Ross, John (1829–1833)

References and further reading:

South Africa

Cape Town’s location at the tip of the Cape of Good Hope made it a mandatory stop on most extended voyages from Europe or the northeast coast of North America south to Antarctica. There, fresh food and water were taken on, ships repaired, and new seamen recruited. From the eighteenth century onward, Cape Town was visited by many of the major exploring expeditions, with some sailing directly south, whereas others continued on to Australia and New Zealand before heading south.

In 1919, possibly inspired by the frequent visits by Antarctic expeditions, Professor E. J. Goddard of the University of Stellenbosch proposed the organization of a South African national Antarctic expedition but was unfortunately forced to abandon his plans in 1921 by a downturn in the country’s economy. During the Second International Polar Year (1932–1933), the whaling ship Tafelberg conducted studies off the coasts of Queen Maud and Enderby Lands between October 1932 and March 1933. Cape Town continued to be visited by Antarctic exploring and whaling expeditions, the ships of Discovery Investigations being frequent visitors, with its scientists often spending Antarctic winters examining whales brought into South African whaling stations. A second abortive attempt to organize a South African expedition to the Antarctic mainland was proposed by Professor Lester C. King of the University of Natal. One of the leading protagonists of the theory of continental drift, King believed it likely that his proposed expedition for 1946–1948 would discover evidence in favor of this then controversial theory, now in the revised form of plate tectonics known to be substantially correct (see Wegener, Alfred). Unfortunately, sufficient funds again could not be raised.

Despite South Africa’s intimate connection with Antarctic exploration, when decisions were made in the first part of the twentieth century as to how to divide up areas of the Antarctic continent claimed by the British Empire on the basis of discovery by British expeditions, while major sectors were allocated to Australia and New Zealand, nothing was given to South Africa, apart from the Prince Edward Islands where South African sovereignty had been established in 1947–1948. However, despite not being a claimant state South Africa was invited to be one of the original twelve signatories to the Antarctic Treaty.

The first South African National Antarctic Expedition (SANAE) was organized in 1959–1960. In January 1960, a ten-man party led by Hannes la Grange took over the Norwegian International Geophysical Year base “Norway Station” on Princess Martha Coast. This station was maintained until February 1962, when replaced by a new base known simply as SANAE, built some miles to the north. Successive SANAE bases have, like Norway Station, required replacement as they became buried in the accumulating ice shelf, a problem faced by all polar stations built on ice shelves. For this reason, the most recent station—SANAE IV—has been built on the solid rock of Veslekarvet Nunatak, considerably farther inland than its predecessors. Field stations have also been operated at Borg, Grunehogna, and Sarie Marie, from where geological studies have been made of the surrounding mountains.

South African exploration and science on the Prince Edward Islands is described under that entry. These are not, however, the only sub-Antarctic islands in which South Africa has taken an interest. In particular, several attempts have been made—in 1955, 1964, and 1966—to establish a meteorological station on Bouvet Island, the most significant being the last, when several landings were made by helicopter and a refuge hut erected. South African scientists also participated in the large-scale expedition organized by the Norwegian Polar Institute between December 1996 and February 1997. In January 1990, automatic weather stations were deployed by S.A. Agulhas on Thule and Zavodovski Islands; since then regular visits to the South Sandwich Islands have been made by South African ships to service them.
South Georgia (Sub-Antarctic)

Located at 54°20'S, 36°40'W, this mountainous island 900 miles southeast of the Falkland Islands is just over 100 miles long and 26 miles across at its widest. With mountains rising to 2,934 meters at Mount Paget, 57 percent of the island’s surface is covered by glaciers. Whereas the north coast is largely ice-free with good harbors, the south coast presents a hostile lee-shore on which many vessels have foundered.

Although Amerigo Vespucci is credited by some with the first sighting of South Georgia, it is more likely that the coast he saw in April 1502 at 52°S was Patagonia. Assuming this is true, then the first documented visit to the island was made by the London-born merchant Antoine de la Roché in April 1675. De la Roché was returning from a trading voyage to Peru when his ship was blown far east of the Le Maire Strait, the navigable channel between Tierra del Fuego and Staten Island. Coming upon an island, de la Roché sat out the storm anchored in a sheltered bay surrounded by snow-capped mountains. There, near the southeastern end of the island, he remained for fourteen days in what was almost certainly Drygalski Fjord, before setting sail for Brazil and La Rochelle, France, where he arrived on 29 September. The island was next seen eighty-one years later, on 30 June 1756, by Captain Gregorio Jerez in the Spanish trading vessel Léon, like de la Roché blown off course when returning from Peru. Jerez named his discovery “Isla de San Pedro,” a name occasionally used today in Argentine publications.

Between 16 and 24 January 1775, James Cook sailed along the north coast, compiling an excellent chart as he went, and making the first landing on the island in Possession Bay on 17 January. Cook gave a characteristically unflattering description of South Georgia, writing: “The inner parts of the country were not less savage and horrible. The wild rocks raised their lofty summits, till they were lost in the clouds, and the valleys lay covered with everlasting snow. Not a tree was to be seen, nor a shrub even big enough to make a toothpick” (Beaglehole 1961, 621–622). Having dismissed his find as “not worth the discovery,” he then went on to name it “the Isle of Georgia in honour of His Majesty”.

Following Cook’s report of many fur seals, the first known sealing vessel (Lord Hawkesbury) arrived in 1786, obtaining a full cargo of seal skins. Soon British and American sealers visited in significant numbers, the peak year being 1800–1801 when Edmund Fanning (Aspasia) reported sixteen other vessels, himself obtaining 57,000 skins. Not surprisingly, few seals were to be found the following season, and by 1825 James Weddell estimated that at least 1.2 million fur seal skins had been taken from South Georgia since sealing began. Although Cook had charted the sheltered north coast, the dangerous south coast—a lee-shore exposed to persistent westerly winds and largely fronted by precipitous cliffs—was first explored by sealers, eager to find previously undiscovered beaches where fur seals hauled out to breed. The extent of sealing knowledge was well depicted in a chart drawn in 1802 by Isaac Pendleton, an impressive demonstration of just how much knowledge of the Antarctic was first acquired by sealers. The charting of this coast was further improved upon by Fabian von Bellinghausen in December 1819.

Throughout the nineteenth and early twentieth centuries, South Georgia was occasionally visited by exploratory expeditions on their way to and from Antarctica. In Undine Harbor, toward the western end of South Georgia, James Weddell found rest and recuperation in March 1823 after achieving his farthest south in the Weddell Sea. He remained there for more than a month and typically found time to record interesting observations of the wildlife and vegetation. In March 1894, Carl Anton Larsen paid his first visit to an island, which he was later to establish as the major center of the Southern Ocean whaling industry. Larsen did not himself investigate the island at this time, but not long afterward, as captain of Antarctic, he brought Gunnar Andersson to Cumberland Bay, where scientific studies were conducted and a good chart compiled of the bay between April and June 1902. It was during this visit that Grytviken received its name, “Pot Harbor,” for the sealing try-pots found on the beach. By the time of Wilhelm Filchner’s arrival in October 1911, Larsen had established Grytviken as a major whaling station. Informed by Larsen’s whalers that ice conditions farther south were still unfavorable for access to the Weddell Sea, Filchner bided his time here for nearly two months (apart from a brief reconnaissance visit to the South Sandwich Islands). Sir Ernest Shackleton also stayed longer than he intended at South Georgia when he received similar advice from the whalers in October 1914. He was, of course, to return to the island under very different circumstances in May 1916, when with Frank Worsley and Tom Crean he succeeded in making the first crossing of the island, after having been forced to land at King Haakon Bay on the south coast. Shackleton returned once more to South Georgia, when he arrived in Quest on 4 March 1922. He died the following morning and now lies buried at the whalers’ cemetery at Grytviken.

Prior to Shackleton’s epic crossing of the Allardyce Range, it is unlikely that anyone had explored more than a mile from the coast. Thanks to the sealers, the latter had been well known from the early nineteenth century onward, but the for-
midable interior remained unexplored. Between 18 September 1928 and 13 May 1929, Dr. Ludwig Kohl-Larsen led a small expedition consisting of his wife, Margit—daughter of Carl Anton Larsen—and Albert Benitz in a study of recent glaciation on the island. During their investigations, they surveyed considerable areas of the interior not previously visited, most notably the Kohl-Larsen Plateau. Systematic mapping of the interior and coast, however, was not undertaken before the 1950s, when Duncan Carse organized a comprehensive topographic survey during four expeditions between 1951 and 1957.

The first station was established as early as August 1882 by the German International Polar Year expedition led by Karl Schrader. Sited at Royal Bay and operating until September 1883, this was the only Antarctic station during the First International Polar Year, all the others being in the Arctic with the exception of a French expedition to Cape Horn. As part of the Discovery Investigations, the Marine Biological Laboratory was opened at King Edward Point in April 1925 for the purpose of examining all whales processed at Grytviken. This laboratory was staffed on a seasonal basis until 1931 and was later put to good use when the Falkland Islands Dependencies Survey opened Base M at the same site on 1 January 1950. Primarily a meteorological station to begin with, this station's facilities were expanded in 1969 by the British Antarctic Survey (BAS) to cover biological, ionospheric, and later geomagnetic studies. In November 1972, a second BAS station was opened on Bird Island (54°00'S, 38°03'W), an isolated island off the west tip of South Georgia where significant biological studies had been conducted since the 1950s. On 3 April 1982, the BAS station at King Edward Point was attacked by Argentine troops during the Falkland Islands War; the station's staff members were taken prisoner together with the military garrison, though those out in the field managed to evade imprisonment until the island was retaken by British forces on 25 April. In March 2001 Grytviken was reopened as a scientific outpost. A synopsis of the history of the island.

References and further reading:

South Orkney Islands (Antarctic)
This archipelago 400 miles southwest of South Georgia, between 60°30' and 60°48'S and 44°20' and 46°40'W, consists of four major islands—Coronation, Laurie, Powell, and Signy—and their off-liers. Much more subject to the annual freeze-up of the Weddell Sea than the more maritime South Shetland Islands farther west, these islands can be reached by ships other than icebreakers only three to four months during the year.

The South Orkneys were discovered by the sealers George Powell and Nathaniel Palmer on 6 December 1821 while searching for fur seals. Finding very few seals of any kind, Palmer appears to have shown little interest in the islands as Powell claimed possession for Great Britain and conducted a rough survey. Only six days later, the islands were seen from a distance by the British sealer Michael McLeod, where colleague James Weddell also visited them. At least ninety-one sealing vessels operated off the South Shetland Islands during the 1821–1822 season, and with stocks severely depleted by sealing during the previous two seasons, it is not surprising that several vessels reached the South Orkneys in their search for seals. Weddell was to return here in January 1823, and it was he who coined the name “South Orkneys,” noting that they lay in the same latitude south as the Orkneys, off Scotland, in the north. Again, few seals were found, though Weddell did obtain
the skin of a previously unknown species here, spotted like the leopard seal (Hydrurga leptonyx) but fatter and without the leopard seal’s intimidating array of teeth. This is now known after its discoverer as the Weddell seal (Leptonychotes weddelli). Weddell stayed for eight days, during which he compiled a good chart of the islands.

Like the South Shetland Islands, the South Orkneys were largely ignored for the remainder of the nineteenth century, except for occasional visits by sealers. In late January and again toward the end of February in 1838, the French explorer Jules Dumont d’Urville retreated here to recuperate after twice failing to reach far south in the Weddell Sea. A survey was made of the northern coastline, and a landing was made on Weddell Island on 20 February to collect birds and rocks. In late January and early February 1874, Eduard Dallmann spent some time hunting seals here, as did Carl Anton Larsen in November 1892, respectively during their voyages from and to the Antarctic Peninsula. The next truly significant visit to the islands by an exploring expedition, however, was the Scottish National Antarctic Expedition of William Speirs Bruce, which wintered on Laurie Island between 21 March to 26 November 1903, carrying out a full scientific program and making a topographic survey of that island. Most significant, the meteorological station established by Bruce was handed over to the Argentine government and has been maintained ever since, making it by far the longest continuously operated station in the Antarctic.

In 1908, Powell’s claim of British sovereignty to the South Orkneys was included in the Letters Patent consolidating British claims in this region within the newly created Falkland Islands Dependencies. Largely on the basis of its meteorological station on Laurie Island, Argentina issued its own counterclaim in 1925. British as well as Argentine interest was stimulated by the whaling industry, active here from 1907–1908 when the Newfoundland Whaling Company sent a factory ship and two catchers to investigate the area’s potential, though no whales were taken until 1912 due to difficult ice conditions. A shore station operated on Signy Island in the early 1920s, and the South Orkneys remained an important whaling center until the early 1930s with blue and fin whales particularly abundant. A certain amount of useful charting work was carried out by whalers, especially in their search for potential anchorages. A more comprehensive survey was conducted by the British Discovery Investigations in 1933. The resulting report (Marr 1935) is still the most detailed and authoritative account of the islands and is especially informative on the history of their exploration.

British sensitivity to the Argentine counterclaim made establishment of a British base in the islands a high priority for the Falkland Island Dependencies Survey immediately after the conclusion of World War II. After an abortive initial attempt to set up a station on Coronation Island, Base C was established in January 1946 on Laurie Island. This station was soon found to be too close to the Argentine base, so in the following year Base H was opened on Signy Island and Base C closed. Whereas the Argentine station Orcadas has been chiefly concerned with meteorology, a full scientific program was conducted from Base H, including topographic surveys of the islands in the 1940s and 1950s.

See also: Bruce, William Speirs (1902–1904); Coronation Island; Dallmann, Eduard (1873–1874); Discovery Investigations; Dumont d’Urville, Jules; Larsen, Carl Anton (1892–1893); Laurie Island; Palmer, Nathaniel (1821–1822); Powell, George (1821–1822); Sealing and Antarctic Exploration; Signy Island; South Shetland Islands; Weddell, James; Whaling and Antarctic Exploration

References and further reading: Marr, J. W. S. 1935. The South Orkney Islands. Discovery Reports, 10, 283–382.

South Pole

Nothing better symbolizes the contrast between the south and north polar regions than the presence of the South Pole about 2,835 meters above sea level—its exact height fluctuates with the flow of ice—and the North Pole 6,000 meters above the depths of Amundsen Basin. Close to the South Pole stands the U.S. scientific station Amundsen-Scott. There is nothing but ice for 181 miles, the nearest land being the nunatak Mount Howe.

This was the spot reached by Roald Amundsen and his four companions on 14 December 1911, thirty-four days before Robert Falcon Scott arrived on 17 January 1912 to declare “Great God this is an awful place!”—and thus it was for this explorer, who had labored for more than 800 miles from Ross Island with the sole object of getting there first. Whereas there is still uncertainty today as to who first reached the North Pole, Scott’s diary confirms Amundsen’s priority at the South Pole, and both were to calculate the position of the Pole within a half-mile of each other. There is also no doubt that Richard Byrd was the first to overfly the South Pole on 29 November 1929, though this does assume that his navigation was sufficiently good to manage the feat, which it probably was. On 16 February 1947, Byrd also made the second overflight during Operation Highjump.

The first plane to land at the Pole was Que Sera Sera, a Douglas R-4D Skytrain piloted by Lieutenant Commander Conrad S. Shinn on 31 October 1956 during the second year of Operation Deep Freeze. Construction of Amundsen-Scott Station began one month after this flight on a site 400 meters from the Pole. It was officially opened on 24 January 1957. The first wintering party was led by the polar veteran Paul Siple and consisted of nine scientists and nine U.S. Navy personnel.

The presence of a station at the South Pole was of considerable assistance to later expeditions. On 4 January 1958, Edmund Hillary became the first to reach the Pole overland since Scott and was the first to do so in motorized transport, in essentially unmodified Ferguson farm tractors. Vivian Fuchs arrived fifteen days later, the first from the Weddell Sea.
and on his way to completing the first continental crossing. A Soviet tractor party led by Aleksandr Gavrilovich Dralkin reached the Pole from Vostok on 26 December 1959, with two American tractor parties following in 1961 from Byrd Station in Marie Byrd Land (Antero Havola on 10 January) and McMurdo (Albert Paddock Cray on 12 February). A particularly notable traverse was made by the Japanese party led by Masayoshi Murayama from Syowa to the Pole and back, a distance of 3,240 miles, between 28 September 1968 and 16 February 1969. The purpose of all these journeys was to conduct seismic surveys of the ice sheet.

The South Pole is naturally a favored destination for adventurers, most of whom now make their way from the Patriot Hills in Ellsworth Land, or else from Hercules Inlet on the Filchner-Ronne Ice Shelf, if determined to make the journey from the coast. Many notable firsts have been achieved. Since this encyclopedia’s concern is with exploration rather than the breaking of records, Table 22 lists only Erling Kagge’s first solo expedition.

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<th>Expedition</th>
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<td>1911</td>
<td>Amundsen</td>
<td>First to the Pole</td>
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<td>Byrd</td>
<td>First plane to overfly the Pole</td>
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<td>1956</td>
<td>Shinn</td>
<td>First plane to land at the Pole</td>
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<td>1957–1958</td>
<td>Siple</td>
<td>First to winter at the Pole</td>
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<td>1958</td>
<td>Fuchs</td>
<td>First to the Pole from the Weddell Sea</td>
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<tr>
<td>1993</td>
<td>Kagge</td>
<td>First solo journey to the Pole</td>
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Amundsen-Scott is currently into its third rebuild. The original 1956 buildings were replaced by the famous geodesic dome in 1975. At 16 meters high and 48 meters in diameter, it housed three two-story structures for living, dining, communications, recreation, laboratory, and meetings but became increasingly buried by ice. Work began on construction of a new station in 2000; it is due for completion in 2006.

**South Sandwich Islands (Sub-Antarctic)**

This volcanic arc, consisting of eleven small islands and their off-layers, extends between latitudes 56°18’ and 59°28’S and longitudes 26°14’ and 28°11’W. From north to south, the islands are: Zavodovski, Leskov, Visokoi, Candlemas, Vindication, Saunders, Montagu, Bristol, Bellingshausen, Cook, and Thule. With the exception of Leskov, situated at some distance to the west, they lie at regular intervals on a curving arc, which is bounded on its convex eastern side by a deep-sea trench descending to 8,265 meters. Most of the islands show signs of recent volcanic activity.

The eight southern islands were discovered between 30 January and 3 February 1775 by James Cook, who described his discovery as “the most horrible coast in the World,” though this did not stop him from naming it for John Montagu (1718–1792), Fourth Earl of Sandwich, First Lord of the Admiralty. Ice and poor visibility prevented him from being certain whether he had found several islands or something more extensive, so he left their eastern extent undetermined. The islands were next visited during a little-known sealing voyage in 1818 by the British sealer J. Smith in Norfolk, when the first landing was made and a volcanic eruption reported. Which island this was is unclear, but the most likely candidates are Saunders, Zavodovski, or Candlemas; landings can be made on each from a small boat in very favorable conditions, and all possess cones whose active steaming might be mistaken for an eruption (John Smellie, personal communication). If Smith landed on Zavodovski Island, then his sighting preceded that of Fabian von Bellingshausen, who is generally credited with the discovery of this and the other two northernmost islands, Leskov and Visokoi, in January 1820. Bellingshausen named his discoveries the Traversay Islands for the Marquis de Traversay, the Russian naval minister, who had played an important role in the expedition’s organization. On 5 January, a party led by Lieutenant Commander Ivan Zavodovski landed on an island where a dark plume of smoke had been seen, this island later being named for him. Bellingshausen remained in the South Sandwich Islands for two weeks, making a point of surveying all the islands from the eastern side, which Cook had been unable to do, in order to prove beyond doubt that no extensive land lay in that direction.

Although fur seals do breed on the South Sandwich Islands, they do not do so in large numbers. As a result the islands, although visited by sealers, never became a major center for the sealing industry. One of the earliest sealing visits was made by Benjamin Morrell in 1823. He found no seals and included only a brief description in his published narrative. When John Biscoe visited the islands in December 1830, he was initially misled by charts showing them 50 miles east of their actual position. He eventually managed to come up with them on 21 December, remaining there until 31 December, searching in vain for seals and possible places to land but finding none. In the same month, the islands were also visited by the American sealer James Brown (Pacific), who landed on Zavodovski Island, where he remained for ten days before searching for seals on the other islands south to Saunders Island, without making any further landings. The fact that he spent so long on Zavodovski suggests that he found seals there, though proba-
bly not elsewhere. Like many sealers, he was reticent in reporting the details of his voyage so as not to attract competitors. American sealing vessels are known to have visited the islands in the later years of the nineteenth century, and it is probable that landings were made. The only evidence found to date consists of spars, a blubber hook, and other debris discovered on Candlemas Island in 1964.

Probably as a result of this late-nineteenth-century sealing, Carl Anton Larsen found no fur seals at all in November 1908, when he investigated the potential of the islands for the whaling industry. Larsen saw few whales and found no harbors suitable for use by whaling vessels. He was, however, able to land on several islands—Zavodovski, Candlemas, Saunders, Montagu, and Bristol—compiling rough charts of them as well as other unvisited islands and making notes on birds and geology. Although whaling was tried on an experimental basis in 1911–1912, only twenty-eight whales were taken. Whaling ships were to operate near the islands in the late 1920s but never again immediately offshore.

Other brief visits have been made by a number of exploratory expeditions, some of them marking time before ice conditions farther south permitted access to Antarctica. In November 1911, Wilhelm Filchner came here hoping to collect rock specimens in support of ideas put forward by William Speirs Bruce of a link between these and other island groups in the “Scotia Arc,” the Antarctic Peninsula, and South America. In the event, poor visibility and ice meant that no landings could be made, though the four most northerly islands were seen. Sir Ernest Shackleton passed between Saunders and Candlemas Islands on his way south to the Weddell Sea in 1914. Following Shackleton’s death at South Georgia in 1922, many on board with him would return with Frank Wild in *Quest* to make an accurate survey of Zavodovski Island.

Most of what is known today about these remote and seldom-visited islands has been acquired during a series of voyages by British research and naval vessels. In addition to examining the biological basis of the whaling industry, the Discovery Investigations were charged with producing accurate charts of islands falling within the Falklands Islands Dependencies. In fulfilling that remit, RRS *Discovery II* conducted a running survey of the South Sandwich Islands between 26 February and 18 March 1930. Although the ship was able to land only on Thule Island, the resulting charts represented a considerable improvement on what had been available previously; these charts were improved by voyages beginning in the 1950s by HMS *Protector*, HMS *Endurance*, and RRS * Shackleton*. Following a visit made by *Shackleton* in January 1961, when particularly favorable conditions enabled landings to be made on Zavodovski, Candlemas, Saunders, Vindication, Visokoi, and Leskov Islands, the most important surveys were carried out in March 1964 from *Protector* and in January and February 1997 from *Endurance*. During the former, Martin Holdgate’s comprehensive topographic and scientific South Sandwich Islands Survey effected landings on all islands apart from the comparatively well-known Zavodovski. In addition, a British Antarctic Survey party spent sixteen days ashore on Candlemas Island, which was selected for more intensive study because it was thought likely to display the greatest variety of geology and of plant and animal life. In 1997, landings were made on all islands, with parties camping ashore on Zavodovski, Candlemas, and Thule.

**See also:** Argentina; Bellingshausen, Fabian von; Bellingshausen Island; Biscoe, John; Bristol Island; British Antarctic Survey; Candlemas Island; Cook Island; Cook, James (1772–1775); Discovery Investigations; Great Britain; Larsen, Carl Anton; Leskov Island; Montagu Island; Morrell, Benjamin; Saunders Island; Sealing and Antarctic Exploration; Sub-Antarctic Islands; Thule Island; Vindication Island; Visokoi Island; Whaling and Antarctic Exploration; Zavodovski Island

**References and further reading:**

**South Shetland Islands (Antarctic)**

The South Shetland Islands consist of eleven major islands and their off-lies, extending some 280 miles between 61° and 63°S and 54° and 63°W, separated from the Antarctic Peninsula by the 60-mile-wide Bransfield Strait. The major islands from southwest to northeast are Low, Smith, Snow, Deception, Livingston, Greenwich, Robert, Nelson, King George, Elephant, and Clarence.

The discovery of this archipelago by William Smith on 19 February 1819 represents the first discovery of land in the Antarctic, as opposed to earlier sub-Antarctic discoveries such as South Georgia (1675), Bouvet (1739), Kerguelen (1772), and the South Sandwich Islands (1775). Their discovery was followed almost immediately by numerous other exploratory and sealing voyages, during the course of which not only were the South Shetlands themselves investigated fully but also the Antarctic Peninsula discovered, together with off-lying island groups such as the Palmer Archipelago and the South Orkney Islands.

The first reports of land far to the south of Cape Horn go back to the sixteenth-century navigators Francis Drake and Dirck Gerritsz, although, revealingly, claims that Drake sailed as far south as the Antarctic Circle and Gerritsz to 64°S were put forward not by the navigators themselves but by subsequent commentators. Neither claim is now generally credited. American sealers—“Brother Jonathan” being one name quoted—have also been suggested as possibly having anticipated Smith. This, too, seems unlikely. Although sealers might
be able to keep an important discovery secret for a year or two, it is improbable that they could do so for much longer than that. Indeed, the sheer number of fur seals found on the beaches and the speed of the sealers’ response when news of Smith’s discovery began to circulate demonstrate almost beyond doubt his priority.

The first sealing vessel to have reached the islands after Smith is generally thought to have been Espírito Santo, though it may possibly have been preceded by another Buenos Aires vessel, San Juan Nepomuceno. Espírito Santo arrived on 25 December 1819, having been fitted out by Joseph Herring, mate of the Williams when the South Shetlands were discovered in February 1819. Herring clearly lost no time in crossing by land from Valparaiso to Buenos Aires in order to commission a vessel to sail south for sealing purposes. The voyage of Espírito Santo provides a telling example of how sealing secrets were not kept. It stimulated rumors in Buenos Aires, possibly leading to the voyage of the San Juan Nepomuceno (whose destination we don’t know, though it returned with a full cargo of sealskins). At the Falkland Islands, news of the discovery of fur seals on a new land was passed to Nathaniel Palmer, second mate of the American sealing vessel Hersilia. That vessel reached the South Shetlands soon after Espírito Santo in January 1820 (see Sheffield, James).

One other ship came upon the shore of the South Shetlands in 1819—unwillingly in this case. The San Telmo, a 74-gun Spanish warship sailing from Cadiz to Lima, was dismayed in a severe storm in Drake Passage and driven south, where it was Spanish warship sailing from Cadiz to Lima, was dismasted in addition to developing knowledge of the South Shetland Islands. Where at most three ships participated in 1819–1820, in the following year there were at least thirty American vessels, as well as one Australian vessel, and in 1821–1822 there were at least ninety-one vessels. Under such intense pressure, not even the initially large fur seal population could survive long. Increasingly, sealing fleets devoted their attention to the search for new breeding grounds where unexploited seal populations might be found. These exploratory voyages were often conducted by relatively junior members of sealing fleets such as Nathaniel Palmer, sailing in shallows, or sloops of shallow draft, which were well-equipped to evade the treacherous reefs and shelving shores on the stormy coast. In addition to developing knowledge of the South Shetland Islands far beyond the outline details acquired by Smith and Edward Bransfield, sealers made the first landings on the Antarctic continent, explored the Palmer Archipelago possibly as far as 68°S, and discovered the South Orkney Islands. By the end of the 1821–1822 season, fur seals had been hunted virtually to extinction, and few of the sealers coming here in future years returned with profitable cargos.

With the exception of occasional sealing voyages to see whether fur seal populations had revived, few visits were made to the South Shetlands during the remainder of the nineteenth century, apart from several exploring expeditions paying brief visits to Deception Island.

This period of neglect ended abruptly in the first decade of the twentieth century when whaling vessels based their operations first in Admiralty Bay, King George Island, and then at Deception. The South Shetlands remained a major whaling center until 1931, when world whale oil prices collapsed, and before the introduction of pelagic whalers, which were capable of operating independently of shore bases. A second, briefer period of neglect followed before political considerations again focused attention on the islands during and immediately after World War II, when Argentina and Chile disputed Great Britain’s claim to sovereignty put forward in 1908. Control of Deception’s sheltered anchorage proved especially contentious, and by 1959, when tensions were eased by the Antarctic Treaty, all three countries maintained permanent stations here, with other stations on Greenwich Island, Half Moon Island, and King George Island. After 1959, the South Shetlands—King George, in particular—have been the location of choice for stations set up by countries wishing to participate in Antarctic affairs but unwilling or unable to afford the expense involved in maintaining bases farther south. Details of these are given in the entries for the individual islands.

See also: Antarctic Peninsula; Bellingshausen, Fabian von; Bransfield, Edward; Clarence Island; Deception Island; Elephant Island; Gérritsen, Dirk; Greenwich Island; King George Island; Livingston Island; Low Island; Nelson Island; Palmer Archipelago; Palmer, Nathaniel; Robert Island; Sealing and Antarctic Exploration; Sheffield, James; Smith Island; Smith, William; Snow Island; South Orkney Islands; Whaling and Antarctic Exploration

References and further reading:
The literature on the South Shetland Islands is extensive but diffuse, with no monograph offering a comprehensive overview. For further reading, see works cited under the “see also” references.

Southern Ocean

The term “Southern Ocean” is used here to refer to the region south of the Antarctic Convergence, where the cold waters spreading north from Antarctica plunge beneath warmer waters extending south from the tropics. This was the name given by James Cook, the Southern Ocean’s discoverer in 1772–1775, but it is not universally used. Reflecting national interests, some countries prefer to regard the Atlantic, Pacific,
and Indian Oceans as extending to the coast of Antarctica. Both usages are found in the exploration literature.

The Antarctic Convergence is a marked oceanographic feature encircling the globe in a line undulating between latitudes 45° and 60°S. Its position varies slightly according to the seasons. Ships crossing the convergence may experience a distinct reduction in temperature, often accompanied by mist or fog. Enclosed within it is an area of 10.9 million square miles, twice the size of the Arctic Ocean but only one-sixth that of the Pacific. Immediately adjacent to Antarctica, and north to about 65°S, the prevailing winds are easterly, a fact first reported by John Biscoe and exploited by later sailing vessels. Farther north, the “Screaming Sixties” and “Furious Fifties” are zones of strong westerly winds. Drake Passage between Antarctica and South America can be notoriously rough, with powerful westerly winds whipping up the eastward-flowing Antarctic Circumpolar Current, constrained within the 625-mile-wide strait.

Almost all Antarctic expeditions conducted biological and oceanographic research on their way to the continent. Other expeditions were primarily concerned with the ocean and marine life (e.g., George Nares, 1872–1874; Carl Chun, 1898–1899; and Discovery Investigations, 1925–1951). Most of the small islands were discovered by sealers, and some large areas were first visited by whalers seeking new whaling grounds.

**See also:** Amundsen Sea; Bellinghausen Sea; Biscoe, John; Chun, Carl; Cook, James (1772–1775); Discovery Investigations; Nares, George (1872–1876); Ross Sea; Sealing and Antarctic Exploration; Sub-Antarctic Islands; Terra Australis Incognita; Weddell Sea; Whaling and Antarctic Exploration

References and further reading:

**Soviet Union**

*See Russia (Soviet Era)*

**Spain**

Under the terms of the Treaty of Tordesillas of 1494, Spain was entitled to claim all lands west of a line drawn between the Poles 370 leagues—about 1,110 nautical miles—west of the Azores, that is, approximately following the 43° meridian. In practice, Spain never sought to apply this in the Arctic, though when Philip II was married to Mary, queen of England, English merchants were discouraged from exploring the Northwest Passage, which would have been within the hemisphere claimed by Spain. Ironically, English investigations were later stimulated by a series of apocryphal Spanish voyages, which were said to have discovered Pacific entrances to the Passage: Lorenzo Ferrer Malondoño (1588), Juan de Fuca (1592), and Bartholomew de Fonte (1640). The Spanish remained sensitive about British “incursions” into the Pacific, culminating in the Nootka Crisis of 1790, when the two countries nearly went to war over British involvement in the North Pacific fur trade. The Spanish also were exploring the northwest coast of North America, though their voyages were to areas falling outside the scope of this book.

Although Spain itself has never put forward any Antarctic territorial claims, Argentina and Chile both base their claims partly upon the Treaty of Tordesillas, on the grounds that they inherited the Spanish claim. In a similar manner, Argentina’s claim to South Georgia is derived from the sighting in 1756 by the Spanish ship *Léon*; Chile’s claim to the South Shetland Islands is partly based on the shipwreck there in 1819 of the Spanish warship *San Telmo*.

Spain ratified the Antarctic Treaty on 31 March 1982 and achieved consultative status on 21 September 1988. The national program is coordinated by Consejo Superior de Investigaciones Científicas and currently operates two summer stations: Rey Juan Carlos I on Livingston Island (since 1988), and Gabriel de Castilla on Deception Island (since 1990). The latter station is named for a Spanish captain who reported being blown south to 64°S in March 1600 while attempting to round Cape Horn.

**See also:** Argentina; Chile; Deception Island; Livingston Island; Northwest Passage

References and further reading:


**Spitsbergen**

Somewhat confusingly, the meaning of the name “Spitsbergen” has varied in time. Since 1969, it has been used to denote the largest island in the Svalbard Archipelago, and this is the usage adopted throughout this encyclopedia. Prior to 1969, this island was known as “West Spitsbergen” (Vestspitsbergen), with “Spitsbergen” referring to the major islands of the archipelago, that is, all except Bear, Hope, and White Islands and King Charles Land. The exploration of the archipelago as a whole is treated under the entry for Svalbard.

Located between 76°30’ and 80°N and 11° and 22°E, Spitsbergen has an area of 15,075 square miles and is separated from Prince Charles Foreland by Foreland Sound, from North East Land by Hinlopen Strait, and from Barents Island by Heley Strait. Although the area may have been known to the Norse in the early middle ages and visited by Pomor hunters by or before the sixteenth century, its discovery is generally credited to the Dutch Northeast Passage expedition piloted by Willem Barents. He first sighted land in the vicinity of Amsterdam Island on 19 June 1596, landed two days later at Fair Haven, and named the new land Spitsbergen because of the many high mountains. In 1607, Henry Hudson sailed along the west coast from Bell Sound north to “Hakluyt’s Headland,” in
the process discovering King's Bay, where many whales were observed. For a general account of exploration by the whalers and walrus hunters who were encouraged to venture north by Hudson's report, see the entry for Svalbard. Among the first was Jonas Poole, who in 1610 explored and named the major west coast fiords: Horn Sound (Hornsund), Bell Sound (Bellsund), Ice Sound (Isfjorden) and Cross Bay (Krossfjorden). In 1612, Thomas Marmaduke explored the north coast at least as far as Grey Hook (Gråhuken), where he landed one of his men and set up a cross. Further exploration of this coast was made in 1614 by Robert Fotherby and William Baffin in *Thomaisine*, reaching as far east as Wijde Bay. In 1617, John Ellis was detached from the English whaling and exploring expedition led by Thomas Edge to explore the southeast coast of Spitsbergen. Much of the Stor Fjord region was probably first seen at this time, as far north as the entrance to Heley Sound.

By the middle of the seventeenth century, the whole coast had been visited apart from the least accessible eastern coast, from Heley Sound north through Hinlopen Strait. Priority of discovery is not easily established for this area, but a Dutch chart of 1663 shows the entrance to Hinlopen Strait with other details of the north coast, which was evidently well known by this date. It is possible, but not certain, that Cornelius Giles sailed through Hinlopen Strait in 1707 (a good ice year) during his voyage to the north and east of North East Land. The first accurate survey of the Hinlopen Strait region was carried out in 1827 by Henry Foster, while his leader, Edward Parry, was attempting to reach the North Pole across the ice from Sorge Bay. The first circumnavigation was probably achieved by the Norwegian walrus hunter Nils Fredrik Rønnbeck in 1867.

The interior of Spitsbergen remained essentially unexplored until late in the nineteenth century, long after the coastal areas were well known. Although it is probable that trappers traveled extensively inland in their pursuit of arctic foxes, these journeys are unrecorded. The first documented inland journey of any extent was made in June 1890 by Gustaf Nordenskiöld and two companions, who skied for five days from Horn Sound to Recherche Bay across the inland ice. The first expedition setting out specifically to explore the interior was led by Martin Conway, who, with John Gregory and Edmund Garwood, made the first crossing of the island—from Advent Bay via Sassen Valley to Agardh Bay—between 21 June and 17 July 1896. Conway and Garwood returned in 1897, traveling from Klaas Billen Bay across Nordenskiöld Glacier toward the Chydenius Range, from where the illness of an assistant forced their return. Garwood then explored the area inland of King's Bay, to which Conway gave the name "King James Land" (now James I Land). Significant later explorations of the interior include Olaf Holtedahl's 106-mile journey in 1911 from King's Bay to Wood Bay, and then from here back to Ekman Bay; and those made in 1913 during the search for survivors from Herbert Schröder-Stranz's expedition by Kurt Wegener and Arve Staxrud (the former completing a circuit from King's Bay, taking in Wood and Wijde Bays, the latter sledgeing from Ice Fjord to Sorge Bay and back across New Friesland).

One of the earliest scientific visits occurred in 1823 when Edward Sabine was landed on the Norway Islands off the north coast of Spitsbergen, remaining there from 30 June to 22 July to make pendulum studies during the expedition of Douglas Clavering. The first major scientific venture was a French expedition led by Paul Gaimard in *La Recherche*. This visited Recherche Bay, Bell Sound, in 1838, and Magdalene Fjord the following year. Scientific research during the nineteenth century, however, was dominated by a series of Swedish expeditions initiated in 1837 by Professor Sven Lovén of Uppsala University and continued by Otto Torell (1858 and 1861), Adolf Erik Nordenskiöld (1864, 1868, and 1872–1873), Alfred Nathanorst (1870, 1871, 1882, and 1898), Gustaf Nordenskiöld (1890), and Gerard De Geer (1896). Although Swedish interest continued after 1900, expeditions from other countries became more common, many motivated by the desire to locate potentially valuable mineral deposits. Thus, William Speirs Bruce led expeditions in 1909, 1912, and 1914 to investigate the economic prospects for claims made by him on behalf of the Scottish Spitsbergen Syndicate.

Prior to 1906, Norwegian activities were primarily concerned with hunting rather than science. In that year, Spitsbergen became the focus of study for a series of annual expeditions led until 1910 by Gunnar Isachsen and by Adolf Hoel between 1911 and 1938. Devoted largely to topographic and geological survey, these expeditions culminated in 1936 in a comprehensive aerial survey. Although Norwegian sovereignty was recognized by the Spitsbergen Treaty of 1920, under its terms nationals of other countries are also free to conduct research. Thus, in addition to the important ongoing work of the Norwegian Polar Institute, several countries maintain research stations at Ny-Ålesund (see below), and Poland has operated a station in Horn Sound since 1957. From 1948 on, geologists from Cambridge University led by Brian Harland conducted comprehensive studies of the island's geology.

The first documented wintering on Spitsbergen—or indeed anywhere in Svalbard—took place in 1630–1631 when eight English whalers became separated from their ship and were forced to winter in Bell Sound. All survived. It was in Bell Sound also that the first station was established by an exploring expedition; five houses, a storehouse, and a steam bath-house were erected in August 1764 in Recherche Bay in support of the attempted high-latitude voyages led by Vasily Chichagov. Sixteen men remained behind, and by the time they were relieved two years later, in July 1766, eight were dead. Adolf Erik Nordenskiöld led the first scientific expedition to overwinter, in 1872–1873 at Mossel Bay. Sweden maintained stations at Cape Thordsen during the First International Polar Year (1882–1883), and at Sveagruva at the head of Bell Sound during the Second International Polar Year (1932–1933). From
1911 on, radio and meteorological stations were operated by mining companies at Ice Fjord, Barentsburg, Grumantby, Longyearbyen, and King's Bay, as well as by the Norwegian government in Green Harbor. Deprived of meteorological information from other sources, Germany established a number of secret stations on the island during World War II at Knosbaun (1941–1942) and Nussbaum (1942–1943) in northern King's Bay; at Sørdalsbugta (1943–1944); and Stormbukta (1944–1945), close to South Cape. Today, a major grouping of research facilities occurs at Ny-Ålesund (78°56'N, 11°53'E), where stations are operated by many countries, including Great Britain, France, Germany, Japan, Italy, and South Korea. Ny-Ålesund's role in the Arctic is in some ways analogous to King George Island in the Antarctic. Both are comparatively easy to reach and provide a low-cost means of participating in polar research.

See also: Barents, Willem; Bruce, William Speirs (1906–1920); Chichagov, Vasily; Clavering, Douglas; Foster, Henry; Hoel, Adolf; Hudson, Henry (1607); International Polar Years; King George Island; Nathorst, Alfred; Nordenskiöld, Adolf Erik (1868, 1872–1873); Parry, Edward (1827); Schröder-Stranz, Herbert; Svalbard; Torell, Otto; Whaling and Arctic Exploration

References and further reading:

Stefansson, Vilhjalmur
(1879–1962)

Some people today know the American explorer Vilhjalmur Stefansson as the expedition leader who left his ship Karluk, when beset off North Alaska, to go hunting. The tragedy of the Karluk is told elsewhere (see Bartlett, Bob), and it was by no means the only controversial episode in the explorer’s life. The prophet of “the Friendly Arctic” and discoverer of the last remaining islands north of Canada created a media frenzy when he reported finding “blond Inuit” on Victoria Island, and his campaign against Soviet sovereignty over Wrangel Island led directly to the deaths of four men. He is viewed by some as a publicity hound and charlatan, but others held him in the highest regard, and not just for his very real achievements as an explorer.

Vilhjalmur Stefansson was born into an Icelandic community in Manitoba, Canada. When he was still very young, his family moved across the border to North Dakota. Despite minimal education, by dint of hard work and exceptional ability he won himself a place at Harvard and then a fellowship specializing in anthropology. Some years later he was recommended to Ejnar Mikkelsen and Ernest Leffingwell, who were looking for an anthropologist to join their search for land north of Alaska. One of the most important decisions Stefansson ever made was not to accompany them in Duchess of Bedford; instead he traveled overland and down the Mackenzie River to have more opportunity of observing the native people. While waiting for Mikkelsen and Leffingwell to arrive at Herschel Island, he learned from whalers of the existence of a tribe of “blond Inuit” on Victoria Island. Some of them had fair hair, blue eyes, and other European features, and they used utensils made of copper. Were these the descendants of the Norse community, who had mysteriously died out in West Greenland at the end of the middle ages? When his companions failed to reach Herschel Island, Stefansson accompanied the British explorer Albert Harrison to Shingle Point. There, he had his first experience of living among an Inuit community before moving on to Tuktoyaktuk to experience even more traditional Inuit life. What Stefansson learned this winter was to stand him in good stead throughout his exploring career. He acquired a taste for Inuit food and was taught Inuit hunting and traveling methods. It was at this time that he began to formulate his famous views on the Arctic as an essentially “friendly” rather than forbidding place, where white men might survive as well as the Inuit—if only they were prepared to adopt their ways.

The “Blond Inuit” of Victoria Island, 1908–1912

Stefansson returned to New York eager to organize an expedition of his own to visit Victoria Island and check out the stories told by the whalers. Having obtained backing from the American Museum of Natural History, he was contacted by Dr. Rudolph Martin Anderson, a former colleague from Iowa State University. Although Anderson’s doctorate was in ornithology, he was also knowledgeable in geology and zoology, factors that helped considerably in winning the support of the Geological Survey of Canada.

Setting out from New York on 22 April 1908, Stefansson followed the same route north that he had taken in 1906, before reaching the Mackenzie Delta on 5 July. Anderson and many of the Inuit were heavy smokers. Stefansson had neglected to bring matches because previously they had been freely available from the whalers at Herschel Island. Arriving by whaleboat, he now found the whaling industry severely depressed, with no supplies to spare. As for the Royal Canadian Mounted Police, Sergeant Francis Fitzgerald considered him exceptionally misguided in planning to live among the Inuit, for whom his party would surely be an additional burden at a time of scarcity. Fitzgerald therefore refused to provide anything, expecting that this would force Stefansson to remain on Herschel Island. For want of one simple commodity, the latter was thus constrained to spend what remained of the summer traveling to Point Barrow. Anderson, meanwhile made natural history collections on the north coast of Alaska. After wintering together in the Colville Delta, the two men returned to Herschel Island, where they took passage on board the whaler Karluk and Rosie H. before being landed at Cape Parry. After sixteen months, they were at last heading in the right direction. Stefansson had more reason than most to dislike smoking.
Anderson having gone to fetch supplies from Herschel Island, Stefansson set out on 21 April 1910 with Natkusiak, Pannigabluk, and Tannaumirk to look for unknown Inuit tribes farther east on the shores of Coronation Gulf. The fact that this region had once been inhabited was evident from the remains of houses and Samuel Hearne’s report in 1771 of encountering Inuit at the mouth of the Coppermine River. The Mackenzie Inuit, however, had no contact with any people farther east and considered game to be too scarce there to support a population. This view was shared by John Richardson, who had failed to note any Inuit during his investigations by boat in 1826 and 1848. Inuit, however, had been encountered more recently on Victoria Land, the northern shore of Coronation Gulf. Their presence there had been noted by Peter Dease and Thomas Simpson in 1838, and subsequently by Robert McClure, John Rae, and Richard Collinson in the 1850s, but it was the whaler Christian Klengenberg’s reported meeting in 1906 that had provoked Stefansson’s initial interest.

The first sign that the region was indeed still inhabited was a piece of driftwood on a beach, which had clearly been shaped by a blunt adze-like tool. Soon afterward, they came upon a deserted village of more than fifty igloos. Continuing on, they found another deserted village on 13 May. Beyond that, they saw men scattered across the sea ice, crouched around seal holes. The first Inuk they approached took them for evil spirits. Fearing that they might strike him dumb, he began a meaningless monotone in the belief that as long as he emitted a noise with each breath they could not harm him. Eventually, he was persuaded to put down his long knife; having concluded that these strangers were human, he invited them back to his village, where they received the warmest of welcomes. Stefansson by now had excellent command of Inuktut, and although his hosts found his accent somewhat strange, they recognized it as that of their neighbors to the west. And his blue eyes and light-colored beard were similar to those of some of the inhabitants of Victoria Island—Klengenberg’s “blond Inuit.”

It was too late in the year to think of crossing to Victoria Island, so Stefansson spent the next few weeks visiting nearby villages before heading inland to the Dismal Lakes, the favorite summer hunting ground of the Inuit. Rather than impose himself on them, he decided to winter instead with Anderson on the Dease River. The following year, the two men set out for Coronation Gulf. While Anderson, Tannaumirk, and Pannigabluk remained on the mainland to add to the natural history collections, Stefansson and Natkusiak crossed Dolphin and Union Strait on 30 April 1911, finding a safe route by following in the tracks of migrating caribou. Having learned that the
Victoria Island Inuit gathered each spring for a trading festival in Prince Albert Sound, the two men took a shortcut across Wollaston Peninsula to find the Inuit far out on the ice on 12 May. Again, they received a warm welcome. Through the whalers, these Inuit had some knowledge of white men. Stefansson had planned to continue on to Banks Island, but he now learned that it was uninhabited and that the only Inuit who customarily visited there were this year intending to hunt caribou in the interior of Victoria Island instead. This widely traveled group journeyed annually to the eastern Arctic and included the highest proportion of individuals with “European” features. Stefansson concluded his explorations by sledging across Amundsen Gulf, where he was later joined by Anderson at their winter quarters in Langton Bay. Next spring, Stefansson followed the coast to Point Barrow, while Anderson took passage in a whaler along with their very extensive natural history and ethnographic collections.

The Canadian Arctic Expedition, 1913–1918

Every explorer hopes that his explorations will arouse some interest on his return, but Stefansson had no expectation of the media storm that was to engulf him upon his arrival in Seattle. On his way south, he had been interviewed by a correspondent for the Seattle Daily Times. Although Stefansson was no doubt less guarded than he might have been, the reporter had an unbridled imagination, and the resulting article credited Stefansson with achievements comparable to discovering the lost tribes of Israel. Living on Victoria Island today were the descendants of the Norseman Leif Eriksson. Although Stefansson did indeed consider it possible that the Copper Inuit, as they came to be known, might have Norse blood, the piece was riddled with errors and gave the impression that Stefansson did not know what he was talking about. However, this controversy ensured that Stefansson’s name was headline news across the United States. Now, if ever, was the time to plan his next expedition.

Having obtained the backing of the National Geographic Society and the American Museum of Natural History, Stefansson still lacked sufficient funds to purchase a ship and therefore approached Sir Robert Borden, prime minister of Canada. Canada claimed an extensive sector of the Arctic, much of which remained unvisited by any Canadian. As an American citizen, Stefansson pointed out that any lands discovered by him might establish a claim on behalf of the United States—unless his expedition was conducted under the auspices of the Canadian government. The point was taken, and Sir Robert undertook to fund all expenses.

This was a much more ambitious endeavor than his previous expedition, involving several ships and many scientists. Stefansson, as overall leader, was to take personal command of the Northern Division, whose primary objective was geographical discovery. Anderson would lead the Southern Division, which would conduct scientific studies in the Coronation Gulf region. Overall control was vested in the Department of Naval Service, with the scientists recruited from the Geological Survey of Canada. These arrangements were to lead to considerable difficulties for Stefansson. He and Anderson had worked together well enough on the previous expedition, each functioning largely independently of the other. But Anderson by no means shared Stefansson’s belief that explorers could live off the land in the same way as the Inuit. Senior staff at the Geological Survey also lacked confidence in Stefansson and encouraged their scientists to take orders instead from Anderson. These undercurrents complicated preparations and, once in the field, led to near-mutiny.

The Northern Division sailed on 17 June 1913 from Esquimalt, British Columbia, in the veteran whaler Karluk. The Southern Division left Victoria, British Columbia, on 15 August in the 30-ton schooner Alaska. Another schooner of similar size, Mary Sachs, was to serve as tender to both divisions and conduct oceanographic research. On board Karluk were a number of scientists intended for the Southern Division. Doubting the adequacy of Stefansson’s preparations, they summoned him to a meeting at which they raised the issue of freshwater provision and were not prepared to accept his explanation that freshwater could be obtained from any ice floe over one year old, until this was confirmed by skipper Bob Bartlett. Bartlett was also something of a problem. Having no knowledge of the western Arctic, he had not been Stefansson’s first choice and insisted on expatiating loudly on the perceived inadequacies of Karluk, thus further undermining the confidence of those on board. Although no Roosevelt (see Peary, Robert), Karluk had made similar voyages many times before and was as fit as most western whalers. Once around Point Barrow, Bartlett initially followed the North Alaskan custom of keeping between the ice and the shore. Finding his way blocked farther east, he decided against advice to follow a lead into the pack. Soon afterward Karluk was beset and never freed again. Realizing that they would have to winter in the ice, Stefansson left the ship on 20 September with a hunting party to lay in a store of caribou meat. He was accompanied by ethnographer Diamond Jenness, meteorologist Burt McConnell, photographer George Hubert Wilkins, and two Inuit, Asatsiaq and Pauyurak. Soon afterward, Karluk was driven away from the coast in a storm, and Stefansson was unable to meet up with it again. Instead, he wintered with the Southern Division at Collinson Point, near Flaxman Island.

Anderson’s scientists were under the impression that no useful work could be done until the summer, a notion rapidly disabused by Stefansson. Anderson resented his interference and was reluctant to allow him use of the Southern Division’s supplies and equipment. Along with other members of his party, he viewed Stefansson’s planned journey over the sea ice as a publicity stunt from which he most likely would not return. He did nothing to help it.

On 22 March 1914, Stefansson, Ole Andreasen, and Storker
Storkerson set out north from Martin Point. Initial progress was very slow, with the coastal ice drifting rapidly to the east. On 7 April, the supporting party turned back, leaving the three men to continue with six dogs, following as close as they could to the 140th meridian. By 27 April, they had reached 72°58′N. With the summer melt near and the ice beginning to fragment, Stefansson decided to make for land. Rather than returning south, they headed due west for Banks Island. Few animals were sighted, and they were reduced to half-rations before seals and bears became more frequent closer to land. They had brought with them provisions for just two weeks, so by the time that they reached Norway Island on 25 June, they had spent ninety-six days on the ice. Stefansson’s belief that exploring parties could subsist by hunting alone had received triumphant vindication. Soundings taken during the journey showed the continental shelf extending no more than 50 miles off the coast, substantially reducing the likelihood of finding land north of Alaska.

The remainder of the summer was spent surveying the west coast of Banks Island and hunting caribou. Several possible anchorages were identified, and signs were noted of previous Inuit occupation. Before leaving Martin Point, Stefansson had instructed Wilkins to sail *North Star* to Banks Island in the event of his failure to return to Alaska. *North Star* was an auxiliary schooner he had bought after losing *Karluk*. Anderson, however, insisted that Stefansson and his party were dead and refused to allow Wilkins to leave with *North Star*. Instead, Wilkins had to make do with the much less suitable *Mary Sachs*, eventually making his way with difficulty to Cape Kellett, where he met up with Stefansson on 11 September. *Mary Sachs* had incurred substantial damage on the voyage and had to be beached for repairs. This was a considerable disappointment for Stefansson, who had hoped to establish his winter quarters farther north with the ship’s assistance. Now, he had to winter here and, with thirteen men to feed, had no choice but to spend the remaining weeks before winter darkness in laying in a larger store of fresh meat.

Stefansson had no intention of relaxing at Cape Kellett. On 22 December, he and Natkusiak, his favorite Inuk traveling companion, set out along the coast to look for Inuit wintering in southeast Banks Island. None were found there or across Prince of Wales Strait in Victoria Island. The two men arrived back at Cape Kellett on 27 January 1915.

In mid-February 1915, Stefansson led a seven-man party along the coast to northwestern Banks Island. From there, accompanied by Andreasen, Storkerson, and Karl Thomsen, he headed northwest across the sea ice in another search for land. They continued in this direction until 6 May, before making for Prince Patrick Island. Again, no land was seen. Traveling north along Prince Patrick, Stefansson completed the survey of the west coast begun by Frederick Mechem and Leopold Mc Clintock in 1853. On 18 June, uncharted land was seen in the distance at 78°N, 117°W. Naming it Brock Island for the director of the Geological Survey of Canada, they landed the following day. By now, however, they were well into the melt season, and Stefansson was concerned about conditions in McClure Strait, which they would have to cross on their way back to Banks Island. He therefore decided to leave further exploration for the following year and set out for the south on 22 June. Early on during their return journey, more new land was sighted. On reaching Banks Island, Stefansson led his party across the interior from Mercy Bay to Cape Kellett on the west coast, where they arrived on 19 August.

Disappointingly, Wilkins had not yet been able to fulfill his instructions of bringing *North Star* to Cape Kellett. Rather than await his arrival, Stefansson decided to purchase the small trading schooner *Polar Bear*. After first visiting Herschel Island to communicate with Wilkins and the Department of Naval Service, which still believed him dead, he attempted to sail through Prince of Wales Strait to Prince Patrick Land. There he hoped to establish a northern base, but in the event he could get no farther than the Princess Royal Islands before becoming beset and forced to winter. Meanwhile, Wilkins and *North Star* had little more success west of Banks Island, wintering south of Cape Prince Alfred.

During the winter, Storkerson began a survey of the previously uncharted coastline of northeast Victoria Island; Stefansson laid in supplies of fresh meat through hunting before making for Cape Kellett on 1 December. On 5 April 1916, he headed north from Mercy Bay across McClure Strait and Melville Island to reach the new lands discovered the previous year. There, the survey was handicapped by dense fog and by the difficulty of distinguishing land from sea, both being blanketed by snow. Not surprisingly, Stefansson’s two large islands—Brock and Borden—later proved to be three, Mackenzie King being separated from Borden by Wilkins Channel. He next sought to join his survey with those of Otto Sverdrup and Robert Peary to the northeast by making for Cape Isachsen on Ellef Ringnes Island. Landing there on 29 May, he was at last able to obtain a good sun-sight to fix his position. Continuing along the floe edge, he discovered more land on 13 June. This was Meighen Island, located in the middle of the Sverdrup Islands and claimed by Otto Sverdrup for Norway. Stefansson made a special point of erecting a board to mark his discovery and leaving behind a note stating that it was a possession of the British Empire. Back on Ellef Ringnes, he found a record on 20 July left three months before by the American explorer Donald MacMillan. Stefansson now headed for King Christian Island but was prevented from landing by a shore lead. Sighting more new land to the southwest, he discovered that Sherard Osborn’s “Findlay Island” was not one but several islands, of which Lougheed was the largest. He remained there for a month to conduct a thorough survey, beginning his journey south on 9 September. To maximize the work done, he had divided his men into a number of smaller parties, which were then to assemble on Melville Island, where
some would winter in the south near Liddon Gulf and others farther north at Cape Grassy.

The main task through the winter was to lay in depots to support Stefansson’s final attempt to locate land in the far northern Beaufort Sea. On 30 March 1917, he set out from Cape Grassy, traveling past Brock Island to reach 80°30′N, 111°W on 25 April far out on the sea ice. No more land was found. Although the continuous ice cover assisted sledding, it meant that there were no seals to be killed. Two of his companions—Harold Noice and Lorne Knight—had insisted on living off canned food through the winter and now showed unmistakable signs of scurvy. With no fresh meat to restore them to health, Stefansson had no option but to turn back. Despite having to truncate his journey, he could nevertheless state with confidence that any land remaining to be discovered was unlikely to be of any great size or consequence. Thus, the Canadian government no longer needed to fear major discoveries being claimed within its sector by foreign countries.

Arriving back at Cape Kellett on 17 August, Stefansson learned that Thomsen and Captain Beneard of Mary Sachs had failed to return from taking mail to Melville Island. Two more deaths occurred during an expedition on which no less than fourteen were to perish, including the eleven in Karluk. Polar Bear’s unreliable captain had left without them, but fortunately the trading vessel Challenge arrived ten days later. Stefansson purchased it and sailed the next day to Cape Bathurst on the mainland. From there, he made his way west to winter at Barter Island.

Stefansson had one more project in mind for his expedition, but it was one in which he himself was unable to participate when he fell seriously ill. The plan was to establish a camp on the drifting ice to take depth and current measurements. Unfortunately the trading vessel Karluk was crushed was Fred Maurer. Despite the deaths there of two of his companions from malnutrition, Maurer considered that there was sufficient game for a small group practicing Stefansson’s self-sufficient methods to survive for an extended period. Since no other group had ever occupied Wrangell, they had established a claim on behalf of Canada and the British Empire. Stefansson approached both governments to see if they were prepared to follow this up. Receiving unofficial encouragement, Stefansson’s next task was to find a leader. Since the claim was to be made on behalf of Canada, he needed a Canadian citizen and eventually chose the twenty-year-old Allan R. Crawford. In addition to Maurer, he would be accompanied by Milton Galle and Lorne Knight. When the Canadian government delayed action for a year, Stefansson decided to take the initiative to keep hold of Crawford’s services. A vessel was chartered—Silver Wave—and on 15 September 1921, the four men landed together with Ada Blackjack, their Inuk seamstress and cook, and seven dogs.

The result was far from what Stefansson had hoped. The New York Times got hold of the story, and awkward questions were raised about why an American citizen was assisting another country claim land to which the United States also had a claim. The Canadian press doubted whether Wrangell Island had any value for Canada, and the British expressed concern lest relations with the United States be damaged. The result was that no government wished to pursue Stefansson’s unofficial action, leaving him with the expense of organizing relief expeditions in 1922 and 1923. The 1922 expedition failed to get through, and when the 1923 expedition arrived, only Blackjack remained alive. Knight had died from scurvy, and the other three men lost their lives seeking help across the treacherous ice of Long Strait. In the following year, sovereignty over Wrangell was asserted by the Soviet Union.

Later in life, Stefansson was to advise governments and companies on the Arctic’s strategic significance and business opportunities. Buying up apartments in Greenwich Village, New York, as his famous library outgrew the space available, he won funding during the years leading up to and after World War II to support a team of librarians and researchers, who helped him extract the information he needed to compile bibliographies, manuals, and encyclopedias, all about the Arctic. Because of the Karluk and Wrangell Island episodes, Stefansson remains a controversial figure, one generally better regarded outside Canada than within it, despite all he did to further that country’s northern ambitions. The Canadian Arctic Expedition left deep wounds that never fully healed. There never has been just one view of Vilhjalmur Stefansson.
See also: Amundsen, Roald; Banks Island; Bartlett, Bob (1913–1914); Beaufort Sea; Borden Island; Brock Island; Canada; Dease, Peter; Drifting Ice Stations; Eriksson, Leif; Franklin, John (1825–1827); Hearne, Samuel; Herschel Island; Inuit Contribution to Polar Exploration; Lougheed Island; Meighen Island; Melville Island; Mikkelsen, Ejnar (1906–1908); Prince Patrick Island; Rae, John; Sverdrup, Otto (1898–1902); Victoria Island (Canada); Wilkins, George Hubert; Wrangell Island

References and further reading:

Steger, Will
(1944–)

There will always be room for new polar achievements as long as men and women have the imagination to conceive new tasks to attempt. On the first of his two great expeditions, the American adventurer Will Steger sought to reach the North Pole using methods similar to those employed by Robert Peary in 1909. His second expedition—the crossing of Antarctica by its longest axis—was undertaken as a symbol of international collaboration at a time when the continent’s future was subject to acrimonious debate.

By Dogsled to the North Pole, 1986

Will Steger first discussed plans for an expedition to the North Pole in 1982 while holed up with Bob Mantell in a blizzard in the Canadian Barrens. Steger was a former science teacher from Ely, Minnesota, where he ran a winter-skills school with wilderness instructor Paul Schurke. Both had many years of experience of sledding with dogs, Steger reckoning that he had logged 20,000 miles traveling in the north, mostly with dog teams, though by “the north” he meant Alaska, Canada, and the northern United States rather than the Arctic Ocean, whose shifting ice fields were to prove a very different proposition.

The expedition took three years to plan. Although a number of expeditions had reached the North Pole with the aid of air support since the late 1960s, Steger and Schurke decided that as much as possible they would rely on the same methods as Frederick Cook and Robert Peary and, in so doing, aim to throw light on the continuing controversy as to whether either, both, or neither had reached the Pole in 1908 and 1909. Thus, they would rely on dogs without air supply, and Schurke would navigate by sextant and chronometer but not GPS. For safety purposes, a radio would be taken, but the exchange of information would be strictly one-way. Thus, they would receive no weather forecasts, sea ice reports, or any other news giving them an advantage over Peary and Cook. One difference, however, they would allow themselves was to airlift out dogs no longer needed, rather than killing them. An experienced team was recruited, consisting of two Canadians, the veteran dog driver Brent Boddy and the champion skier Richard Weber; Alaskans Bob Mantell and Geoff Carroll; Bob McKerrow, a New Zealander familiar with the Antarctic; and the mountaineer Ann Bancroft, who was seeking to become the first woman to reach the North Pole.

On 8 March 1986, the seven men and one woman set out from Ward Hunt Ice Shelf, Ellesmere Island, with five sleds pulled by forty-nine dogs. Doing without air supply meant that their initial load was 3,175 kilograms, made up of equipment and food judged sufficient for the estimated sixty-day journey. Close inshore, the ice was exceptionally rough, and even with so many dogs they were forced to resort to relaying for the first three weeks, laboring ten to twelve hours each day to advance just a few miles. Eighty miles out, the dogs were at last able to pull the full load. On 2 April, McKerrow was airlifted out together with seven of the dogs. He had injured his ribs badly in one of the frequent falls and, after continuing for several days, eventually concluded that the risk of internal injury was just too great to go on. Nine days later, twenty-one dogs were flown out, leaving three teams of seven to pull the three remaining sleds, each carrying a load of 318 kilograms. They had traveled 170 miles but still had more than twice that distance to go. No further flights were planned, but regrettably one more was necessary when Mantell had to be flown out on 16 April with frostbitten feet.

From what he had seen so far, Steger was increasingly doubtful whether Cook could possibly have reached the Pole. Cook had traveled very light, taking with him rations that could not have sustained him for 100 days, even when supplemented by eating sixteen of his twenty-six dogs. Also, Cook’s sleds, though ingenious, were too insubstantial to have withstood the battering they would have got from rough polar ice. If not Cook, then what of Peary? Peary’s critics had tended to focus on two aspects of his claim: his navigation (or lack of it), and his speeds after leaving the support parties. It was suggested that ice-drift would have borne him off his planned distance to go. No further flights were planned, but regrettably one more was necessary when Mantell had to be flown out on 16 April with frostbitten feet.

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vailing southwesterly winds, the sastrugi (uniform snow ridges formed by winds blowing constantly from the same direction) pointed consistently northeast.

As Steger’s party continued north, they found conditions improving, and when they were lucky to strike a frozen lead heading directly toward the Pole, they made 15 miles in less than three hours. But with the approach of spring, temperatures were rising and leads took longer to refreeze. In the early part of the journey, they had to wait only a short while before they were sufficiently frozen over to cross; now they had a choice of either waiting longer or else finding a different route around. Nevertheless, their speeds continued to improve, and on 26 April they made 38 miles in eighteen hours to reach 88°45’N, their best day of travel. Over the five days before the Pole was reached on 1 May, they were to average nearly 34 miles a day, essentially the same as Peary’s distances in 1909, which some found unbelievable. Although Steger remained personally unsure about the adequacy of Peary’s navigational techniques for locating the Pole, his own journey proved that his reported speeds were feasible, at least to the Pole. Peary had claimed even greater speeds for his return journey, but with his own party being flown out two days later, Steger had no means of checking those.

The International Trans-Antarctic Expedition, 1989–1990

The idea of the International Trans-Antarctic Expedition (ITAE) was born in 1986 when Steger’s path crossed that of the French adventurer Dr. Jean-Louis Étienne in the middle of the Arctic Ocean. Both were on their way to the North Pole, Étienne undertaking only the second solo journey and the first by skis alone unassisted by dogs. As they stayed up talking late into the night, they discovered that they shared a dream: both wanted to complete the first unmechanized traverse of Antarctica. There and then they decided to make the attempt together. They exchanged phone numbers, and
preparations for ITAE began once they had returned from the North Pole.

The expedition would be formidably expensive, especially after they decided to make their traverse over the longest possible route. With $11 million to be raised, they somehow needed to catch the public imagination and hit upon the idea of choosing a team of six men from different countries and cultural backgrounds who would nevertheless work together for a shared cause. ITAE was to be a symbol of international collaboration toward world peace and protection of the environment, especially Antarctica, whose future was then the subject of debate. Although some believed that its great white wildness should remain forever inviolate, others were prepared to allow prospecting by mining companies. Considering the issue too important to be left to diplomats and politicians, Steger and Étienne intended through ITAE to campaign for Antarctica’s preservation for future generations.

With Steger representing the United States and Étienne France, Viktor Boyarsky was chosen from the Soviet Union, Geoff Somers from Great Britain, Keizo Funatsu from Japan, and Qin Dahe from the People’s Republic of China. All were experienced polar travelers, apart from Qin, a glaciologist and geologist who had two years’ experience in the Antarctic as base manager of the Great Wall Station on King George Island. Somers had spent three and a half years with the British Antarctic Survey; Boyarsky had worked in Antarctica with the Arctic and Antarctic Research Institute. The other three had all acquired their polar expertise in the north. Between 19 April and 16 June 1988, as preparation for the Antarctic crossing, five of the party participated in the first south-north crossing of the Greenland Ice Sheet, Qin’s place being taken by Bernard Prud’homme. Assisted by thirty dogs and air support, they climbed onto the ice sheet to the east of Narssarssuq, from where they headed 1,600 miles north to the Humboldt Glacier. The only previous comparable journey was Naomi Uemura’s 1978 north-south crossing, though that had been accomplished alone.

At sunrise on 27 July 1989, the six men and forty dogs set out from Seal Nunataks on the east coast of the Antarctic Peninsula. As the three experienced dog handlers, Steger, Somers, and Funatsu each took charge of a sled following behind Boyarsky, who acted as scout and as a target for the dogs. Meanwhile, Étienne operated the radio, with Qin conducting scientific studies. Qin had never skied before and found the going very tough, falling over repeatedly but fortunately without injuring himself. They were able to travel relatively light, as Somers had established twelve depots along their route the previous year. There were also to be five air resupplies during the journey. On 21 August, they left the Larsen Ice Shelf to climb onto the spine of the Antarctic Peninsula. Struggling up the steep incline of the Weyrauhaeuser Glacier into the teeth of a vicious katabatic wind, their progress was very slow. By midafternoon, unable to see where they were going, they were forced to pitch camp in winds reaching 60 miles per hour that threatened to tear away the tents. When they reached the plateau at 1,615 meters, they were laid up for three days in a whiteout. Conditions on top of the peninsula were truly appalling, and it was easy to understand why no one had previously attempted to cross it so early in the year. Although marked by 3-meter-high flags, they missed three of the first four depots left by Somers. Out of dog food, they were reduced to feeding the dogs pemmican and going short themselves. A vote was taken as to whether some of the party should be airlifted out to rejoin the others later on when the going was easier. It was rejected unanimously. The expedition had been planned as a cooperative endeavor. If all of them could not make it, then none would. Fortunately, a Twin Otter got through with supplies on 30 September. They were now south of Alexander Island and about halfway through their peninsula journey; with luck, this would be as bad as it would get. With winds regularly up to 90 miles per hour and temperatures down to –34°C (–30°F), they certainly hoped that with the approach of the austral summer life would become easier. By 27 October, they had reached the Ellsworth Mountains. Conditions improved during the first week of November. From the twilight of their earlier journey, they moved into twenty-four-hour daylight. In light winds, with temperatures rising to –26°C (–15°F), they were able to increase their distances to 25 miles a day and began to make up the three weeks lost on the peninsula. After resupply at Patriot Hills, they continued on to the Thiel Mountains and from there to the Pole, where they arrived on 11 December. They had traveled 2,071 miles in 138 days and still had 1,700 more to go. After resting three days they set off again. The next part of their journey, to the Soviet station Vostok at the South Geomagnetic Pole, was across the area of inaccessibility, a 750-mile zone traversed previously just once by a tractor party in 1959. There, the great Antarctic ice sheet rose to still greater elevations, and Steger’s party reached 3,475 meters at their highest point. At such altitudes, breathing became labored, and spells of dizziness made strenuous effort difficult. By now, both Qin and Steger had strained their backs and preferred to abandon their skis and run alongside the sleds. A succession of fine days aided their progress. To get to Vostok, they were counting on being resupplied twice by air. Radio being useless at a sunspot maximum, every 2 miles they stopped to build a cairn to ensure that the planes could find them. Over snow compacted hard by the winds, they continued to make good progress, often more than 20 miles a day, to arrive at Vostok on 18 January 1990. Boyarsky had spent two winters here and received a particularly warm welcome. Caches had been laid for them along the tractor trail to Mirnyy, their final destination some 850 miles beyond. As the high ice plateau lessened in height toward the ocean, ice-cold katabatic winds poured down its slopes. On 6 February, temperatures dropped to –48° (–54°F) on the coldest day, though 15 February felt still colder with a wind chill of –87° (–125°F). Winter
was fast drawing in. The last ship left Mirnyy in early March, and it was essential that they be on it to avoid having to winter in Antarctica. Just two days short of the Soviet station, Funatsu went out briefly to look after his dogs in a howling blizzard. Thirteen hours later, he was found buried in the snow. Knowing better than to wander aimlessly once he realized that he was lost, Funatsu had scraped a shallow hole and then allowed the insulating snow to bury him, hoping that the others would reach him in time. On 3 March they completed their journey of 3,741 miles, reaching Mirnyy after 220 days.

Ironically, the cause for which ITAE had been organized—the protection of Antarctica—was to make impossible any similar expedition, for dogs were not native to Antarctica, and their use on the continent was banned by the Environmental Protocol of 1991, which also imposed a fifty-year moratorium on all mining activity.

**Attempted Crossing of the Arctic Ocean, 1995**

ITAE had proved a highly effective means for focusing public attention on Antarctica, providing teachers in particular with a story around which lessons could be designed to communicate the importance of Antarctica in the global environment. Steger now planned a similarly spectacular expedition to the Arctic, which would make use of the Internet to focus classroom attention on the Arctic Ocean. Having crossed Antarctica with dogsleds, he now intended to use the same method to cross this ocean. Again, the expedition would be international, but this time it would include women. The initial four-man and two-woman party consisted on Steger, Boyarsky, the Briton Martin Hignell, the Dane Ulrik Vedel, fellow American Julie Hanson, and the Japanese Takako Takano.

Originally with thirty-three dogs and three sleds, they had set out from Arctic Cape, Severnaya Zemlya, on 9 March 1995, only to be forced back to land five days later by a broad expanse of broken ice and water barring their way to the Pole. At this point Vedel withdrew, taking with him eleven dogs. Not surprisingly, spirits now were low and were to sink further as they waited three weeks in vain for the ice to freeze over. Eventually, Steger had to accept the least-worst option of being flown by helicopter over the open water to begin the journey at 85°30’N on 2 April. The alternative was simply to give up, and with schools across the world logging daily onto the expedition website, this possibility could not be considered. The remainder of the journey went well. The Pole was reached on 21 April, and the crossing was completed at Ward Hunt, Ellesmere Island, on 3 July.

**Solo from the Pole, 1997**

On his last expedition to date, Steger planned to make the first journey sledding south from the North Pole during summer. Exceptionally risky, this was to be an unsupported solo expedition, undertaken without aid of dogs or airdrops; he expected to take fifty days. On 12 July 1997, he was dropped off at the Pole by the Russian icebreaker Sovetskiy Soyuz. As anticipated, there was much open water, and the ice was fragmented and very insecure. These conditions, combined with persistent impenetrable fog, persuaded him that the attempt was just too risky—not only for him but also for rescuers should he get into difficulties and need help. Abandoning the attempt on 19 July, he was picked up six days later by Sovetskiy Soyuz on its next voyage to the Pole.

**Stenhouse, Joseph** (1887–1941)

The story of how Sir Ernest Shackleton’s ship *Endurance* became trapped and eventually crushed in the ice of the Weddell Sea is well known. Much less familiar is how *Aurora*, Shackleton’s other ship on this expedition, was simultaneously caught up in the ice of the Ross Sea and lucky not to share the same fate.

**Aurora’s Drift in the Ross Sea, 1915–1916**

Lieutenant Joseph Russell Stenhouse took over command of the 386-ton *Aurora* on 25 January 1915, when Captain Aeneas Mackintosh left the ship to lead sledding parties with the goal of establishing depots south across the Ross Ice Shelf in support of Shackleton’s planned crossing of Antarctica (see Shackleton, Ernest). For an account of what happened to the Ross Sea party, see the entry for Aeneas Mackintosh.

In order for the ship’s crew to be available to help with the extensive depot-laying journeys, Shackleton had given instructions that *Aurora* should winter with the expedition rather than return to New Zealand. He had also stipulated that its anchorage should be on Ross Island, to the north of Cape Royds and south of the glacier tongue protruding into the waters of McMurdo Sound. Stenhouse’s first task was thus to find a safe anchorage for *Aurora*. At this date, only Robert Falcon Scott’s *Discovery* had wintered in the Ross Sea; on all other expeditions, only shore parties had wintered. Scott’s considerable difficulties in extracting his ship from the ice are described in his entry (see the expedition of 1901–1904) and in the entry for William Colbeck (the two relief expeditions).
Finding a sheltered winter anchorage on the exposed west coast of Ross Island proved far from easy. Stenhouse finally decided to try Cape Evans, the base for Scott’s shore party through the winters of 1911 and 1912. Moored 40 meters offshore, Aurora was secured to land by two anchors at its bows and seven steel hawser lines and one cable from its stern. Ice quickly formed around it to further stabilize its position, which now appeared sufficiently safe for Stenhouse to order fires put out on the boiler to save coal.

Any appearance of security soon proved deceptive. On 6 May, a severe storm arose, parting the ice surrounding Aurora from the shore. With all its moorings broken, Aurora was borne out into McMurdo Sound, firmly encased in an ice floe. Most of the supplies and equipment for the Ross Sea party were still on board; many of the crew had been left marooned at Cape Evans with virtually no supplies apart from what they could garner from leftovers from Scott’s expedition. Six more were at Hut Point, 13 miles farther south.

Blown far offshore in the storm, Aurora was caught up in the main body of the Ross Sea pack ice before steam could be raised in its boilers, then drifted helplessly with the pack slowly northwest. Although there was a radio transmitter on board, contact could be made with neither Cape Evans nor Macquarie Island. Initially, lack of fresh water was the most immediate problem; it could only be obtained from freshly fallen snow, with icebergs tantalizingly close but not close enough to obtain blocks of ice. As the coast of Victoria Land was neared, however, ice pressure increased, and on 21 July the rudder—always the most vulnerable part of a ship—was smashed near Coulman Island in very heavy pressure that threatened to break Aurora’s back. Stenhouse ordered final preparations to abandon ship and to take to the ice, but fortunately the pressure eased before that proved necessary.

The worst now appeared to be over with the ice drifting more freely to the north. Spirits were further lifted off Cape Adare by the return of the sun on 6 August. On 22 September, Sturge Island in the Balleny Islands was sighted some 90 miles away, but still the ice would not release Aurora. At this date, Stenhouse was optimistic of sailing back to Cape Evans in time to help the Ross Sea party with its major depot-laying journeys. On 23 November, the Balleny Islands were again in view, impressively enlarged above the horizon by a looming mirage. Still stuck in ice in early January 1916, Stenhouse went unprepared to make available clothing reserved for the sledding parties to his now threadbare crew. One way or another, he meant to get back to Ross Island. However, when release finally came with the breakup of the floe on 12 February at 62°27’S, 157°32’E, it soon became clear that he would be lucky to get the rudderless, leaking, coal-depleted Aurora back to New Zealand. On 2 March, after spending days in ineffective attempts to negotiate a passage through the pack ice, Stenhouse ordered steam raised and reluctantly set course north. Port Chalmers, New Zealand, was reached on 3 April, the battered Aurora suffering the ignominy of having to be towed into port by a tug.

After undergoing extensive repairs, Aurora sailed south again for Antarctica on 20 December, now under the command of Captain John K. Davis, with Shackleton himself on board. Cape Evans was reached on 10 January 1917, and the seven survivors of the Ross Sea party were picked up. After volunteering for service on Q-boats during World War I, Stenhouse returned to the Antarctic in 1925–1926 as captain of Discovery on the first voyage of the Discovery Investigations. He was killed in action during World War II.

**References and further reading:**

### Sub-Antarctic Islands

No ocean on Earth is entirely devoid of land, and the Southern Ocean is no exception. Scattered about it at irregular intervals are numerous islands and island groups. The greatest number lie south of the South Atlantic along the Scotia Ridge, which extends between Tierra del Fuego at the tip of South America to the Antarctic Peninsula. South Georgia, and the South Sandwich, South Orkney, and South Shetland Island groups, all lie at high points on this ridge. The most isolated islands are similarly located on the extension of the Mid-Atlantic Ridge, where it extends south of Africa around to the Indian Ocean. There one finds Bouvet, as well as the Prince Edward and Crozet Islands, with Kerguelen and Heard Islands on the nearby Kerguelen Ridge to the southeast. Macquarie, Campbell, and the Auckland Islands are the southernmost of the islands lying south of New Zealand. Almost all of them are volcanic, with South Georgia and the South Orkney Islands being the chief exceptions.

Depending on latitude, the islands vary considerably in terms of climate and ecology. Definitely not to be considered sub-Antarctic are Peter I, Scott, and the Balleny Islands, all located close to Antarctica and essentially sharing that continent’s climatic and ecological features. The South Shetlands and South Orkneys—particularly the latter—are also heavily influenced by their proximity to Antarctica, though they show some sub-Antarctic features; fur seals, for example, breed there, and mosses, lichens, and even grasses are found in sheltered locations. The true sub-Antarctic islands lie farther north—yet still to the south of the Antarctic Convergence, at least during the winter—and are thus surrounded on the surface by a cold-water mass moving north from Antarctica, in which krill, and all the animal species that live off krill, pro-
liferate. Since the latter include seals and whales, these islands have attracted sealers and whalers in large numbers at various times in their history.

The fact that fur seals haul out to breed on the sub-Antarctic islands has been the single most important factor in the island's history. Many were discovered by sealers, and those discovered by exploring or trading expeditions soon afterward attracted sealers, who continued to visit until all the fur seals had been killed. This tale of destruction was repeated across the Southern Ocean, a process begun by the unlikely figure of James Cook, whose widely read journal (first published in 1777) reported seeing many fur seals at South Georgia. After the first few seasons of intensive sealing, most sub-Antarctic islands during the remainder of the nineteenth century were visited infrequently by sealers. They were hopeful to see a revival in fur seal numbers, and they were prepared to make a living by killing elephant seals and southern right whales. The first sub-Antarctic whaling station was a short-lived experiment between 1849 and 1852 on the Auckland Islands, the optimistic Charles Enderby being the prime instigator. Elsewhere, whaling stations were not established until the first decade of the twentieth century, the main sub-Antarctic centers being South Georgia, the Kerguelen Islands, and Campbell Island.

As a result of sealing and whaling activity over many years, the coasts of most islands were familiar long before any attempt was made to explore their generally mountainous interiors. Systematic exploration inland has tended to follow the establishment of scientific stations. Excluding the Marine Biological Laboratory operated by Discovery Investigations on South Georgia between 1925 and 1931, these all date from the 1940s onward and have been maintained by the following countries: Argentina—Thule, South Sandwich Islands (1955–1956, 1977–1982); Australia—Heard (1947–) and Macquarie (1948–); France—Kerguelen (1951–), and Possession, Crozet Islands (1963–); Great Britain—South Georgia (King Edward Point, 1925–1931, 1950–1982, 2001–; Bird Island, 1972–); New Zealand—Campbell (1941–1995); and South Africa—Marion, Prince Edward Islands (1947–). Several unsuccessful attempts have been made to establish a station on the inhospitable Bouvet.

See also: Auckland Islands; Bouvet Island; Campbell Island; Crozet Islands; Discovery Investigations; Enderby Brothers; Heard Island; Kerguelen Islands; Macquarie Island; Prince Edward Islands; Sealing and Antarctic Exploration; South Georgia; South Sandwich Islands; Southern Ocean; Whaling and Antarctic Exploration

Submarines

The thought that submarines might prove particularly useful in ice-covered waters is almost as old as the concept of the submarine itself. Following Cornelius van Dreble's demonstrations of a leather submersible boat rowed by twelve oarsmen in London on the River Thames, Bishop John Wilkins suggested in 1648 that such a “Submerged Ark . . . Tis safe . . . from ice and great frosts, which do so endanger the passages toward the Poles” (*Mathematikal Magick*). Submarines have indeed contributed most significantly to the exploration of the polar regions, particularly in the Arctic Ocean and seas adjacent to it.

*Nautilus* in Jules Verne's *Twenty thousand leagues under the sea* (1869) dives beneath ice averaging 400–500 meters to reach an open polar sea surrounding the South Pole. Verne's story was to inspire many. Among the first was the Belgian engineer M. Palmaerts, who in 1880 proposed a voyage to the North Pole by submarine. A more considered proposal to the same effect was put forward in 1901 by Professor Hermann Anschütz-Kämpfe. A gifted inventor of instruments who was later responsible for developing the gyroscopic compass, Anschütz-Kämpfe suggested that a submarine currently under construction at Wilhelmshaven could be made suitable for such a task with the addition of devices such as a light meter to measure ice thickness and a bottom propeller to assist vertical ascents. Anschütz-Kämpfe was unable to obtain backing for his project, and it was left to the American Simon Lake one year later to construct the first submarine, *Protector*, specifically designed for work beneath the ice. Nearly thirty years afterward, Lake was approached by Sir Hubert Wilkins concerning the possibility of converting a World War I submarine for the purposes of reaching the North Pole. An account of this first polar submarine expedition is given in the Wilkins entry.

Envisaging that the undersurface of the polar ice would be essentially smooth, Lake had equipped both *Protector* and Wilkins's submarine *Nautilus* with inverted sled-runners. Designed to float upward against the ice, Lake viewed sliding along the ice as the main means of propulsion. Because they would be unable to go far without surfacing to renew oxygen supplies and recharge their batteries, they would “puddle-hop” between polynyas and other areas of open water, which Wilkins knew from aerial reconnaissance to occur frequently in the Arctic Ocean. These ideas still dominated the first post–World War II experiments: USS *Atule* accompanied Operation Nanook in 1946 through Smith Sound to Kane Basin, and USS *Sennett* was assigned to Operation Highjump (1946–1947), the only occasion on which a submarine has participated in an Antarctic expedition. Equipped with sled-runners along its sail, *Atule* penetrated about 1 mile under the ice, which was found to extend down to a maximum of 25 meters. *Sennett* was even less successful and unable even to reach the Ross Sea through its thick encircling pack.

One of those aboard *Sennett* was Dr. Waldo K. Lyon (1914–1998), a scientist from the Naval Electronics Laboratory who, as director of the Arctic Submarine Laboratory, was to become the dominant influence on the development of polar submarines. Lyon was with USS *Boarfish* when it ventured 12 miles under the ice north of Bering Strait in 1947. In the following year, he joined USS *Carp* on a mission designed to test how far north a submarine could reach in the Chukchi Sea by
puddle-hopping between ice holes. It penetrated just 54 miles. In 1952, Lyon was again aboard when USS Redfish remained submerged for 8.5 hours, traveling 40 miles under the ice in the Beaufort Sea before heading east to reach the entrance to McClure Strait, the chief exit point for the Northwest Passage.

All of these voyages were made in diesel-electric submarines, which Lyon sought to equip for polar work through improved instrumentation. Thus, after his experiences on Boarfish, Lyon designed an inverted fathometer to be mounted topside because polar submarines need to know their distance from the ice above as well as from the seafloor below. In certain cases, appropriate instruments already existed but were no longer mounted. For example, during World War II, submarines were routinely equipped with forward-scanning sonar, but with the threat of minefields much reduced this had become seen as an unnecessary expense. On polar submarines, iceberg detectors were essential. Over time, Lyon progressively developed equipment to provide a constant flow of information of the state of the ice ahead and above, as well as means of visual scanning through underwater television.

Diesel-electric submarines were limited by the capacity of the batteries and had to surface frequently or raise air-intake tubes to fire up the engines for the batteries to be recharged. Nuclear-powered submarines have no such limitations, and following the launch of USS Nautilus in 1955, a series of high-profile polar missions were undertaken. On 3 August 1958, Nautilus became the first submarine to pass under the North Pole and the first vessel of any kind to reach it, on the way completing the first transit of the Arctic Ocean (see Anderson, William). USS Skate was the first submarine to surface in the vicinity of the Pole on 11 August 1958, afterward visiting the drifting Ice Station Alpha before returning in March the following year to conduct the first Arctic winter voyage. In January and February 1960, USS Sargo demonstrated that the Arctic Basin could be entered in the winter from the Pacific as well as from the Atlantic, and in August of that year USS Seadragon made the first submarine transit of the Northwest Passage. A fitting culmination to this series was achieved in July 1962, when Seadragon and Skate surfaced at the North Pole. Seadragon had come from the Pacific and Skate from the Atlantic after pioneering a new route north from Smith Sound to the Lincoln Sea. In the same year, the nuclear-powered Lenin Komsomol became the first Soviet submarine to reach the North Pole.

A new era was inaugurated with the launch of the Sturgeon-class nuclear attack submarines, the first submarines designed specifically for year-round polar operation with strengthened sails and rudders and equipped with top sounders, ice profilers, iceberg detectors, among other enhancements. To assist vertical ascent and descent through the ice, the sail planes were capable of being folded back 90 degrees to lie alongside the sail. In all, thirty-seven were built between 1963 and 1981. Although Sturgeon-class submarines were to operate extensively in the Arctic, they were introduced at a time of declining exploratory activity by the U.S. Navy as cutbacks in its budget forced their employment elsewhere. Also, the loss of USS Thresher in 1963 demonstrated serious deficiencies in nuclear submarine design. Notable voyages nevertheless continued to be made, with USS Queenfish exploring the shallow waters off the Siberian coast for more than 2,600 miles in 1970 and, in the same year, USS Hammerhead discovering a new deepwater passage along the east side of the Lincoln Sea, connecting Robeson Channel with the Arctic Basin. In March 1971, HMS Dreadnought reached the North Pole, making Great Britain the third country to achieve that goal.

Until the end of the Cold War in 1990, investigations increasingly focused not on the deep waters of the Arctic Basin but on the marginal ice zones, where the fragmented pack provided hiding places for submarines with very little risk of detection. Improved international relations following the end of the Cold War around 1991 resulted in the release of vast quantities of previously classified data gathered by U.S., Soviet, and British submarines. The last Sturgeon-class submarines were withdrawn from duty and made available through the SCICEX (Scientific Ice Expedition) program as platforms for a series of voyages during which civilian scientists conducted environmental research. The various national submarine programs have also made a more indirect contribution to the knowledge of the Arctic through meteorological and sea-ice reconnaissance support activities.

Extensive continental shelves and ice keels descending deep below the pack ice restrict the potential role of submarines for exploration of Southern Ocean waters close to Antarctica. However, the prime factor restricting submarine exploration in the Antarctic is political: the prohibition on the use of nuclear power in regions subject to the Antarctic Treaty. The first submarine known to have visited Antarctic waters is the British submarine HMS Olympus, which in December 1939 investigated anchorages in the Crozet and Prince Edward Islands. USS Sennett remains the only submarine to have sailed south of the Antarctic Circle.

See also: Anderson, William; Arctic Ocean; North Pole; Northwest Passage; Operation Highjump; Wilkins, George Hubert (1931)

References and further reading:
Surveying and Mapping

This entry (contributed by Geoff Renner, formerly of the British Antarctic Survey) outlines the techniques employed in surveying and mapping in the polar regions, then focuses on their application in Antarctica.

Prior to the debut of a viable magnetic compass in the late twelfth century, rudimentary charts had evolved via maritime lore, account, cursory sketches, and elementary astronomy. Within three centuries, celestial navigation enabled latitude to be determined. Yet navigation devices remained crude—an astrolabe or cross-staff to measure star altitude, a compass to register heading, and a plumb line to sound depths. The enigma was longitude, which could be only roughly guessed by combining the speed from the ship’s log with time from a sandglass. With cumulative errors occurring through instrument shortcomings and the unknown oceanographic variables of current and drift, any resulting charts were either wanting or conjured from a blend of marshaled facts and folk memory. Although the invention of the reflecting quadrant (sextant) in the eighteenth century improved latitude sailing, the effective computation of longitude proved evasive. Research in astronomy coupled with the publication of the first nautical almanac in 1767 paved the way for more accurate longitude calculations by observing lunar distances, but this method required complex field procedures as well as computations that were time-consuming and beyond the capacity of many. A reliable seagoing timepiece was essential to relate local time to Greenwich Mean Time. A heuristic solution finally gained approval in 1772 when overdue recognition was accorded to the clockmaker John Harrison for constructing a chronometer capable of keeping sufficiently reliable time to allow longitude calculations to be made. James Cook took with him the first copy of Harrison’s chronometer on his second circumnavigation (1772–1775). It proved invaluable.

Polar climates pose special difficulties for surveyors, placing demands upon both the specification of instruments and their handling. At low temperatures, operators are well advised to insulate exposed metal to prevent frostburn. Another hazard is presented by surface condensation and refreezing due to avoidable fluctuations in temperature. Whatever the tools used, topographical survey involves the alliance of science and art—the measurement of angles and distances and their transcription to a two-dimensional map. Cartographic compilations are pivotal to wilderness exploration. Schematic traverses judged sufficient for small-scale surveys were improved upon by running surveys incorporating position fixes from astronomical observations, magnetic bearings, dead reckoning, and resection. Visual interpolation allowed apposite features to be in-filled. With more rigorous trigonometry, reconnaissance maps replaced exploratory maps and, at scales of 1:250,000 to 1:100,000, permit the representation of prominent geomorphologic features. Until cartographic field procedures were revolutionized in recent decades by new electronic and remote-sensing techniques, hydrographic and shore-based surveys had remained largely unchanged for many years. Almost two centuries after Cook’s second circumnavigation, Vivian Fuchs brought with him many of the same tools on his first crossing of Antarctica (1955–1958): compass, chronometers, star almanac, and measuring chain or tape. For overland parties, later developments included aneroid barometers, leveling staves, survey cameras, and radio receivers to monitor time signals.

Although charts of varying accuracy had been compiled by sealers (e.g., Isaac Pendleton’s outline map of South Georgia of 1802), the first scientific survey in the Antarctic was made of Deception Island by members of Henry Foster’s expedition (1828–1831). Edward Kendall began by establishing a survey baseline across the volcanic caldera by converting the elapsed time between the sight and sound of cannon fire to distance. The chief purposes of Foster’s voyage were to conduct pendulum measurements to help determine the exact shape of the Earth and magnetic observations to monitor compass variation and dip; both were essential for accurate mapping worldwide.

At the beginning of the twentieth century, less than 5 percent of the Antarctic had been mapped. Exploratory mapping was accomplished using sledge-wheel and compass techniques, yet by the publication of the first Australian map of Antarctica (1929), only one-quarter of the continent had been reconnoitered. The situation was transformed by the advent of airplanes. Despite photogrammetry being in its infancy, the flights made during the expeditions of Hubert Wilkins and Richard Byrd in the late 1920s and 1930s introduced a reformation in polar cartography. By the onset of World War II, the majority of the coastline had been charted, although the interior remained largely unsurveyed. During Operation Highjump (1946–1947), six planes were dedicated to aerial photographic sorties. Trimetrogon cameras were used to simultaneously shoot one vertical and two oblique images covering a panoramic swath 70 miles wide. A total of some 70,000 photographs were recovered. The union of flight and photography signaled the end of traditional oversnow surveys. However, for dependable map production, ground truth was still essential. Ships, helicopters, fixed-wing aircraft, and oversnow support helped in the establishment of baseline templates necessary for photogrammetric control.

Radio had a considerable impact on surveying practices once applied in the early twentieth century. Time signals upgraded the accuracy of astro-fixes, then developments in radar led to the introduction of tellurometers to the Antarctic in 1959. With distances measured electronically, simple trilat-
eration traverses complemented the more complex triangulation networks recorded optically. There were considerable advantages in efficiency and range. Around the same time, the International Geophysical Year paved the way for international cooperation and led to establishment by the Scientific Committee on Antarctic Research (SCAR) of the permanent Working Group on Geodesy and Cartography. Its responsibility was to coordinate the systematic mapping of the Antarctic by standardizing scales, symbols, and adjusting data to the World Geodetic System.

The rapid transition between the traditional and electronic age of polar survey and mapping was exemplified in the 1970s, when dogsledging and satellite technologies overlapped. In 1972, the United States launched the Earth Resources Technology Satellite (also known as Landsat), which orbited at an altitude of 570 miles. Any given image could scan a strip of land 115 miles square and transmit multispectral information to Earth for processing. With only eleven Landsat images covering the area of a single 1:250,000 map, the value to polar cartography was immense. There were limitations, including cloud cover, resolution, and a restriction to latitudes lower than the eighty-first parallel. The problem of ground truth remained but was resolved by the advent of navigation satellites. In Antarctica, Doppler satellite positioning was combined with international logistics to establish a network of ground stations enabling previously independent surveys to be reduced to a common geodetic datum, to provide a tighter control to aerial photographs, and to equate existing to any future topographical maps. In recent decades, remote sensing has overtaken traditional mapping procedures. Digitally processed multispectral images, individual and mosaic, now provide enhanced resolution in the preparation of medium- to small-scale base maps. However, satellite imagery lacks the detail and the stereoscopic scrutiny offered by aerial photography. With the replacement of Doppler satellite navigation by the Global Positioning System, it became possible to recover three-dimensional coordinates alongside aerial photographs. This obviated ground control and provided for automated computer management, geometrical rectification of optical distortion, and source material for larger-scale and thematic maps. To reflect the digital era of mapping and map design, SCAR renamed its cartographic unit the Working...
Group on Geodesy and Geographic Information. In 1989, the Mapping and Geographic Information Center was established at the British Antarctic Survey by a UK consortium. Its responsibility lay toward all new digital maps but also addressed earlier conventional survey data sets. As quality was given priority over quantity, it was not until 1993 that information prepared from multinational sources was released on CD-ROM as the Antarctic Digital Database (ADD), the result of a collaborative project with the Scott Polar Research Institute and the World Conservation Monitoring Center. From this database the first comprehensive, seamless digital map of Antarctica was printed. This collaborative 1:10,000,000-scale shaded relief map covers all areas south of 60°S. The projection is polar stereographic, the latitude of true scale is 71°S, and the ellipsoid is World Geodetic System 84. In two data sets, ADD also defines geomorphologic features pertinent to generalized scales. Data is being improved continuously. Upgraded versions of ADD were released in 1998, 2000, and 2002.

Image-based maps compiled from aerial photography, satellites, manned spacecraft, and remote surveys using various electromagnetic wavelengths have major applications worldwide. Digital information integrated with complementary analog data provides image analysis for geographical information systems, education, and scientific themes. In 1997, the first complete synthetic aperture radar map of Antarctica was published. The image bank was recovered over a thirty-seven-hour period, providing a snapshot reference of Antarctica was published. The image bank was recovered over a thirty-seven-hour period, providing a snapshot reference of the continent. Synoptic images have enabled the existent coastlines to be accurately mapped and the monitoring of ongoing changes due to glacial dynamics such as isostatic rebound and ice shelf recession. This is important because, of all the continents, Antarctica is most subject to continuous change.

Geoff Renner

See also: Airplanes; British Antarctic Survey; Byrd, Richard; Cartography of the Arctic; Cook, James (1772–1775); Deception Island; Foster, Henry; Fuchs, Vivian; International Geophysical Year; Operation Highjump; Sealing and Antarctic Exploration; Terra Australis Incognita; Wilkins, George Hubert (1928–1929, 1929–1930)

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Svalbard (Norway)

Located between 74° and 81°N and between 10° and 35°E, this archipelago lies 580 miles north of Norway and comprises the following major islands and island groups: Barents, Bear, Edge, Hope, North East Land, Prince Charles Foreland, Spitsbergen, and White Islands and King Charles Land. For information concerning the exploration of specific islands, see the entries under their names. Since 1925, the archipelago has been officially named “Svalbard” (Cold Coast), previously being known as “Spitsbergen,” a term now reserved for the largest island. The total land area is 24,500 square miles. Under the terms of the Spitsbergen Treaty of 1920, sovereignty is vested in Norway, the archipelago having been previously regarded as terra nullius (no-man’s land).

Six Icelandic annals include the phrase “Svalbard is found” for 1194. The thirteenth-century Landnámabók (Book of Settlements) records “Svalbard” as being four days' sailing from north Iceland. The view that these records prove discovery by the Norse has been put forward by some Norwegian scholars (e.g., Fridtjof Nansen), but there is little real evidence, and Jan Mayen would appear to fit better, particularly in relation to its distance from Iceland. Russian scholars have claimed that the hunting activities of the Pomor inhabitants of the White Sea region extend back to the fifteenth and sixteenth centuries. There is, for example, a tradition that the Starostin family has hunted in Svalbard “since before the founding of the Solovetsk monastery” (i.e., before 1425). Recent dendrochronological studies have yielded mid-sixteenth-century dates for timber found in Pomor huts though, given that the huts were often constructed from materials used in preexisting buildings, this provides evidence rather than proof for Pomor activities preceding discovery in June 1596 by Willem Barents. Since no mention is made of the Pomors in contemporary whaling accounts, others believe that their expeditions did not begin before the early eighteenth century (Hultgreen 2002).

Whalers and walrus hunters played an important role in the early exploration of Svalbard following Henry Hudson's report of seeing many whales there. With stocks of right whales severely depleted farther south, English, Dutch, and Danish whalers were among the first to come north. With the Dutch soon achieving ascendancy off north Spitsbergen, much of southern Spitsbergen and the islands farther east—Barents and Edge Islands—were first explored by English ships looking for new whaling grounds. Belief that the islands were connected to Greenland was reflected in the term “Greenland Fishery” accorded to these activities, despite taking place off Svalbard rather than Greenland. This belief led to early attempts by Christian IV to assert Danish sovereignty. Despite it being well-established by 1700 that Svalbard was not joined to Greenland, British whalers, motivated perhaps by a desire to deny discovery to Dutch rivals, continued to refer to the “Greenland Fishery” until the end of the eighteenth century.

With the exception of brief visits by Anton Martin in 1758, Edward Sabine in 1823, and Balthasar Keilhau in 1827, scientific expeditions to Svalbard may be considered to have been inaugurated by Sven Lovén in 1837. Lovén conducted zoological and geological studies at locations along the west-central coast of Spitsbergen but, more significant, was inspired by his experiences to encourage fellow Swede Otto Torell, who in turn tutored Adolf Erik Nordenskiöld and Alfred Nathorst to
become leaders of a succession of Swedish scientific expeditions to Svalbard. Supported by royal and commercial patronage, including the personal interest of King Oscar II and the sponsorship of industrialists such as Oscar Dickson, these expeditions culminated in Nordenskiöld’s map of 1875, which brought together the results of many seasons’ fieldwork.

Norwegian hunting activities date back to the eighteenth century, the first wintering being organized by merchants from Hammerfest in 1795–1796. Two of the fifteen-man party died, and no further attempts to winter are recorded until 1822. In the second half of the nineteenth century, Norwegians were responsible for much of the detailed exploration of the eastern regions of the archipelago, which previous expeditions had found inaccessible. Among their achievements were the first passage of Freeman Strait between Barents and Edge Islands (E. Lund, 1847); the first passage of Heley Sound between Spitsbergen and Barents Island (Johannes Nilsen, 1858); the rediscovery of King Charles Land (Erik Eriksen, 1853) and the first landing (Erling Carlsen, 1859); the first circumnavigation of the archipelago (Erling Carlsen, 1863); the first circumnavigation of Spitsbergen (Nils Fredrik Rønbeck, 1867); the rediscovery of White Island (Johan Kjeldsen, 1876); the first passage of Rivalen Strait (Hemming Andreasen, 1886); and the discovery of Victoria Island (Johannes Nilsen and Ludvig Sebulonsen, 1898). The year 1898 was particularly good for ice, and during it Thomas Lerner’s German expedition made the first counterclockwise circumnavigation, and Alfred Nathorst’s Swedish expedition was the first to visit all the major islands in the archipelago: Bear, Hope (but unable to land), Spitsbergen, King Charles Land, White, and North East Land.

Apart from Balthasar Keilhau’s pioneering visit in 1827, the scientific study of Svalbard by Norwegians began in 1902–1903 with Kristian Birkeland’s expedition to study the aurora borealis. The major program of research originated in 1906 with the inauguration of a continuing series of annual expeditions led by Gunnar Isachsen (until 1910) and then by Adolf Hoel (1911–1938). These were initially conducted with financial and logistical assistance from Albert I, prince of Monaco; after 1909 the bulk of funding was provided by the Norwegian government, the expeditions being formally reconstituted in 1928 as Norges Svalbard-og Ishavs-Undersøkelser (Norwegian Scientific Exploration of Svalbard and the Polar Regions). Principally concerned with topographic, geological, and hydrographic surveying, they culminated in an aerial survey during which the entire archipelago was photographed in 1936 and 1938.

Norwegian sovereignty of Svalbard was recognized by the 1920 Spitsbergen Treaty. Under its terms, there were to be no military installations, and concessions to mine coal were to be granted to foreign nationals subject to regulations drawn up by the government of Norway. Other countries were free to conduct scientific research, again subject to Norwegian regulation. Thus, in addition to research conducted by the Norwegian Polar Institute (1948–present), several countries currently maintain scientific facilities at Ny-Ålesund, and Poland has operated a station in Horn Sound since 1957.

See also: Barents Island; Barents, Willem (1596–1597); Bear Island; Edge Island; Hoel, Adolf; Hope Island; Hudson, Henry (1607); King Charles Land; Nathorst, Alfred (1898); Nordenskiöld, Adolf Erik (1864, 1868, 1872–1873); Norse Arctic Exploration; North East Land; Pomor Contribution to Arctic Exploration; Prince Charles Foreland; Spitsbergen; Torell, Otto; Whaling and Arctic Exploration; White Island

References and further reading:


Sverdrup Islands (Canada)

This northwestern group within the Queen Elizabeth Islands of Arctic Canada was discovered by Otto Sverdrup between 1900 and 1902, for whom it was named some time before 1910. The group includes Axel Heiberg, Amund Ringnes, Ellef Ringnes, King Christian, and Meighen Islands. Sverdrup claimed his discoveries for Norway, but this was never taken up by the Norwegian government. In 1907, a rival claim on behalf of Canada was submitted by Joseph-Elzéar Bernier, although he was unable to reach any of the islands and had to make his claim instead from King Edward VII Point, Ellesmere Island, at the entrance to Jones Sound. On 11 November 1930, Norway recognized Canadian sovereignty while at the same time Canada paid Sverdrup $67,000 for his journals and maps.

See also: Amund Ringnes Island; Axel Heiberg Island; Bernier, Joseph-Elzéar; Canada; Ellef Ringnes Island; King Christian Island; Meighen Island; Norway; Queen Elizabeth Islands; Sverdrup, Otto (1898–1902)

References and further reading:


Sverdrup, Otto

(1855–1930)

During the first of its three great expeditions, the Norwegian polar vessel Fram crossed the Arctic Ocean. On the third, it carried Roald Amundsen to the South Pole. Its second expedition was no less significant, since during it much of Arctic Canada was explored for the first time. Otto Sverdrup was captain on Fram’s first voyage and leader of the second expedition.

Otto Neumann Knoph Sverdrup, the son of a farmer, went
to sea at age seventeen. By the time he was selected as a member of Fridtjof Nansen's party to attempt the first crossing of Greenland in 1888, he was an experienced seaman with some knowledge of the Arctic. Nansen soon found him indispensable, and when he required a captain to take command of *Fram*, he knew that Sverdrup was his man. Sverdrup carried a natural authority. Calm, unruffled, and resourceful, he did not have to exert himself to command. For more than half of *Fram*’s voyage across the Arctic Ocean, it was in Sverdrup’s sole charge. After Nansen left the ship on 14 March 1895, it continued to drift west with the ice, reaching its farthest north of 85°55’N at 66°31’E on 15 November before arriving at Danes Island, Spitzbergen, on 14 August 1896.

**Major Discoveries in the Canadian Arctic, 1898–1902**

Soon after his return, Sverdrup was approached by Nansen with a view to leading a new Norwegian expedition to be funded by Consul Axel Heiberg and the brewers Amund and Ellef Ringnes, who had been among the sponsors of the *Fram* expedition. The objective would be to steam through Nares Strait and, if possible, force *Fram* around northern Greenland as far as the east coast. Should Sverdrup be prevented from carrying out this plan, he would be given discretion to choose some other goal. No expense would be spared, and *Fram* would carry five years’ worth of provisions.

Sixteen men were to accompany him, including second-in-command Lieutenant Victor Baumann (astronomer and hydrographer), Lieutenant Gunnar Isachsen (cartographer), Edvard Bay (zoologist), Per Schei (geologist), Johan Svendsen (medical officer), Oluf Raanes (mate), Peder Leonard Hendriksen (harpooner), Ove Braskerud and Rudolf Stolz (stokers), and general assistants Ivar Fosheim and Sverre Hassel. Although only Hendriksen had taken part in the Arctic crossing, Isachsen and Hassel were to participate in notable subsequent expeditions (see the entries for Adolf Hoel and Roald Amundsen).

On 24 June 1898, *Fram* sailed from Oslo. Reaching Greenland on 18 July after a stormy voyage across the Atlantic, it took on sixty-six sledge dogs at Egedesminde and Godhavn. Little ice was encountered off West Greenland, but in the vicinity of Smith Sound it became clear that this would be a very difficult year to get far north. *Fram* was eventually forced to winter in Rice Sound off Pim Island, where eighteen men had died in 1884 on the expedition led by Adolphus Greely. Sverdrup’s men, however, found plentiful game, especially farther inland along Hayes Fiord, where a subsidiary base was established at Fort Juliana, two days march from the ship. A detailed survey was conducted of Hayes Fiord, which previous explorers had thought might possibly cut Ellesmere in two. While at Fort Juliana, Sverdrup received a brief visit from Robert Peary, whose ship was beset off Cape Hawks. Peary remained just long enough to assess the quality of his competitors. He did not have time even to share a cup of coffee.

Sverdrup kept his men busy through the winter, though birthdays were celebrated in style and Christmas festivities continued until 3 January 1899. Diversion was also provided by parties of Inuit who traveled across Smith Sound from Etah. Returning from a sledging trip to Fort Juliana, Svendsen, the expedition’s doctor, complained of chest pains and soon afterward died. Punctilious in examining others, the doctor alone had remained unexamined. On 17 April, Sverdrup set out with Bay to reach the head of a large fiord on the west coast of Ellesmere Island twelve days later. This Sverdrup named Bay Fiord for his traveling partner. On 23 May, Isachsen and Braskerud left *Fram* aiming to cross Ellesmere by a more southerly route. They reached about 78°30’N, 83°W in the interior, where they remained for two weeks before returning to arrive at the ship on 2 July. On 24 July, another attempt was made to get as far north as possible in *Fram*. On 22 August, conditions were no better than those of the previous year, and Sverdrup decided to exercise his option to alter the expedition’s objectives, determining instead to explore west of Ellesmere Island through Jones Sound. Conditions here were hardly better than in Nares Strait, and winter quarters could be established no farther west than Harbor Fiord, on the south coast of Ellesmere, on 1 September. Sverdrup took a boat to investigate the coast with Isachsen, Fosheim, and Stolz. Provisioned for one month, they soon found themselves trapped in Baad Fiord, where they were forced to fashion temporary accommodation under their upturned boat before the ice froze sufficiently to allow them to walk across it, hauling their boat and remaining supplies on an improvised sledge. When he finally arrived back at *Fram*, Sverdrup learned that another member of his expedition had died. With no doctor to treat him, stoker Braskerud’s bad cold had developed into pneumonia. The sun set for the last time on 31 October.

Through the winter, improved sledges were built, together with clothes, footwear, and anything else that might be needed in the coming sledging season. On 20 March 1900, Sverdrup led a nine-man party west along the coast to Hell Gate, a place notorious for swirling currents and unstable ice. With considerable difficulty, they managed to carve a way with picks and shovels along the narrow icefoot close by the shore. As they followed the coast north, land could be seen at intervals beyond the sea ice whenever the prevailing mist lifted. Were these separate islands, or westerly extensions of Ellesmere? Given the poor visibility characteristic of this region, compiling an accurate survey would not be easy, especially since much of the possible land was low-lying and not easily distinguishable from sea, both being covered by ice and snow throughout much of the year. On 31 March, Baumann was sent back to obtain further supplies from *Fram* before returning to conduct a survey of the fiord they had now reached, which was later named for him. A prominent cape could be seen due west, which Sverdrup considered probably lay on a large island. Naming this land Axel Heiberg for one of the expedition’s three
sponsors, they landed there on 11 April, continuing on around the coast for another four days, when more land was seen farther west during a brief clearing in the weather. Isachsen and Hassel were sent to investigate. By 7 May, Sverdrup and Fosheim were at 80°55’N and out of time. If this was an island, it was an uncommonly large one, but this issue could not be resolved this year. Meanwhile, Isachsen and Hassel crossed the sea ice to land on another apparently large island, Amund Ringnes. Farther south, Schei and Hendriksen explored North Kent, Buckingham, and Graham Islands before reaching Axel Heiberg at Hyperite Point. Sverdrup and Fosheim were the last to return to Fram. Finding a note from Baumann reporting his discovery of an overland route avoiding Hell Gate, they made their way across the mountains. Fog descended and they were soon lost, climbing down into a narrow valley that was completely blocked by a large glacier. With no way around or over, Sverdrup decided that it might just be possible to go through it. In an episode that could have come from Henrik Ibsen’s Peer Gynt, he and Fosheim descended through a tunnel into a succession of ice caves hung about with giant icicles, to emerge finally into the daylight with the lower valley before them.

By 4 July, all were back at Fram in time for its departure on 9 August in an attempt to establish winter quarters in one of the many fine bays they had seen on the west coast of Ellesmere. This year, there was much less ice, and Fram was able to steam the length of Jones Sound. Rather than attempting Hell Gate, Sverdrup sought to force it through Cardigan Strait, but the ice and tidal currents were equally bad there, and they were lucky to find refuge in Arthur Fiord on the north coast of Devon Island. After an abortive attempt was made to steam through Hell Gate, Sverdrup reluctantly decided to winter close to the head of Goose Fiord, where at least there was plenty of game.

During the winter, further sledging journeys were planned to extend their discoveries. On 8 April 1901, Sverdrup set out with Fosheim, Schei, and Raanes with the aim of proving Axel Heiberg’s insularity by sledging to its northern tip along a channel that he believed must lie to its east. When found, this channel was aptly named Eureka Sound, but Sverdrup was prevented from sledging to its end when he was forced to turn back by heavily pressured ice at 80°30’N off the Schei Peninsula. Useful investigations of Greely Fiord, however, were conducted by Fosheim and Raanes. Meanwhile, Isachsen and Hassel sledged along the southern coast of Amund Ringnes Island to discover another large island beyond—Ellef Ringnes.
by 18 June, all of the slogging parties were back at the ship, and *Fram* was made ready for the voyage home. Where they lay anchored at the head of Goose Fiord, the ice had broken up, but farther along ice had remained, forming a barrier they were unable to penetrate despite three weeks of intense effort with ice saws and explosives. They would have to spend a fourth winter in the Arctic. With plentiful game nearby, Sverdrup had no worries about running short of food, but he was concerned that a relief expedition might be organized unnecessarily to assist them.

Another year meant another opportunity for further exploratory journeys the following spring. Deciding that he himself would make one last attempt to determine whether Axel Heiberg was an island, Sverdrup set out on 1 April 1902 with Schei up Eureka Sound to reach Land’s End off the Kleybolte Peninsula of Ellesmere Island. At 81° 40’ N, this was the northernmost point achieved on the expedition. Having traveled the length of Eureka and Nansen Sounds and finding no land connection with Ellesmere, he had at last proved Axel Heiberg’s insularity. Other journeys were made by Isachsen and Bay across Jones Sound to explore the north coast of Devon Island, as well as by Baumann, Fosheim, and Raanes to Beechey Island through Wellington Channel. There, Sverdrup had instructed them to examine the condition of a sloop and depots left some fifty years earlier during the Franklin search. The boat and material might prove useful if *Fram* could not be freed this summer and they had to reach Greenland some other way. Unfortunately, the vessel was a wreck and the depot had been broken into and destroyed. The resourceful Sverdrup, however, had given thought to *Fram’s* release and had ordered sand spread over the ice in hopes it would assist thawing. Such proved to be the case, and the ice broke up early, allowing *Fram* to leave Goose Fiord on 6 August. When the ship reached Stavanger in west Norway on 9 September, Sverdrup’s party had been away four and one-quarter years.

Sverdrup’s major achievement was the discovery and exploration of the three very large islands—Axel Heiberg, Amund Ringnes, and Ellef Ringnes, now known collectively as the Sverdrup Islands. He had also explored much of the west coast of Ellesmere Island. With many scientists included in his party, the results of the studies filled five large volumes and covered geology, botany, zoology, meteorology, and archaeology. Sverdrup claimed his discoveries for the Norwegian king. Mindful of British sensitivities in a region it had long regarded as its own on the basis of previous explorations, the Norwegian government never sought to pursue this claim, which was eventually resolved amicably in 1930 by Norway recognizing Canadian sovereignty, and Canada paying a large sum of money to Sverdrup to purchase his maps and journals.

*Later Voyages to the Russian Arctic, 1914–1921*

Having spent nearly ten years in the Arctic, Sverdrup took an extended break from polar affairs. In 1914, however, he was approached by the Russian government concerning the possibility of directing a search for three missing expeditions led by Georgiy Brusilov, Georgiy Sedov, and Vladimir Rusanov. Brusilov and Rusanov were competing to complete the first Russian transit of the Northeast Passage, and Sedov was attempting to reach the North Pole. Sverdrup was placed in command of *Eclipse*, a 440-ton British whaler with a 360-horsepower engine. Rusanov’s last message had stated that he was attempting to enter the Kara Sea around the northern tip of Novaya Zemlya. Sverdrup therefore decided to begin his search in the Kara Sea, where there was a good chance that Brusilov also might be found.

Sailing from Oslo on 13 July 1914, *Eclipse* entered the Kara Sea through Kara Gate one month later and, three days afterward, was firmly beset and drifting east. On 9 September, while off the Taymyr Peninsula, an unexpected reply was received to a radio transmission. Two icebreakers, *Taymyr* and *Vaygach*, commanded by Boris Vil’kitskiy, had been damaged by ice just west of Cape Cheyluskin, and one was in imminent danger of sinking. Not until January 1915 was Sverdrup able to establish radio contact farther west with Yugor Strait and thereby relay messages between the stricken vessels and naval authorities in St. Petersburg. The icebreakers had sufficient provisions for this winter, but not another, should they be forced to remain where they were. To guard against this eventuality, Sverdrup was instructed to evacuate many of the crew. This involved traveling some 175 miles along the coastal ice with three men and three dog teams. On 19 May, he began the return journey, accompanied by thirty-nine sailors on foot. This was only the beginning of their travels. At *Eclipse* they were met by the veteran Arctic explorer Nikifor Begichev, who then escorted them more than 500 miles overland to Gol’chikha on the Yenisey Estuary. As soon as the ice broke up, Sverdrup made for Diokson to take on more coal before attempting to reach the icebreakers. However, they too were soon released, allowing Sverdrup to resume his search. By now, Sedov’s vessel *St. Foka* had returned with two survivors of Brusilov’s expedition, leaving just Rusanov in need of help. There was a small possibility that he might have reached the very isolated Uyedinenny Island, and Sverdrup’s landing there was the first since its discovery in 1878. There was no sign of Rusanov.

Sverdrup was to return twice more to the Arctic. In 1920, the Soviet government asked him to take charge of the icebreaker *Svyatogor*—later *Krasin*—in rescuing the passenger steamer *Solovey Budimirovich*, beset in Kara Gate with eighty-seven passengers on board. In the following year, he directed a convoy of five freighters on an experimental transit of the same strait to the Ob’ and Yenisey Rivers. These later voyages testify to the esteem in which Sverdrup was held. The issue was not that imperial Russia and the Soviet Union lacked skilled Arctic navigators. Rather, in the face of seemingly impossible difficulties, no one was more likely to succeed than Sverdrup.
See also: Amund Ringnes Island; Amundsen, Roald (1910–1912); Arctic Ocean; Axel Heiberg Island; Beechey Island; Brusilov, Georgiy; Devon Island; Elles Ringnes Island; Ellesmere Island; Farthest North; Greely, Adolphus; Hoel, Adolf; Kara Sea; Nansen, Fridtjof; Northeast Passage; Peary, Robert (1898–1902); Sedlov, Georgiy; Sverdrup Islands; Vil’kitskiy, Boris

References and further reading:

Sweden

The Swedish contribution to polar exploration is long and distinguished, particularly in Svalbard, where a succession of scientists beginning with Anton Rolandson Martin conducted pioneering investigations. Martin’s visit in 1758 was sponsored by the Swedish Academy of Sciences. Taken north in a whaler, he was able to spend only a few hours ashore, but he made useful observations of seabirds and marine mammals. This is generally regarded as the first scientific visit to Svalbard and one of the first anywhere in the Arctic. Sven Lovén’s zoological and geological investigations in 1837 inaugurated a tradition of Swedish scientific interest in Svalbard that continued well into the twentieth century. (The major expeditions are described in the entries for Otto Torell, Adolf Erik Nordenskiöld, and Alfred Nathorst.) Elsewhere, Nordenskiöld and Nathorst also led expeditions to Greenland, while Nordenskiöld famously completed the first transit of the Northeast Passage in 1878–1880. During the First International Polar Year, Nils Ekholm established a Swedish station on Spitsbergen at Cape Thordsen. One of the participants in this expedition was Salomon Andrée, whose balloon flight to the North Pole in 1897 ended in disaster, as did Alfred Björling’s planned exploration of the Canadian Arctic. Andrée’s expedition is described in the entry under his name. Accompanied by Evald Kallstenius, the twenty-one-year-old Björling disappeared on a summer visit to Ellesmere Island in 1892. The wreck of his schooner was discovered in June 1893 on the Cary Islands, near Smith Sound, by the whaler Henry McKay, who had been sent to look for him. Letters found at the time indicated that Björling had been forced to winter when his vessel became stranded and that he had run out of food and lost his life attempting to reach Ellesmere Island by boat. Such setbacks did not discourage other explorers, for whom the Swedish Academy of Sciences and the Swedish Society of Anthropology and Geography provided a supportive framework. Expeditions also benefited from the personal interest of King Oscar II and the sponsorship of the businessman Oscar Dickson.

Sweden was itself the beneficiary of international support from relief expeditions mounted to search for Andrée and Björling, and the country has always been prominent among relief expeditions in aid of others. Thus, it was the Swedish pilot Einar Lundborg who first succeeded in reaching Umberto Nobile’s ice camp after *Italia* crashed in 1928, and Albin Ahrenberg volunteered to assist when August Courtauld was feared lost on Greenland’s Inland Ice in 1930 during the expedition led by Gino Watkins. The leading polar scientist of the interwar period was the glaciologist Hans W:son Ahlmann, who led expeditions to North East Land in 1931, Spitsbergen in 1934, and northeast Greenland in 1939–1940. During the Second International Polar Year, Sweden maintained stations on Spitsbergen at Sveagruvan (led by V. F. V. Lindholm) and Mount Nordenskiöld (led by H. Olsson). The chief contribution to the International Geophysical Year was to mount a joint Swedish-Swiss-Finnish expedition to North East Land, led by Gösta Liljequist.

Although Sweden did not ratify the Antarctic Treaty until 24 April 1984 (achieving consultative status on 21 September 1988), its involvement in Antarctica’s affairs and exploration dates back to 1887, when A. E. Nordenskiöld expressed an interest in leading a joint Swedish–Australian expedition to Antarctica. Nothing much came of this, but it may have stimulated his nephew, Otto Nordenskjöld, to organize his own Swedish Antarctic Expedition (1901–1904), which despite its title was a private rather than a national venture, undertaken essentially without state support. The first Swedish national Antarctic expedition was the relief expedition of 1903–1904 led by Olof Gyldén, which was organized when concern arose about Nordenskjöld’s fate. Nordenskjöld and his second-in-command, J. Gunnar Andersson, were subsequently involved in promising discussions for a joint Swedish-British Antarctic expedition, which were abandoned when World War I broke out. The next expedition to reach Antarctica was the 1949–1952 joint Norwegian-British-Swedish expedition led by John Giæver.

Sweden’s current Antarctic program was inaugurated in 1986. Coordinated by the Swedish Polar Secretariat within the Swedish Academy of Sciences, two summer stations—Swea and Vasa—were established on Princess Martha Coast. These stations have since been opened intermittently, usually in combination with the nearby Norwegian and Finnish stations, operating as a combined Nordenskjöld Base with the logistics provided by a joint Nordic expedition.

See also: Andersson, Gunnar; Andrée, Salomon; Giæver, John; International Polar Years; Nathorst, Alfred; Nobile, Umberto; Nordenskjöld, Adolf Erik; Nordenskiöld, Otto; North East Land; Princess Martha Coast; Spitsbergen; Svalbard; Torell, Otto; Watkins, Gino (1930–1931)

References and further reading:

Switzerland

Perhaps because the Swiss Alps present sufficient challenge, and perhaps because its national expertise was greatest in
mountaineering, Switzerland has not been prominent in polar exploration. Yet some Swiss citizens have been in demand due to their mountaineering skills. Most famous of all was Xavier Mertz, a much-admired member of Douglas Mawson’s Australasian Antarctic Expedition who died in 1912 during a sledging journey that Mawson alone survived. Although Switzerland did ratify the Antarctic Treaty on 15 November 1990, its nationals have made a rather greater contribution to knowledge of Greenland, where Alfred de Quervain (1879–1927) led two expeditions in 1909 and 1912. On the first expedition, he conducted glaciological and meteorological studies on the ice cap in the vicinity of Umanak to compare results with those obtained in the same area by Erich von Drygalski in 1891 and 1892–1893. On the second, he led a four-man party across the Inland Ice from west to east, in the process discovering Mount Forel, the second-highest peak in Greenland. Many Swiss geologists assisted Lauge Koch’s studies of East Greenland between 1926 and 1959. Elsewhere in the Arctic, the photographer Walter Mittelholzer obtained fine aerial views of interior Spitsbergen in 1923 from the Junkers D260 Eisvogel (Ice Bird). Some of the mountains photographed by Mittelholzer were later climbed by the Swiss Spitsbergen Expedition led by Hanspeter Jenni in 1962. During the International Geophysical Year, Switzerland mounted a joint expedition with Sweden and Finland to North East Land.

See also: Drygalski, Erich von (1891, 1892–1893); Greenland, Inland Ice; International Geophysical Year; Koch, Lauge (1926–1959); Mawson, Douglas (1911–1914); North East Land; Spitsbergen

References and further reading:
Taylor, Thomas Griffith (1880–1963)

Although Captain Robert Falcon Scott is best known for the journey to the South Pole on which he and his four companions in the Polar Party perished, Scott’s second expedition took with it more scientists than any previous Antarctic expedition. Much significant science was carried out, not least the topographical, geological, and glaciological surveys of Victoria Land undertaken by the Western Party, led by the Australian geologist Thomas Griffith Taylor.

Scott’s Western Party Explores Victoria Land, 1911–1912

The first explorations of the area to be investigated by the Western Party had been made during Scott’s first expedition. In 1902, a party led by Albert Armitage had found a route down the very steep Descent Glacier onto the Ferrar Glacier, up which they had then made their way to the polar plateau—the first men to do so. In the following year, Scott himself had sledged up the Ferrar Glacier to reach 150 miles onto the plateau, and the geologist Hartley Ferrar had made interesting fossil discoveries indicating that Antarctica had not always been ice-covered. These investigations were to be continued by Thomas Griffith Taylor during Scott’s second expedition. Taylor was a recent graduate of Cambridge University whom Scott had initially thought too young to lead the Western Party until Taylor convinced him otherwise. Joining him were two other scientists, Frank Debenham and Charles Wright, their instructions being to explore the area between the Dry Valley first seen by Scott in December 1903 and Koettlitz Glacier farther south. Because none of the three had sledged previously in Antarctica, they would be accompanied by Edgar Evans, an experienced petty officer. In addition to leading the party, Taylor’s role was to study the physiography and glaciation, Debenham the geology, and Wright the ice structures.

On 27 January 1911, Taylor and his companions were landed from Terra Nova at Butter Point, named after the butter depot there in 1902. It was conveniently situated 4 miles from the snout of Ferrar Glacier, and they traveled up the glacier to what Ferrar had called the North Fork of Ferrar Glacier. Deciding that this was really an independent glacier deserving of its own name, Taylor modestly suggested his own for it and the adjacent dry valley—a suggestion that was later ratified by Scott to Ferrar’s displeasure. Descending Taylor Glacier, the party next spent several very interesting days exploring Taylor Dry Valley, where a lake was named for Professor T. Bonney, Taylor’s supervisor at Cambridge University. From there, they retraced their steps back to the snout of Ferrar Glacier and then headed south along the coast to Koettlitz Glacier, again first surveyed by Ferrar but not with the accuracy and detail that Taylor was able to accomplish with greater time and resources. On 2 March, they set out back to Hut Point, where they met up with Scott on 13 March, joining him in a perilous journey across the sea ice back to their winter station at Cape Evans one month later.

By 7 November, winter was well past, and Scott’s Southern Party had already left to make its attempt on the Pole. Taylor’s departure had been delayed by Debenham, who injured his knee while playing soccer. But now he could wait no longer, even if it meant having to leave Debenham behind. On this new western journey, Taylor was accompanied by the Norwegian ski instructor Tryggve Gran and Petty Officer Robert Forde, with biologist Edward Nelson assisting until Debenham was fit to join the party. Their object was the geological exploration of the coast of Victoria Land, a task they had started the previous season. First, they must build up the depot at Butter Point, which they achieved by man-hauling sledges across the sea ice from Cape Evans with help from Nelson on the first journey, and from Nelson and the Russian groom Anton Omel’chenko on the second. On the second journey, Debenham was able to accompany them but was not yet able to pull. Reaching Butter Point on 17 November, they headed north along the coast toward Granite Harbor. Now largely recovered, Debenham began his topographic survey at Cape Bernacchi on 20 November, compiling a remarkably accurate map given the instruments at his disposal, essentially a plane table and a theodolite, the latter read by Taylor. For two months, the party occupied a stone shelter (“Granite House”) on the south coast of Granite Harbor, which provided more shelter than tents and helped to conserve fuel. According to Scott’s instructions, Terra Nova was to pick them up from Granite Harbor on or about 15 January 1912. Terra Nova was no more able to achieve this than it was to reach Lieutenant Victor Campbell’s Northern Party at Evans’ Coves, Terra Nova Bay, some way to the north, in each case being prevented by the quantity of ice offshore.

As Taylor and his party waited, it became all too clear that Terra Nova would have difficulties reaching their location. As early as 14 January, therefore, he moved to the more accessible Cape Roberts, leaving behind specimens and heavier equipment at Granite Harbor. These could be collected later. Although Terra Nova was seen on 20 January, 20 miles of broken ice floes lay between. During the three weeks they remained at Cape Roberts, it was never able to come closer. By 5 February, they were living off reduced rations and increasingly concerned that they might be forced to winter where they were. Taylor now decided that they should head south along the...
coast, the object being to find some location that would be easier for *Terra Nova* to approach. On their way, they left behind a small depot, which later saved the life of Petty Officer Frank Browning of Campbell’s Northern Party. By 8 February, Taylor was at Cape Bernacchi, but there was still no sign of the ship. Five days later, Gran spotted *Terra Nova*, which was at last able to come sufficiently close to pick them up near the snout of Koettlitz Glacier. However, it was not until 25 February that Taylor and his colleagues were finally landed at Cape Evans, Koettlitz Glacier. However, it was not until 25 February that Taylor and his colleagues were finally landed at Cape Evans, and only then after *Terra Nova* had made three more attempts to retrieve Campbell’s group. The Northern Party would have to endure the winter with very limited shelter and provisions, a fate that the Western Party might easily have shared had it not been for Taylor’s energetic leadership.

Taylor never returned to Antarctica. During a distinguished academic career, he held chairs of geography successively in Australia, the United States, and Canada, writing numerous articles and books.

See also: Armitage, Albert; Atkinson, Edward; Campbell, Victor; Scott, Robert Falcon; Victoria Land

References and further reading:

**Terra Australis Incognita**

The true nature of the world’s southern regions would have come as a great surprise to the ancient Greeks and all those who were influenced by Greek thought down to the theoretical geographers of the eighteenth century. What would have surprised them would not have been the presence of an ice continent near the Pole—this they might have predicted—but rather the sheer extent of ocean in relation to land, which they certainly did not.

Ignorance of the true nature of Antarctica and its environs has never inhibited speculation. Having worked out the Earth’s approximate size and the fact that it was spherical, geographers of classical Greece and Rome built up an extensive knowledge of the world based partly on carefully collected traveler’s tales—including some fabulous—and partly on deductive reasoning. The latter led some to claim that the Earth was divided into a series of climatic zones, a theory later systematized by the Roman geographer Pomponius Mela as two inhabitable temperate zones separated by an uninhabitable torrid zone near the equator, with two uninhabitable frigid zones at the poles. Symmetry was an attractive concept in the absence of proof to the contrary, and in general it was assumed that whatever was found in the Northern Hemisphere would also be found in the Southern Hemisphere. Thus the Arctic was the realm of “Arctos” where the constellation known as the Great Bear circled. The Antarctic, “Antarctos,” was its opposite.

Greek and Roman concepts of the world’s far southern regions were selectively inherited by the Christian and Islamic civilizations that followed them. In particular, they were preserved in the writings of Claudius Ptolemy (A.D. 150), which reached a wider audience following the translation of his “Geography” into Latin in 1410. With regard to the far south, Ptolemy was most influential for his depiction of the Indian Ocean as an inland sea bordered to its south by a great continental linking Africa with Southeast Asia and encircling the globe. In a presiding culture where knowledge inherited from the ancient world was held to be superior to anything achievable by the “moderns,” Ptolemy’s portrayal of the Southern Hemisphere was dutifully preserved by Renaissance cartographers with modifications to it only reluctantly introduced as voyages of exploration demonstrated errors of detail. Thus, Portuguese voyages around the Cape of Good Hope to India showed that the Indian Ocean was not an inland sea and that no continent extended so far north. Ferdinand Magellan’s circumnavigation (1519–1522) also led to minor modifications. Although Magellan himself believed that the land he had sighted to the south of the straits named after him formed only an island (Tierra del Fuego), cartographers depicted that land as a peninsula of the great southern continent. This is how, for example, it is shown on Orontius Finaeus’s map of 1531. Finaeus was the first to use the term “Terra Australis,” inscribed on his map as “Terra Australis incognita,” (the Southern Land newly discovered but not yet fully known). This interpretation was subsequently followed by Abraham Ortelius’s atlas *Theatrum Orbis Terrarum* (1570). The latter’s widely circulated “Theatre of the World” included a magnificent world map in which the southern continent, labeled “Terra Australis incognita,” spreads itself across the Southern Hemisphere, occupying every space where its presence was not yet disproved. Strange as this concept might now seem to us, it was not simply a cartographic figment but appeared to be confirmed by certain discoveries. Thus, whereas voyages such as those of Vasco da Gama and Magellan might have proved that some areas were sea that had previously been thought to be land, others such as that of Binot Paulmyer de Gonneville (1503–1505) appeared to provide firm confirmation of extensive land far south. Indeed, it was this vast southern continent that was claimed for Philip III of Spain by Pedro Fernandez de Quiros when he reached the New Hebrides in 1606. Assuming this to be a promontory of *Terra Australis Incognita*, de Quiros named his continent “Australia del Espiritu Santo,” in so doing taking possession “in the name of the Holy Trinity of all islands and lands which I have recently discovered and will discover even to the Pole.”

Although further modifications to the received view of Southern Hemispheric geography were introduced following
the discoveries of Francis Drake (1577–1580) and Abel Tasman (1642–1643), the Southern Hemisphere as depicted by Ortelius remained very much that taught and understood throughout the seventeenth century and into the eighteenth century. In 1756, Charles de Brosses brought together knowledge of these regions in his compilation *Histoire des navigations aux terres australes*. In this important work, de Brosses discussed in detail all that was known about the large continent that, on both theoretical and observational grounds, he was certain to be found far to the south. Theoretically, he shared the contemporary view that in order for the Earth’s equilibrium to be maintained, a large landmass must exist in the Southern Hemisphere to counterbalance the great continents of the Northern Hemisphere. Furthermore, he believed that the sheer quantity of ice reported by explorers proved the existence of land nearby since it was widely, though incorrectly, believed that only fresh water but not sea water could freeze. It was this belief, for example, that persuaded a number of eighteenth-century explorers that, although only relatively small areas of land were visible to them, being surrounded by ice, they must form part of a much larger landmass. With the case for a southern continent irrefutable, all that was required was the dispatch of an expedition to discover it.

The views of de Brosses were taken up in Great Britain by Sir Alexander Dalrymple, an able if choleric Scot who published two compilations summarizing all that was known from voyages to the South Pacific (1770–1771) and South Atlantic (1775). Dalrymple was a respected member of the Royal Society, and when the British government proposed sending an expedition to the South Pacific to observe the transit of Venus in 1769, the Royal Society put forward Dalrymple’s name as prospective leader. He was not chosen due to Dalrymple’s insistence that he be placed in absolute command of a naval vessel with power of appointment of all officers, and the Admiralty’s refusal to appoint any commander other than a naval officer. Instead, James Cook was appointed, and Dalrymple was left to fume at home, particularly when Cook returned having accomplished much, but not having discovered “South Land,” Dalrymple’s name for the southern continent. Always an eloquent man, Dalrymple damned Cook’s expedition, stating that it had failed in its major objective and that if he had been in command “I would not have come back in ignorance” (Mill 1905, 59). Dalrymple’s strictures were suf-
Thule Island (South Sandwich Islands)

Located at 59°27’S, 27°22’W, this small volcanic island—a little over 3 miles across—is the southernmost of the South Sandwich Islands. It was discovered on 31 January 1775 by James Cook, who believed it to form one landmass with nearby Bellinghausen and Cook Islands, naming it “Southern Thule,” a name that was afterward used for the group as a whole. The three islands were shown by Fabian von Bellingshausen in January 1820 to be separate. In February 1823, the American sealer Benjamin Morrell found a good anchorage here from where he searched for seals and driftwood, finding neither. This is one of the few points of detail that can be checked in Morrell's published narrative. And because a reasonable anchorage—unknown prior to his visit—does lie where he reported, it suggests that, despite his book's numerous inaccuracies, at least some of his statements may be true. After Morrell, the whaler Captain Ole Jørgensen in 1911 made the first documented landing; the next was in 1930 by the staff of Discovery Investigations, when it was the only island in the South Sandwich group on which a landing could be made.

The South Sandwich Islands are claimed by both Great Britain and Argentina, and Thule Island has figured significantly in the resulting dispute. In 1955, the Argentine refuge hut Teniente Esquivel was erected near Hewison Point at the southeast tip of Thule. A small naval detachment was based there until 14 January 1956, when a volcanic eruption on Bristol Island caused the hut to be abandoned. The Argentine occupation of the island had caused concern to the British government, and Vivian Fuchs was asked to inspect it in 1956 on his way south to attempt the first crossing of Antarctica. He saw no sign of any Argentine presence. Subsequently, Thule was kept under close observation with visits by the British naval ships HMS Protector and Endurance and the research ships RRS Shackleton, John Biscoe, and Bransfield. In March 1964, a British Antarctic Survey party was landed from Protector during an extensive topographical and scientific survey of the South Sandwich Islands as a whole. On 7 November 1976, the Argentines returned to Thule, where they built the station Corbeta Uruguay. Capable of accommodating eighty people—mainly naval personnel—in the summer and ten to eleven in the winter, Corbeta Uruguay was officially declared open on 18 March 1977. Although its establishment was clearly motivated by political considerations, the station had scientific as well as military purposes, being equipped to record meteorological, oceanographic, sea-ice, and tropospheric observations. At the time, no action was taken by the British government beyond a formal protest. Following use of the station as a forward base from which South Georgia was attacked in the 1982 Falkland Islands War, in its final action the British navy mounted Operation Keyhole, during which the base was captured and its occupants—one civilian and nine military—expelled on 20 June. The station was blown up during Operation Matchstick in February the following year, after an Argentine flag had been noted flying over the station in December 1982. It has since been shown that this flag was not raised by any Argentine ship and most likely was flown as a practical joke.

An automated weather station was deployed from SA Agulhas in January 1990; since then regular visits have been made by South African vessels for servicing purposes. Recent scientific visits were made in 1997 by a British party from Endurance during a comprehensive geological and biological survey of the South Sandwich Islands, and in 1998 by a German party from R/V Polarstern.

**References and further reading:**

**Toll, Eduard von**
(1858–1902)

A chance sighting of distant land was to lead the Russian scientist and explorer Baron Eduard von Toll to a lifelong obsession to discover “Sannikov Land.” It had been reported long before as lying to the north of the New Siberian Islands in the Russian Arctic, but it had never been reached. Toll's obsession was eventually to result in his being marooned on a High Arctic island and in the deaths of all those with him as they sought safety farther south in vain.

**Elusive “Sannikov Land” Is Sighted from the New Siberian Islands, 1885–1886**

Eduard Vasil’evich von Toll was born into a titled Baltic-German family in Estonia. Studying mineralogy, medicine,
and zoology at university, he participated in an expedition to North Africa before coming to the attention of Academician F. B. Schmidt, director of the Geological Museum of the Imperial Russian Academy of Sciences. With Schmidt’s help, Toll was appointed to assist Dr. Aleksandr Aleksandrovich Bunge (1851–1930) in an expedition sponsored by the Academy of Sciences to explore the geology of the mainland coast between the Lena and Kolyma Rivers and the New Siberian Islands. Traveling much of the time separately from Bunge, Toll investigated the geology of the lower Yana River; he took a special interest in sediments associated with permafrost where mammoths and other extinct species were preserved before he rejoined Bunge to cross Laptev Strait to the New Siberian Islands. No scientific expedition had visited these islands since Peter Anjou in 1820–1824. Again, for much of the time Bunge and Toll traveled separately, and when Toll was at the northwestern tip of Kettle Island on 26 August 1886 he saw land distinctly in the very far distance. Similar observations had led to the organization of Anjou’s expedition, when the hunter Yakov Sannikov and his leader, Mathias von Hedensström, reported seeing land in 1810. That sighting had been confirmed by Sannikov the following year when he attempted to reach it over the ice, only to be halted by open water. Anjou returned doubtful of the existence of “Sannikov Land,” but the issue was left open when he was unable to persuade the Russian Admiralty to organize a new expedition. Toll himself had no doubts of the land’s existence; it was to become his life’s ambition to reach it.

Explorations Continue in Siberia, 1892–1893

Toll’s next opportunity to visit the New Siberian Islands came when he was commissioned by the Academy of Sciences to recover a frozen mammoth carcass and bring it back to St. Petersburg. This was the expedition’s primary objective, but Toll was allowed to exercise his initiative on further goals. When found, the mammoth remains proved disappointing, leaving Toll free to fulfill a promise to Fridtjof Nansen to lay depots for him in the New Siberian Islands, lest Fram be
crushed early on during its voyage. Toll had also helped Nansen by arranging transport of sledge dogs to Khabarovo, where they were taken aboard in Yugor Strait. Toll had no boat and no time on this occasion to search for “Sannikov Land” since he was committed to conducting a geological survey of the lower Anabar River. His subsequent journey to St. Petersburg was remarkable, for it involved riding on reindeer across the southern Taymyr to Dudinka on the lower Yenisey at a time of year—the summer—when long overland journeys were generally not attempted.

A Search for a Nonexistent Land Ends in Tragedy, 1900–1903

Toll was participating in the maiden voyage of the icebreaker Yermak in 1899 when he received a telegram summoning him to St. Petersburg. The Academy of Sciences was at last prepared to sponsor his long-planned expedition to “Sannikov Land.” Indeed, Toll had put forward a most convincing case, advancing numerous scientific and commercial reasons why this land—whether it be an island or a large landmass—should be explored at the earliest opportunity. His plan was to acquire a sturdy Norwegian sealer and sail it along the Northeast Passage to the Lena Delta. There, Toll said, the best dogs in the world could be obtained. Also, the comparatively warm river water would enable him to find open water leading north of the New Siberian Islands, hopefully to “Sannikov Land.” All this could not be accomplished in one season. On the way, he would winter on the Taymyr to explore the peninsula’s little-known east coast. He would then pick up dogs and dog handlers at the Lena before making for “Sannikov Land,” where he would spend his second winter. The expedition would conclude by completing the first Russian transit of the Northeast Passage by sailing through Bering Strait.

Toll acquired the schooner Harald Harfager with a 228-horsepower engine, renaming it Zarya. It would be captained by Lieutenant Nikolay Nikolayevich Kolomeytsev, one of several expedition members with previous experience in the Arctic. Lieutenants Fedor Andreyevich Matisen and Aleksandr Vasil’evich Kolchak were to serve as first and second officers, taking charge of the expedition’s meteorological and hydrographic programs, respectively. The scientific party consisted of the zoologist Dr. Aleksey Andreyevich Byalynitskiy-Birulya, the medical officer and assistant zoologist Dr. Herman Eduardovich Val’ter, and the astronomer and magnetician Fridrikh Georgiyevich Zeberg. Toll himself undertook responsibility for geology.

Zarya departed from St. Petersburg on 21 June 1900. After collecting sixty dogs at Aleksandrovsk-na-Murmane, it had an easy passage through Yugor Strait to the Kara Sea, arriving at Dikson at the mouth of the Yenisey Estuary on 12 August. There, its boilers were cleaned, coal was transferred, the scientists busied themselves with their studies, and several bears were killed. Six days later, Zarya resumed its voyage following the coast of the Taymyr to the northeast. Without an accurate chart to guide him, Toll entered Middendorf Bay by mistake. Zarya was to remain there for three weeks, unable to circumvent ice that westerly winds had packed in behind it. Winter was now imminent, and Toll was still far from rounding Cape Chelyuskin. Eventually, he was forced to anchor in Colin Archer Bay on 26 September. At 76°08’N, 95°06’E, this was a considerable distance from the east coast of the peninsula, which he had hoped to explore.

In his haste to enter the Kara Sea when opportunity presented, Toll had felt unable to wait for the schooner chartered to bring additional coal. As a result, Zarya’s stocks were now low. To complete his program would require a coal depot being laid on Kettle Island. Toll’s difficulty was how to inform the Academy of Sciences of his need. His first plan was to undertake an ambitious overland journey himself to the Anabar River, which would involve crossing the Taymyr Peninsula. On the way back, he would follow the entire length of its coast. Whether or not this was feasible, he was eventually persuaded to adopt another plan when it became apparent that his presence with the expedition was essential. Relations between Toll and Kolomeytsev had become strained, and Toll solved this difficulty by delegating the journey to Kolomeytsev, who was to sledge to the Yenisey Estuary, while Matisen took over command of the ship.

Exploratory journeys began in the spring. While Matisen mapped the Nordenskiöld Archipelago, Toll and Kolchak set out on 20 April 1901 in an attempt to survey the coast east to Cape Chelyuskin. In the event, they were to get only slightly farther than the Taymyr River before returning on 31 May. Given the inadequate information available to him, Toll was mystified by the exact location of this river throughout the winter, and on 18 July he left with Zeberg to confirm its exact location, which was found to be considerably farther east than he had been led to believe. The day after they returned on 23 August, Zarya was released from the floe enclosing it to begin a slow journey northeast to Cape Chelyuskin, which it rounded on 2 September. Toll’s was only the third expedition to do so after Adolf Erik Nordenskiöld in 1878 and Nansen in 1893. Shoaling waters thwarted a planned landing on the east coast, so instead Zarya was headed due east through the ice-free Laptev Sea toward the New Siberian Islands. “Sannikov Land” lay farther north. As the ship changed course to the northeast, Bennett Island in the De Long Islands was seen on 11 September, during a brief lifting of the fog. Toll hoped to winter there or on “Sannikov Land” itself and spent the next few days in a vain attempt to force Zarya through the ice encircling the island before turning north to search for “Sannikov Land.” On 15 September, Zarya attained its farthest north of 77°32’N, 142°17’E. No more land had been seen, and now the ship was almost completely surrounded by ice. Reluctantly, Toll decided that he would have to winter on Kettle Island in the main body of the New Siberian Islands. There, he anchored the next day in Ner-
palakh Bay to be met by K. A. Vollosovich, leader of the relief expedition organized by the Academy of Sciences to lay depots in case Zarya was wrecked.

Arrangements were now made for the winter, with Vollosovich based in a hut nearby. For some time, Toll had been concerned about the health of Val'yer, the medical officer, who insisted on continuing with his duties until he was found dead on watch on 3 January 1902. Toll accompanied Vollosovich's party across Laptev Strait to collect mail for the expedition and send a message to Yakutsk requesting the appointment of a new doctor. He arrived back on 11 April, after making a detour to conduct a brief geological survey of Stolbovoy Island, which he had not visited during his previous expeditions. Three days later, Matisen led a sledding party over the sea ice to search for "Sannikov Land." He did not get far, being stopped first by a polynya and then encountering heavily pressured ice when he attempted to get around it. On 11 May, the zoologist Byalynitskiy-Birulya departed for New Siberia Island with three sledges pulled by forty-five dogs and accompanied by three Yakuts. He was to remain on this island until 17 December. conducting a detailed survey, before making his way independently to the lower Yana River. Between 16 and 25 May, Kolchak surveyed Bel'kovskiy Island. On board Zarya final preparations were now made for Toll's journey to Bennett Island, for which he finally set out on 18 June, accompanied by Zeberg, the Evenk Nikolay Proto' yakonov and the Yakut Vasil'iy Gorokhov.

Arrangements had been made for Toll's party to be picked up by Zarya, but when Matisen was able to put to sea on 21 August, heavy ice prevented him from coming close to Bennett Island. On 5 September, he was almost out of coal and opened Toll's sealed instructions prepared for this eventuality. The instructions ordered him south to Tiksi Bay, just east of the Lena Delta. Zarya was left there; Matisen and his crew boarded a river steamer and were taken upstream to Yakutsk, eventually returning to St. Petersburg.

Toll, however, was far from forgotten, and in St. Petersburg Matisen and Kolchak began preparations earlier in 1903 to return to the New Siberian Islands to rescue him. By 17 April, they had reached the lower Yana. There, the two men separated, Matisen going to the Lena Delta to recover equipment from Zarya, Kolchak heading for the New Siberian Islands with sledges and boats. He arrived at New Siberia Island on 12 August, and from there he set out for Bennett Island by boat. On 17 August, he reached the island. A cairn was spotted; nearby lay a bearskin and the remains of a camp. Toll had promised to build a cairn on the prominent headland Cape Emma. In it was found a bottle containing three notes. The first reported his arrival on the island on 3 August 1902 and the second was a map of the island. The third, written after he became aware that Zarya would be unable to reach him, was addressed to "anybody looking for us" and enclosed a map showing the location of the hut, where further documents would be found. When Kolchak arrived at the hut, he found a message addressed to the president of the Academy of Sciences. This told the full story of Toll's arrival on the island after a perilous journey from New Siberia Island, the final stages of which had been made by boat, before landing at Cape Emma. It also summarized Toll's findings concerning Bennett Island's size, geology, and wildlife, the latter including thirty reindeer and several species of breeding birds. Birds were observed flying farther north, but fog had prevented him from seeing any land in that direction. It was clear that Toll still believed in "Sannikov Land." The message concluded with the statement that they were heading south that day—8 November—carrying with them provisions adequate for fourteen to twenty days. Kolchak ordered a thorough search of the island, just in case any member of the party had managed to return to land, but no one was found. With no sign of them having reached the islands farther south, it seemed certain that they had perished on the treacherous sea ice. Satisfied that there was nothing more to discover on Bennett Island, Kolchak left on 20 August 1903, arriving back on Kettle Island on 9 September.

Histories of polar exploration written during the Soviet era omit all reference to Kolchak's heroic attempt to rescue Toll. The relief expedition is referred to and its leadership left unrecorded, or else attributed to Nikifor Begichev, Zarya's boatswain. The reason is simple. In November 1918, Kolchak assumed the role of supreme ruler of all the Russias and leader of the White forces in Siberia. He was executed by firing squad in January 1920 and thereafter remained a figure of vilification until the end of the Soviet Union. Expeditions continued to search for "Sannikov Land" until the late 1930s.

See also: Anjou, Peter; De Long Islands; Hedenström, Mathias von; Nansen, Fridtjof (1893–1896); New Siberian Islands; Northeast Passage

References and further reading:

Tolstoukhov, Ivan (fl. 1680s)
The most formidable obstacle to those wishing to reach the Far East from Europe via the Northeast Passage is the Taymyr Peninsula. The northernmost projection of Eurasia, it reaches 77°44′N at Cape Chelyuskin. Although it is generally believed not to have been rounded until 1878 by Adolf Erik Nordenskiöld, it is not impossible that this was first achieved by the virtually unknown expedition of Ivan Tolstoukhov 200 years earlier.
The First Round Cape Chelyuskin? 1686–1689

In 1940, the remains of a seventeenth-century shipwreck were discovered by the Soviet hydrographic survey ship Nord in the Faddey Islands, just 80 miles southeast of Cape Chelyuskin. The next year, a hut was found 40 miles to the west on the estuary of the River Simsa. The two finds were clearly of the same date and resulted from the same incident, though it remained unclear whether the hut had been built by survivors of the wreck on the Faddey Islands who had subsequently managed to reach the mainland, or by a party in a separate vessel that had also been wrecked. The shipwreck's location was exceptionally significant, being as it was high on the east coast of the Taymyr Peninsula. Had these sailors come from the west, in which case they would surely have been the first to round Cape Chelyuskin? Or had they sailed from the east—probably from Yakutsk and the Lena River—coming to grief in the ice that so often makes these waters impassable? National pride was at stake; while the Northeast Passage was separately explored almost in its entirety by a succession of Russian expeditions, the first transit of the Passage as a whole had been made in 1878–1880 by the Swede Adolf Erik Nordenskiöld. In the process, he had claimed the honor of being first to round Cape Chelyuskin.

Throughout most of the seventeenth century, shipping along the Arctic coast was proscribed by the Russian government. In his decrees of 1616 and 1619, Tsar Mikhail Fedorovich banned all foreign shipping east of White Sea and all shipping east of Pechora River. This action was motivated by his desire to ensure effective control over the highly lucrative Siberian fur trade, inland waterways and overland routes being more easily monitored for taxation purposes than seaways.

Despite such bans, we know that coastal voyages continued, some authorized and some illegal. Prominent among the former was the exploring and hunting expedition of Ivan Tolstoukhov, colorfully nicknamed “Thick Ear.” The Tolstoukhovs were a well-known family, some of whom were prominent in the northern trading settlement of Mangazeya, which had been established in 1600 near the Gulf of Ob’. Organized by the military governor of Tobol’sk, Aleksey Petrovich Golovnin, Tolstoukhov’s expedition set out in 1686 with the objective of sailing down the Irtysh and Ob’ Rivers and then east along the Arctic coast to explore the possibilities of a navigable seaway linking the Ob’ with the Lena and, thus, Tobol’sk and Yakutsk. The fact that we know at all of Tolstoukhov’s expedition is thanks to the Dutchman Nicholaes Witsen, who learned of its linking the Ob’ with the Lena and, thus, Tobol’sk and Yakutsk. The fact that we know at all of Tolstoukhov’s expedition is thanks to the Dutchman Nicholaes Witsen, who learned of its departure from Golovnin’s son some years later. He also recorded that the expedition failed to return.

This, however, is not all that we now know of Tolstoukhov. More than fifty years later, while engaged in explorations forming part of Vitus Bering’s Great Northern Expedition (1733–1743), Fedor Minin found a cross inscribed with Tolstoukhov’s name on the shores of the Yenisey Estuary. This marked the site where he had first wintered. Minin also found evidence of a second wintering site on the estuary of the Pyasina River some way farther east. Not long afterward, Semen Chelyushkin of Khariton Laptev’s detachment of the Great Northern Expedition found remains of an “old fireplace” near Cape Leman, north and east of the Pyasina and well on the way toward Cape Chelyuskin. Subsequent excavations have uncovered a human skull, which may also have connections with Tolstoukhov’s expedition. Taken together, this evidence certainly appears to indicate that he made a determined attempt to carry out his instructions and very likely reached far north on the Taymyr Peninsula at least. The only evidence, however, indicating that he may have managed to reach the peninsula’s east coast by rounding Cape Chelyuskin is the shipwreck, and not all of the relics found there are necessarily compatible with an expedition of this date and nature.

More than 3,000 coins were found at the two sites, dating from the reigns of Tsar Ivan IV (1533–1584) through Tsar Mikhail Fedorovich (1613–1645). The latest coins date from 1615–1617. Does this mean that the shipwreck occurred soon after 1617? Not necessarily, since for many years afterward few coins were minted and old coins remained long in circulation. By themselves, the coins do not disprove the possibility of this being the remains of Tolstoukhov’s expedition, but they would fit better with a somewhat earlier expedition, as would a musket that has been dated to 1620–1650. Also on board was a large cargo of furs, chiefly sable and arctic fox. This appears to indicate a trading voyage, though it would be exactly the type of cargo with which Tolstoukhov would have been expected to have loaded his vessels, if he did indeed succeed in reaching the Lena. Such a cargo provides clear evidence in favor of the vessels being engaged in a voyage from east to west. Thus it was either a determined attempt to smuggle furs out to Europe, or the remains of Tolstoukhov’s ships sailing back on their return journey. The former is interesting; the latter—if true—would have been a truly epic voyage.

See also: Bering, Vitus (1733–1743); Laptev, Khariton; Minin, Fedor; Nordenskiöld, Adolf Erik (1878–1880); Northeast Passage; Russia

References and further reading:

Torell, Otto (1828–1900)

One of the pioneers of Ice Age studies, Otto Martin Torell has been called “the father of Swedish polar exploration” (Liljequist 1993, 22). His expeditions of 1858, 1859, and 1861 inaugurated a long series of Swedish scientific expeditions, most of them to Spitsbergen.

Swedish scientific interest in Spitsbergen can be dated back to 1758, when the young naturalist Anton Rolandson Martin (1729–1786) was brought here on a whaling voyage and spent a few hours ashore. Torell’s director of studies at Lund University was Sven Lovén (1809–1895), who had himself visited Spitsbergen in 1837 before becoming one of the
Torell, Otto

world’s leading authorities on marine invertebrates. Through Lovén, Torell learned that the subfossil shells found in southern Sweden indicated that this region had experienced an Arctic climate in the fairly recent past. Study of these deposits soon convinced Torell of the much greater extension of ice sheets not long previously during an “ice age,” for which he was one of the earliest proponents. By now thoroughly familiar with what he viewed as glacial deposits, he realized that only through knowledge of present-day glaciers would he be able to convince the many skeptics of the reality of the Ice Age. To this end, he visited Switzerland in 1856 and Iceland the next year, before leading small expeditions to Spitsbergen in 1858 and West Greenland in 1859. Torell paid for all of these travels out of his inheritance.

Early Explorations of North East Land, 1861
On his 1858 expedition, Torell had been accompanied by the geographer and geologist Dr. Adolf Erik Nordenskiöld and the zoologist Dr. August Quennerstedt. Sailing in the small schooner Frithjof, they had made numerous landings in Horn Sound, Bell Sound, Ice Fjord, and as far north as the Norway Islands. Torell found Spitsbergen ideal for his purposes, with extensive rock exposures clear of ice and vegetation. His 1861 expedition was to be a much more ambitious project and was made possible only with the aid of grants from the Swedish parliament and Crown Prince Oscar. In addition to continuing his multidisciplinary studies of Svalbard and waters surrounding it, Torell proposed to sledge north over the ice from the Seven Islands, in the hope of discovering new land and establishing a record high latitude. He also wished to investigate the feasibility of measuring an arc of the meridian, originally proposed by Edward Sabine following his visit to Spitsbergen with Douglas Clavering in 1823. Obtaining precise measurements of an arc of the meridian in the far north would, through comparison with similar arcs from lower latitudes, enable scientists to provide an accurate estimate of the Earth’s ellipsoidal shape. Torell’s plan was to conduct preliminary surveys leading to the establishment of a trigonometrical chain, extending from the Seven Islands—Svalbard’s northernmost point—to the southern tip of Spitsbergen. Noting how much time was wasted in fine weather when there was too little wind for sailing vessels, Torell initially approached Sir Leopold McClintock with a view to chartering Fox, the steamer used during his famous expedition of 1857–1859. But it was unavailable, so Torell had to make do with two hunting sloops, Aeolus and Magdalena. In addition to second-in-command Nordenskiöld, the strong scientific team included Dr. Anders J. Malmgren (zoologist and botanist), Dr. Nils C.
Dunér (astronomer and physicist), Dr. C. Vilhelm Blomstrand (geologist), J. Karl E. C. Chydenius (physicist), Axel T. Goës (zoologist), and Fredrik A. Smitt (botanist).

Given Torell's plans to sledge north over the ice, he planned to sail from Tromsø early in the year. By 15 April 1861, all members of the party were assembled and ready to embark. But the persistent northerly winds did not cease until 7 May, when *Aeolus* and *Magdalena* at last departed. They encountered ice in considerable quantities, so the planned landing on Bear Island was aborted. When Amsterdam Island was reached on 22 May, the two vessels were delayed until 1 June before they could head east along Spitsbergen's north coast to reach Sorge Bay six days later. It was from there in 1827 that Edward Parry had set out with two boat-sledges toward the Pole to reach 82°45'N. This was the record that Torell hoped to beat. Again, ice and unfavorable winds prevented him continuing farther east to the Seven Islands, and by 2 July, when at last *Aeolus* was able to escape from the bay, Torell had decided to abandon his planned ice journey. By now the pack had begun melting and would be too much broken up by open water. Instead, he would concentrate on his other objectives: *Magdalena* would be sent to explore southern Spitsbergen in the vicinity of Stor Fjord, and he would investigate farther east in *Aeolus*.

On 5 July, *Aeolus* anchored off Depot Island in Murchison Bay, North East Land. On 10 July, after conducting the first survey of this little-known fiord and proving that it was not connected with Wahlenberg Bay farther south, Torell and Nordenskiöld set out in an open boat to make a geographical and geological survey of Hinlopen Strait. Chydenius, meanwhile, led another boat party to begin reconnaissance studies toward measuring the meridian arc. Initially, Torell had hoped to row around North East Island, its size being then unknown, but abandoned that plan after observing that the southern entrance to Hinlopen Strait was blocked by ice. Crossing over to the western side of the strait via the Waiigat Islands, he searched for the reported entrance to Stor Fjord—Heley Sound—but found it blocked as well. Heading north to rejoin the others, he met up with Chydenius on 22 July off Low Island, to the north of Murchison Bay, before embarking in *Aeolus* the following day.

Four days later, Torell began his next boat journey, again accompanied by Nordenskiöld. His intention was to explore the north coast of North East Land, which was hardly better known than its west coast, of which he had now accomplished the first scientific survey. The first night, they camped on the North Cape. Encouraged by good weather, they rowed through iced-strewn water to reach the Seven Islands, landing at the southern part of Parry Island. Natural history specimens were collected, and Nordenskiöld conducted observations to establish the island's exact location. During the next few days, they visited two other members of the Seven Islands group—Martens and Phipps Islands—before returning via Parry Island to North East Land, where they landed at Extreme Hook on 8 August. From there, they followed close to the coast heading east to Sabine Island, where the unarmed Nordenskiöld had a close encounter with a bear. (It ran off after he hit it with a well-aimed stone.) Above Cape Lovén, they climbed a mountain to see whether the deep fiord to the east of this cape cut through to Wahlenberg Bay on the west coast, thus dividing North East Land in two. It did not, but from the top they obtained good views of the inland ice cap, as well as of land beyond the fiord that trended sharply north. This was soon to be named Prince Oscar's Land for the heir to the Swedish throne and the expedition's sponsor. Rowing their boat through sea largely clear of ice, they followed this peninsula north before rounding Cape Platen, North East Land's northernmost point. It was now 15 August, and with open water visible farther east Torell considered continuing the attempt to circumnavigate the entire island. Seeing too much risk, they turned back to rejoin *Aeolus* in Lomme Bay, Hinlopen Strait, on 24 August.

Meanwhile *Magdalena*’s plans to investigate southern Spitsbergen had been frustrated by ice, though its scientists found useful work to do in Wijde Bay as they waited for the ice to clear sufficiently to allow them farther west. When finally able to reach the west coast, it was too late to begin the trigonometrical work, so instead a series of geological and natural history surveys were conducted in the fiords south to Ice Fjord. On 7 September, the two vessels met up at Danes Island.

Given this expedition’s outstanding success both in terms of exploration and science, Torell was surprised when leadership of the Swedish government expedition to complete the meridian arc reconnaissance was offered to Nordenskiöld rather than to him. In later life, first from 1866 as professor of geology at Lund University and then from 1871 as head of the Swedish Geological Survey, Torell continued his pioneering work in glacial geology while still retaining his dream of returning to the Arctic to explore Novaya Zemlya or, even more ambitious, to try again for the North Pole. His Arctic legacy, however, was to be carried forward by his colleague Nordenskiöld and pupil Alfred Nathorst. The arc of the meridian survey was eventually completed by a joint Swedish-Russian expedition between 1898 and 1902.

**See also:** Clavering, Douglas; Greenland, West; McClintock, Leopold; Nathorst, Alfred; Nordenskiöld, Adolf Erik; North East Land; Parry, Edward (1827); Seven Islands; Spitsbergen; Svalbard

**References and further reading:**


Transantarctic Mountains

Extending more than 2,000 miles across Antarctica, the Transantarctic Mountains form an unbroken escarpment from the Anare Mountains on the north coast of Victoria Land, south along the west coast of the Ross Sea, and then along the western and southern coasts of the Ross Ice Shelf to the Horlick Mountains. From there on, the mountains crop out above the ice sheet in a series of discontinuous ranges, according to some geologists reaching as far as the Bay of Whales, the Beardmore, Shackleton, Theron, and Heimefront Ranges to Vestfjella. The Transantarctic Mountains mark the ancient Pacific margin of the East Antarctic Craton and today divide East Antarctica from West Antarctica. They reach their greatest height in the Queen Alexandra Range at Mount Kirkpatrick (4,530 meters).

The term “Transantarctic Mountains” came gradually into usage as it became increasingly apparent that the various ranges named by different explorers formed one coherent physiographic unit, reaching from one side of the continent to the other. The first mountains to be seen were the Admiralty Range (71°20’S, 168°30’E) and the Prince Albert Mountains (76°S, 161°30’E), in northern and southern Victoria Land, respectively, which were discovered by James Clark Ross in January and February 1841. The magnificent Royal Society Mountains (78°10’S, 163°W)—between the Ferrar and Koettlitz Glaciers in southern Victoria Land—were undoubtedly seen by Ross, but they were first named as a separate range by Robert Falcon Scott in 1902. The first ground surveys of these three ranges were conducted by members of expeditions led by Scott in 1901–1904 and 1910–1913 and by Ernest Shackleton in 1907–1909. Farther south, the Britannia Range (80°S, 159°W) was first seen by Scott, Shackleton, and Edward Wilson during their southern journey in November 1902. These mountains were surveyed by a sledging party led by Michael Barne the following year. In December 1908, Shackleton discovered Beardmore Glacier and followed it up to the polar plateau, naming the mountains to the west the Queen Alexandra Range (84°S, 169°W), and those to the east the Commonwealth Range (84°30’S, 173°E). Roald Amundsen’s route to the polar plateau lay farther east, up the Axel Heiberg Glacier and through the Queen Maud Mountains (86°S, 160°W). Those mountains, as well as those lying between, were subsequently explored by air and on the ground by members of several expeditions led by Richard Byrd. Laurence Gould was the first after Amundsen to reach the Queen Maud Mountains, during Byrd’s first expedition in December 1929. Gould’s primarily geological studies were extended farther east on Byrd’s second expedition by Quin Blackburn in December 1934, while on the same expedition the Horlick Mountains (85°23’S, 121°W) were discovered from the air on 22 November. However, much remained to be learned, and it was not until 29 February 1940, during the U.S. Antarctic Service Expedition, that Paul Siple was able to make a flight along the face of the mountains to link Amundsen’s discoveries with those of Shackleton. By now, it was clear that the separately named ranges formed one continuous escarpment, its sheer extent fully confirmed by aerial photographs obtained during Operation Highjump in 1947.

Beyond the Horlick Mountains, the Transantarctic Mountains are largely overwhelmed by an ice sheet several thousand meters thick as it overflows from the polar plateau down to the Ross and Filchner-Ronne Ice Shelves. Above the ice sheet stand isolated ranges, which remained undiscovered until the 1950s. The Thiel Mountains (85°15’S, 91°W) were first seen in 1958–1959 by an American party engaged in making a traverse of the Horlick Mountains. Farther east, the Pensacola Mountains (83°45’S, 55°W) were first seen from the air on 13 January 1956. Both ranges were subsequently surveyed by personnel of the U.S. Geological Survey. Still farther northeast, the Shackleton (80°30’S, 25°00’W) and Theron (79°02’S, 28°05’W) Ranges in Coats Land were first seen from the air in 1955 on Argentine flights and soon afterward by members of Vivian Fuchs’s Trans-Antarctic Expedition, who were first to conduct ground explorations. The Heimefront Mountains were first reached by a British party from Halley Bay; they had been discovered from the air in January 1952 by a Swedish aircrew during the Norwegian-British-Swedish expedition led by John Giaever.

About 99 percent of Antarctica’s surface is covered by ice, so rock exposures are prized; outside the Antarctic Peninsula, the best exposures are to be found chiefly in the Transantarctic Mountains. Scientific work by Shackleton, Amundsen, and Scott was necessarily brief as they passed through the mountains on their way toward and from the South Pole. Nevertheless, the first rock collections were made on the Beardmore Glacier by Shackleton in 1909, and fossils found by Scott and Edward Wilson on the slopes of Mount Buckley in the same area in 1912 included the first recognized Antarctic specimens of *Glossopteris indica*, a species since discovered to have lived in all parts of the former supercontinent of Gondwana. Following the pioneering survey work in the Queen Maud Mountains by Gould and Blackburn during Byrd’s first and second expeditions, it was not until the era of permanent stations inaugurated by the International Geophysical Year that systematic geological exploration of the Transantarctic Mountains began. The most sustained efforts are maintained by scientists from the United States and New Zealand operating with air support out of stations on Ross Island. East of the Horlick Mountains, geological work in the Thiel and Pensacola Mountains has been conducted by U.S. parties, in the Shackleton Range by British, Soviet, and German scientists, and in the Heimefront Mountains by personnel based at stations on Princess Martha Coast.

For mountaineers, the Transantarctic Mountains present virgin peaks and unscaled rock faces in numbers unimaginable elsewhere in the world. Logistical difficulties mean that
few specifically mountaineering expeditions have yet been organized, though ascents have been made of some major mountains for surveying and recreational purposes by scientists generally engaged in other pursuits.

See also: Amundsen, Roald (1910–1912); Byrd, Richard; Coats Land; Filchner-Ronne Ice Shelf; Fuchs, Vivian; Giaever, John; Gould, Laurence; International Geophysical Year; Operation Highjump; Princess Martha Coast; Queen Maud Land; Ross Ice Shelf; Ross Sea; Scott, Robert Falcon; Shackleton, Ernest (1907–1909); Siple, Paul (1940–1941); Victoria Land

References and further reading:

Trinity Island (Palmer Archipelago, Antarctic Peninsula)
Located at 63°37'S, 58°20'W, this island—15 miles long and 6 miles wide—is one of the northernmost members of the Palmer Archipelago. With the adjacent Davis Coast area of the Antarctic Peninsula, it was most likely this land that the American sealer Nathaniel Palmer reported sighting on 16 November 1820.

Mikkelsen Harbor was well known to the sealers of the early nineteenth century, who roughly charted it and named it Hoseason Harbor for James Hoseason, first mate of the British sealer Sprightly (1824). Further charting was carried out during Otto Nordenskjöld’s expedition and by Norwegian whalers, who anchored here each season between 1910 and 1917. The harbor’s current name is for Captain Klarius Mikkelsen, Norwegian whaling captain and discoverer of the Ingrid Christensen Coast.

In 1916–1917, James Innes Wilson, the administrator of the Falkland Island Dependencies based at Deception Island, visited the island to collect rocks. In December 1954, the Argentine refuge hut Capitán Caillet Bois was constructed on Bombay Island.

See also: Argentina; Nordenskjöld, Otto; Palmer Archipelago; Palmer, Nathaniel (1820–1821); Sealing and Antarctic Exploration; Whaling and Antarctic Exploration

Trinity Peninsula (Antarctic Peninsula)
Discovered on 30 January 1820 by Edward Bransfield and named “Trinity Land” for the Trinity Board, the British institution responsible for the maintenance of aids to navigation such as lighthouses and buoys. This was only the second sighting of the Antarctic continent, which had been seen first by Fabian von Bellingshausen just three days before. Bransfield’s chart, which survives in the British Hydrographic Office, is marked with the annotation “Trinity Land partly covered with snow.” In February 1838, Dumont d’Urville renamed Trinity Land “Terre Louis Philippe,” in the mistaken belief that it was separated from the rest of the Antarctic Peninsula by “Orléans Channel.” The existence of this channel (in reality the northern entrance to the Gerlache Strait) was disproved by members of Otto Nordenskjöld’s expedition in 1902. That expedition also carried out pioneering surveys in the Hope Bay area—Duse Bay being named for the expedition member Lieutenant Samuel A. Duse—and on the east coast, where Snow Hill, James Ross Island, and Vega Island were all identified as islands and not part of the Trinity Peninsula as James Clark Ross had believed.

The British Base D was established at Hope Bay by Operation Tabarin in February 1945. Sited at the northern tip of the Trinity Peninsula at 63°23’S, 57°00’W, Base D soon established a reputation as the great British sledging center with a series of dog-powered journeys down the east coast of the peninsula and up to the high plateau forming its spine. The latter was first reached by a Falkland Islands Dependencies Survey party in 1946 by means of the Russell East Glacier. In February 1948, Chile established the base General Bernardo O’Higgins at Cape Legoupil (63°19’S, 57°54’W), which is manned by the Chilean Army. In December 1951, Argentina opened the meteorological station Esperanza at Hope Bay, at a time when the British base was temporarily abandoned after being destroyed by fire in November 1948. When the British sought to reestablish their base in February 1952, shots were fired over their heads by the Argentines, provoking a serious diplomatic incident (see the entry for Hope Bay). In addition to offering useful shelter to traveling survey parties, refuge huts also provide a relatively cheap method of marking national territorial claims. In the 1953–1954 season, Great Britain erected one at Duse Bay (Base V), Argentina building three—two at Duse Bay and one on the Tabarin Peninsula. In 1959–1960, a fourth Argentine refuge was built at Cape Longing.

See also: Antarctic Peninsula; Argentina; British Antarctic Survey; Chile; Dumont d’Urville, Jules; Great Britain; Hope Bay; Nordenskjöld, Otto; Operation Tabarin; Ross, James Clark (1839–1843)
Uemura, Naomi (1941–1984)

Contact was lost with the Japanese polar adventurer and mountaineer Naomi Uemura on 13 February 1984, one day after he became the first person to reach the summit of Mount McKinley on a solo winter climb.

It was a poignant but fitting end to an extraordinary career, during which this professional expedition reporter-photographer had banked a startling list of solo firsts. Between 1966 and 1970, he had climbed Mont Blanc, Kilimanjaro, Aconcagua, Everest (the first ascent by a Japanese person), and Mount McKinley, believing them to be the highest peaks of the five continents. Unfortunately for him, Mount Elbrus rather than Mont Blanc is the highest mountain in Europe, and most people today would hold there to be seven continents rather than five. Uemura had thus omitted to climb the highest mountains of Europe, Antarctica (the Vinson Massif) and Australasia (generally viewed as the Carstensz Pyramid, Irian Jaya), but it was nevertheless an impressive achievement.

His polar accomplishments, however, exceeded anything he did as a mountaineer. Between December 1974 and May 1976, Uemura completed the longest recorded solo dogsled journey, traveling some 7,500 miles across North America from Jakobshavn, West Greenland, to Kotzebue, Alaska. Two years later, he became the first man to reach the North Pole on a solo journey. Setting out on 5 March 1978, and assisted by dogs and airdrops, it took him fifty-five days. This was but one part of a more ambitious project, Uemura’s aim being to travel back across the ice to Greenland and then complete the first north-south crossing of the Greenland ice sheet. The early breakup of the ice meant that he had to be airlifted back to Greenland, where he sledged from Academy Glacier, Independence Fjord, to Narsarsuaq, again assisted by dogs and airdrops, in a ninety-three-day journey between 21 May and 21 August. Not only was this the first crossing of the ice sheet by its longest route; it was also the first solo crossing.

Uemura was a man who conceived his projects on the largest possible scale. His early death meant that he was unable to dogsled across northern Eurasia and thus complete his circuit of the Arctic begun in 1974. Nor was he able to make the first solo dogsled crossing of Antarctica. Had he lived longer, what firsts would he have left for others to achieve?

See also: Adventurers; Greenland, Inland Ice; North Pole

References and further reading:

Ukraine

Many Ukrainian scientists participated in Soviet Antarctic expeditions between 1955 and 1991, when Ukraine became an independent country. Reflecting national appreciation that an Antarctic program would help to establish Ukraine’s credentials as a significant contributor to international science, the new government ratified the Antarctic Treaty on 28 October 1992. The following year it established the Antarctic Research Center within the Ukrainian Academy of Science. In February 1996, the former British station Faraday in the Argentine Islands was transferred to Ukraine and renamed Akademician Vernadskiy, thus enabling the continued operation of the longest continuously manned station in the immediate vicinity of Antarctica.

See also: Argentine Islands

United States

The first Americans to explore the polar regions were sealers from New England who had begun sealing off South Georgia and the Kerguelen Islands by the early 1790s. In 1820, James Sheffield reached the South Shetland Islands, followed soon afterward by Benjamin Pendleton, Nathaniel Palmer, John Davis, and Benjamin Morrell, among others, as American and British sealers rushed to exploit the large fur seal population inhabiting the islands. Although Palmer was not the first to see continental Antarctica, he made several significant discoveries. Davis made the first documented continental landing, and Morrell may have been the first to see the east coast of the Antarctic Peninsula.

All these were private expeditions. American polar expeditions remained characteristically private with minimal state sponsorship until well into the twentieth century. By contrast, in Great Britain and Russia, and to a lesser extent France, most large-scale expeditions were conducted by the national navies. On one occasion only was the U.S. Navy persuaded to compete with other countries in fitting out an expedition; Charles Wilkes was sent to the Southern Ocean and Antarctica between 1838 and 1842.

Just as American sealers pioneered exploration of the Antarctic, American whalers investigated new fishing grounds in the Arctic north of Bering Strait, first in the Chukchi Sea, which Thomas Roys entered in 1848, and then east into the Beaufort Sea as far as the Mackenzie Delta. Edwin De Haven’s expedition of 1850–1851 is generally regarded as inaugurating American Arctic exploration. Sponsored by Henry Grinnell—the first of a long series of generous donors—De Haven searched for the missing British expedition led by Sir John
Franklin. Grinnell later sponsored Elisha Kent Kane and Charles Francis Hall to continue the quest. Kane’s accounts of De Haven’s and his own expeditions were enormously popular and did much to arouse interest in the Arctic among his fellow countrymen. His belief that the North Pole was best reached through Nares Strait was to inspire Isaac Hayes, Hall’s last expedition, and, most significant, Robert Peary and Frederick Cook. This view, however, was not shared by all. Thus, between 1879 and 1881 George De Long was sponsored by the newspaper magnate James Gordon Bennett to attempt to reach the Pole through Bering Strait. De Long was a naval officer, and Bennett persuaded the U.S. Navy to fit out the ship and provide equipment while bearing the main burden of expenses himself. Government funding was also made available for Adolphus Greely’s expedition to Ellesmere Island for the First International Polar Year, which was interestingly conducted not by the U.S. Navy but by the Signal Service of the U.S. Army. Peary, like De Long, was a naval officer. Yet apart from being given extended leave of absence, he received little state support until the presidency of Theodore Roosevelt; his expeditions were largely financed by a group of wealthy New Yorkers led by Morris Jesup. Although Peary made repeated attempts to reach the Pole by the so-called American route through Nares Strait, William Ziegler put much of his fortune into rival attempts at the Pole from Franz Josef Land by Evelyn Baldwin and Anthony Fiala. Newspaper correspondent Walter Wellman, having failed from Franz Josef Land, experimented with airships. Detailed accounts of all of these expeditions will be found in other entries in this encyclopedia, including the very public dispute between Peary and Cook as to who reached the Pole first.

Having claimed the North Pole, Peary next set his sights on reaching the South Pole but was forestalled by Roald Amundsen. Thereafter, no American expedition visited Antarctica until Richard Byrd in 1928. Byrd was also a naval officer, though not on the active list. His first two expeditions were essentially private undertakings with minimal state backing, but the U.S. Antarctic Service Expedition of 1939–1941 was the first state-supported polar expedition to Antarctica since Wilkes 100 years earlier. President Franklin D. Roosevelt’s intention was to establish the first permanently occupied stations on the continent, thus challenging territorial claims submitted by other countries. The United States had itself abrogated all claims to Antarctic territory in 1924, though this did not stop claims being submitted on its behalf by Byrd and Lincoln Ellsworth. Indeed, in 1938 Ellsworth had been secretly instructed by the U.S. State Department to claim as much land as he could overfly, ignoring prior Australian claims. The U.S. Antarctic Service Expedition was also given instructions to claim territory for the United States, though Roosevelt’s intention that it should be the first of a continuing series of expeditions failed to receive congressional backing when World War II broke out. Although primarily designed to test equipment and train personnel for the needs of cold-weather warfare, the two major military exercises (Operation Highjump in 1946–1947 and Operation Windmill in 1947–1948) both engaged in activities designed to reinforce the case for territorial claims. Thus, Highjump paid particular attention to Wilkes Land, Marie Byrd Land, and Ellsworth Land, areas previously claimed for the United States by Wilkes, Byrd, and Ellsworth. The United States, however, was never to submit any formal claim to Antarctic territory. And following the success of the International Geophysical Year, was to the fore in negotiations that led to the signing of the Antarctic Treaty in 1959, under which all claims were suspended but not abrogated.

Roosevelt’s plan for an ongoing U.S. presence on the continent was finally achieved in 1955 with the launch of Operation Deep Freeze and the establishment of the U.S. Antarctic Program. How stations were established across the continent, including at the South Pole, is described in the entry for Operation Deep Freeze. It was the U.S. Navy’s largest-ever peacetime operation and continued until 1998, when logistical support was taken over by civilian contractors.

Although Antarctica was characterized throughout the Cold War by international cooperation and goodwill, the Arctic was a major theater of military operations and research. Other entries (see Submarines and Drifting Ice Stations) provide brief accounts of U.S. activities during this period, and the entry for William Anderson describes the pioneering crossing of the Arctic Ocean by USS Nautilus. The end of the Cold War in 1991 was followed by the resumption of improved relations.
in the Arctic, as well as the release of much previously classified information. Although some research in the Arctic continues to be funded by defense agencies, the bulk of the continuing (and extensive) U.S. undertakings in both polar regions is coordinated by the National Science Foundation’s Office of Polar Programs.

See also: Amundsen, Roald; Anderson, William; Baldwin, Evelyn; Byrd, Richard; Cook, Frederick; Davis, John (fl. 1820); De Long, George; Drifting Ice Stations; Ellsworth, Lincoln; Fiala, Anthony; Greely, Adolphus Hall, Charles Francis; Hayes, Isaac; International Geophysical Year; International Polar Years; Kane, Elisha Kent; Morrell, Benjamin; North Pole; Operation Deep Freeze; Operation Highjump; Operation Windmill; Palmer, Nathaniel; Peary, Robert; Pendleton, Benjamin; Sealing and Antarctic Exploration; Sheffield, James; Submarines; Wellman, Walter; Wilkes, Charles; Whaling and Arctic Exploration

References and further reading:

United States Antarctic Service Expedition
See Black, Richard (1940–1941); Byrd, Richard (1939–1941); and Siple, Paul (1940–1941)

United States Exploring Expedition
See Wilkes, Charles

Unsupported Expeditions
Until the second half of the twentieth century, expedition leaders used every means at their disposal to reach their goals. The support structure of any journey was the key to its success. To travel unsupported for its own sake was but the whim of a few adventurers often considered to be eccentric.

The ascent of the world’s highest mountain, Everest, helps define the terms “supported” and “unsupported.” In the 1950s, Sir John Hunt, the team leader, used the latest techniques and equipment as well as the best climbers. His summit team, Edmund Hillary and Tenzing Norgay, succeeded with the use of oxygen and a pyramid system of many Sherpas. Thanks to every available form of support, Hunt’s team was successful and made history. Two decades later, the Italian climber Reinhold Messner achieved the first unsupported ascent of Everest—and did it solo, with no oxygen and no Sherpa help, an astounding endeavor and clearly more arduous than the Hillary-Norgay climb. But Messner used parts of the routes pioneered by Hunt’s men, without which his own success would have been impossible. Clearly, then, there were two “first ascents” of Everest: the “supported” first of Hunt’s team, and the “unsupported” first of Messner. Since then, more than 1,000 climbers have made the ascent, nearly all with Sherpas and oxygen.

Roald Amundsen achieved the first supported South Pole journey in 1910, and Vivian Fuchs made the first crossing of Antarctica in 1958 using an exit route from the Pole prepared for him by a tractor team under Hillary (fresh from Everest). In 1980, this author (Ranulph Fiennes) led a three-man team to complete the first one-way crossing of Antarctica, pioneering the Scott Glacier exit from the polar plateau. The Fuchs and the Fiennes journeys were made possible by air support. In 1993, with Dr. Mike Stroud, this author made the first unsupported crossing of the Antarctic continent, from the Atlantic to the Pacific, and in 1996–1997 Børge Ousland made the first unsupported crossing of Antarctica.

The history of North Pole journeys is not so clear-cut due to disputes over who was first. In 1909, Robert Peary and Frederick Cook both claimed the prize, but neither claim was proven. In 1967, Ralph Plaisted, using snowmobiles, claimed to have reached the North Pole, and a year later Wally Herbert achieved the first supported crossing of the Arctic Ocean. In 1982, with Charles Burton, this author led the first circumnavigation of the Earth crossing both the Southern Ocean and the Arctic Ocean through the Poles. Again, all the above journeys were supported. Since then, many individuals and groups from various countries have claimed success in supported and unsupported records in both polar regions, but they cannot all be named here.

In the mid-1980s, with Oliver Shepard and Stroud, this author began work on extending the current world record for unsupported travel toward the North Pole, which at that time was held by Hugh Simpson’s expedition of 1968 (he had reached 98 miles from land toward the Pole). Gradually, between 1985 and 1990, we extended his record by more than 300 miles. Two competing teams, also unsupported, raced us. The Russians, under Vladimir Chukov, reached the Pole but removed dead and injured members along the way. The Norwegians had an injured man removed by skiplane before they too reached the Pole.

This caused an interesting situation due to different interpretations of the word “unsupported.” The Russians agreed that their attempt had been compromised due to their contact with an airplane to remove the injured, whereas the Norwegians ignored that factor and claimed priority to the Pole. Both the Russians and the Canadians accepted that our own journey (which had ended 89 miles short of the Pole when we were airlifted out short of rations) held the unsupported record since we had gone farther north than the others without air contact. Such distinctions might seem immaterial to someone who has not been involved, but within the generally accepted (and unwritten) rules of unsupported polar travel, any form of air contact taints the record (something like a gold-medal athlete who tests positive for drug use after an Olympic competition).
I can remember in the 1970s falling through the sea ice during a supported North Pole journey. My colleagues erected a tent and, as quickly as they could, cut off my frozen boot, for every second counted to save my foot. If that had been an unsupported expedition, this would have been a major problem, because cutting off the boot would have meant failure. Due to the difficulty of towing very heavy unsupported sledge loads, no spare clothing or boots are taken, so a ruined boot would spell the end. To have slowly thawed the caked ice away from my boot's laces would have preserved the unsupported nature of the expedition, but that might have also meant frost-bitten toes due to the delay. This is just a small example of the difference between a supported and an unsupported journey.

Most of the rules are clear and seldom disputed. There can be no supply depots prearranged along the route by the team or anyone else. No contact—no matter how fleeting or for whatever reason—should be made with any other humans during the journey. No living creature should be killed, so the only additional intake to consuming what one carries is water. The team members must not be helped by vehicles, animals, or other such aides. Each person who sets out must complete the journey; otherwise one person could carry a load part way then drop out, thereby acting as a Sherpa for the others. This includes a death en route or somebody who skis back to the starting point.

The longest unsupported dog journey in history, according to the Guinness Book of Records, was that of Martin Lindsay, Andrew Croft, and Daniel Godfrey in 1934 in Greenland. They traveled 1,080 miles, and the power and energy of the men were clearly supported by the dogs. They never made any claim to the contrary.

Some of the rules are not as clear-cut, for instance, the use of radios, the Global Positioning System (GPS), or even the wind. Some critics claim that any use of radios or GPS navigation instruments constitutes outside support. Some even include the use by Robert Falcon Scott and Ernest Shackleton of sails attached to their sledges. I have spoken to many proponents of unsupported polar travel, and the general opinion is that radios and GPS units do not help the physical effort of progress and so do not constitute outside support; neither do sails attached to sledges prior to the advent of high-tech sails in 1994.

In 1992, Stroud and I used directional (13.6 kilograms) parachute sails during our Antarctic continental crossing. I summarized their use afterward by writing, "I could not recommend sails without strong reservations. For an expedition that happens to strike a 'windy' year, they could well be worthwhile. Otherwise dubious." In 1994, clever designs of parasails changed the picture radically. Now, one can use a super-light (2.27 kilograms and less), easily controlled unit to zip over the ice or snow even when the prevailing wind comes from either flank. This saves huge amounts of time, energy, and weight. In 1996, in Antarctica, while using a modern parasail for the first time, I traveled some 117 nautical miles in one windy day, moving uphill and with a sledge weighing 200 kilograms. At the end of the day, I had used up some 2,000 calories. Compare that to a standard man-haul day of 14 nautical miles and 7,000 calories expended. Since a 5,000-calorie day ration weighs 1.13 kilograms, and I had sailed a distance in one day that I could man-haul in nine days, I could reduce my sledge load by 10 kilograms of ration weight. With three days of parasail assistance I could reduce the weight by 30 kilograms—an enormous assistance by any reckoning.

That one day of parasailing in 1996 completely changed my mind about sailing. Of course it could not be called unsupported, and from then on I redefined my thoughts on the use of post-1994 sail units that could use flanking winds. At the very least, the term "wind-assisted" should be applied to such journeys. That being the case, no unsupported, non–wind-assisted crossing of Antarctica has yet been made. The problem, of course, is defining exactly when wind assistance equals outside support. Every sport has to make some definitions that restrict the participants, whether that be tires and engines for race cars or spikes for soccer shoes. In the case of wind-assistance units, any form of sail or chute (such as Scott's) that benefit from tailwinds, but not flanking winds, should be allowed. No rulemaking committee or other body yet exists for polar travel.

When an expedition leader announces an intention to conduct an unsupported journey, it would be a good plan to state unequivocally upfront his or her personal definition of "unsupported." This would help avoid subsequent ambiguities.

Why should anyone wish to travel unsupported? There are many reasons, but the most obvious is a desire to be first, not only for its own sake but also for the sponsorship and publicity that follow. By the mid-1990s, virtually all the major polar journeys had been achieved in the supported mode; it is human nature to want to do one better.

Once the unsupported mode has been chosen, the expedition leader and planners face additional problems. In essence, there is far less room for error and less reliance on luck and good travel conditions. Since no aerial or other resupply is allowed, sledge loads will be heavier, progress slower, and distance traveled less. This means more rations and fuel and weight. Camera crews are not a sensible part of an unsupported journey, so team members will need to take their own lightweight camera gear. Medical training becomes more necessary, and medical packs need to be capable of covering all likely ailments—including minor surgery. All equipment must be repairable by team members on the spot. Scientific equipment needs to be ultra-light and, like everything else, cut to the bone. Toothpaste is not vital; neither are chocolate-bar wrappers. Extra underwear is not necessary. Pencils can be cut to short stubs. All tags can be cut out from garments, as can spare buttons. Metal to repair broken ski parts can be cut from used fuel bottles. Rope is heavy, but if somebody falls into a crevasse,
Ushakov, Georgiy
(1901–1963)

It is doubtful whether any expedition has sledged more miles than that led by the Russian explorer Georgiy Ushakov during his survey of the High Arctic archipelago of Severnaya Zemlya. Ushakov was also responsible for establishing the first scientific station on Wrangel Island, as well as for commanding the icebreaker Sadko during a voyage in which the Arctic Basin was reached for the first time since Fridtjof Nansen’s Fram forty years earlier.

Born into a Cossack family from the Amur Valley of the Russian Far East, Georgiy Alekseyevich Ushakov learned as a youth how to live off the land through hunting. A fervent communist, he had fought with the Red Army before being assigned in 1926 to establish a colony and scientific station on Wrangel Island. Despite its location north of the Chukotka Peninsula, the island had remained unvisited by Russians until 1911. By the time that the Soviet Union stated its claim in 1924, landings had been made by several foreign expeditions, and it had been claimed for the British Empire by the Canadian explorer Vilhjalmur Stefansson, who had sought to establish a colony there in 1921. To prevent further such ventures, Ushakov was accompanied by sixty Eskimos who hoped to find living easier here than in Chukotka.

Ushakov remained on Wrangel for the next three years. In addition to providing leadership to the Eskimos, he also established a radio station to report on weather and ice conditions. Given his background, Ushakov found more than a little in common with the native peoples under his command, with whom he mixed happily. As a communist, however, he had little tolerance for shamanistic practices, against which an official campaign was then being waged. Ushakov’s methods were more imaginative than most. On one occasion, he pretended to have been taken over by a demon, causing the local shaman to lose face when he failed to exorcize him. To prove that he was stronger than death itself, another time he pretended to die, only to revive and kill a bear, the most totemic of animals. It is no wonder that the Inuit accorded him great prestige as a man of strange powers. His quality was also recognized by the Soviet government, which awarded him the Order of the Red Banner of Labor for his work on Wrangell.

The Mapping of Severnaya Zemlya, 1930–1932

Soon after his return, Ushakov drew up plans for the exploration of Severnaya Zemlya, a landmass north of the Taymyr Peninsula discovered by Boris Vilkitskiy in 1913. Nothing was known about this land other than the location of its eastern and southern coasts. He proposed that a survey should be conducted by a four-man party equipped with sledges and dogs. They would live off the land, and during the winter months, when it was too dark for survey work, they would lay depots in preparation for the spring and fall field seasons. Ushakov’s plan had the great advantage of being very cheap. No vessel would be required to winter, and there would be no need to mount expensive expeditions to supply them. It took just one month to win official approval for the plan, which was modified in just one detail: an icebreaker would investigate the western extent of Severnaya Zemlya, this voyage also providing the opportunity to land Ushakov and his three companions. Ushakov was now appointed deputy director of the Arctic Institute of St. Petersburg. The voyage to Severnaya Zemlya would be led by his director, Otto Shmidt.

Apart from the eighteen-year-old radio operator Vasiliy Vasil’evich Khodov, who in any case would be required to remain at the base and maintain the radio, which he was eminently competent to do, the team selected by Ushakov was arguably the most experienced chosen for any polar expedition. Nikolay Nikolaevich Urvantsev had worked since 1919 in the Taymyr Peninsula, where he had discovered immense ore deposits at Noril’sk. Severnaya Zemlya represented a structural continuation of the Taymyr, and Urvantsev had long considered organizing his own expedition to go there. He was to serve as
geologist and surveyor. Although Ushakov was himself a capable hunter, since his plan involved feeding the dogs fresh meat except during survey work, when they would eat pemmican, he appointed the professional hunter Sergey Prokopyevich Zhuravlev as the final member of his party. Zhuravlev had spent thirteen winters in Novaya Zemlya; in addition to his hunting skills, he was thoroughly proficient in handling dogs. Finding dogs of suitable quality proved more difficult, but eventually fifty were obtained in the Russian Far East.

The expedition was organized quickly, such that Ushakov had only three and a half months to complete preparations before embarking from Archangel in Sedov on 15 July 1930. On 22 August, he and his companions were landed in the Sedov Archipelago off the west coast of Severnaya Zemlya. Shmidt remained for eight days to help with the construction of the hut, which was built on a low-lying island that they named "Domashniy" (Home). Before he left, Shmidt instructed Ushakov that should it prove impossible to pick him up, he was to make his way back to the nearest settlement across Vil’kitskiy Strait and the Taymyr. Fortunately, he was not required to do so.

While Khodov remained at Domashniy, Ushakov, Urvantsev, and Zhuravlev busied themselves with hunting and investigating the local area. In early October, they crossed the 15-mile strait separating the Sedov Archipelago from the main landmass to establish a depot at Cape Hammer and Sickle. There, they raised the Red Flag and claimed Severnaya Zemlya for the Soviet Union. During the winter, Ushakov and Zhuravlev made three further journeys to add to this depot, then two more in early spring to lay new depots farther north and on the east coast. The first journey for surveying purposes was made between 22 April and 29 May 1931, when Ushakov and his two companions explored the west coast of the large central island—October Revolution—before crossing a strait to Komsonolets Island and sledging to the northernmost point of the archipelago. This is now known as Arctic Cape, though Ushakov originally named it for the later disgraced politician Vyacheslav Molotov. A succession of other major journeys followed: across October Revolution Island (1 June to 20 July 1931), around Bolshevik Island (14 April to 28 May 1932), and to Pioneer Island, whose separate insularity was proved in June 1932. The summer thaw and rains made sledging impossible, so this was the time to rest and write up what had been seen during the past year. Urvantsev worked on his maps, including one of the entire archipelago at 1:750,000.

Ushakov’s strongly held beliefs are clear from the names he assigned: Red Army Strait, Cape Rosa Luxembourg, and so on. Komsonolets Island, for example, is named for members of the Young Communist League. During the two years they were here, Ushakov and his colleagues dogsledged over 3,000 miles. Urvantsev’s map was so accurate that only minor amendments have been made since. It was to prove immediately invaluable to Shmidt, who arrived on 14 August 1932 to collect a copy for use in his successful passage north of Severnaya Zemlya in Sibiryakov. Ushakov’s party was picked up the next day by Rusanov. The achievements of this expedition received wide recognition, with Ushakov himself being awarded the Order of Lenin.

A Voyage to the High Arctic, 1935
As a senior member of the Arctic Institute and deputy head of the Chief Administration of the Northern Sea Route until 1936, Ushakov was to take a prominent part in the dramatic expansion of Soviet Arctic activities under Shmidt’s leadership. In 1934, he flew to Chukotka to coordinate the rescue of survivors from Chelyushkin (see Otto Shmidt). In the following year, he was asked to lead an expedition to the High Arctic in the icebreaker Sadko. Attempts to open the Northern Sea Route to shipping were handicapped by the lack of meteorological and oceanographic information concerning conditions in the central Arctic Basin. The only source of such data was Nansen’s epic voyage in Fram in 1893–1896.

Sadko, a 3,350-ton icebreaker equipped with a 3,500-horsepower engine, had an unlikely history for an expedition vessel. Originally constructed to carry mail in Canada’s St. Lawrence Estuary, it was sold in 1915 to the government of imperial Russia. Within a year it had been wrecked on a reef off Murmansk and remained there, almost totally submerged, until refloated on 14 October 1933. Following a major refit in Archangel, it was ready for Arctic duty in 1934. Its captain was the veteran polar navigator N. M. Nikolayev, who had previously commanded Fedor Litke on voyages that included a single-season transit of the Northern Sea Route in 1934. Professor Nikolay Zubov led a party of no less than twenty-eight scientists. Two aircraft were carried for the purposes of ice reconnaissance: a Shavrushka flying boat, and a Heinkel floatplane, piloted by Mikhail Babushkin and G. P. Vlasov. Since there was every possibility that the ship would become beset and forced to winter, provisions were taken sufficient for two years, along with thirty-five dogs, three sledges, and prefabricated huts just in case Sadko had to be abandoned.

The ship sailed from Archangel on 8 July 1935; further equipment was loaded at Murmansk before the expedition headed north to Svalbard. Every 30 miles, Sadko halted to allow its scientists to conduct a series of measurements. These stations continued throughout the voyage and reaped an early reward when a submarine mountain range—the Nansen Ridge—was discovered between Svalbard and Greenland. This separated the Arctic Basin from the Greenland Sea. Sadko’s course took it along the northern coasts of Spitsbergen and North East Land to the Barents Sea, where its pilots searched in vain for “Gillis Land,” but were prevented from proving that it did not exist by thick fog. After they recoaled in Novaya Zemlya, they made an unsuccessful attempt to land on the easternmost island of Franz Josef Land, Graham Bell, before discovering a small island on 1
September at 80°55’N, 79°00’E. This was later named for Ushakov. Two more islands were found seven days later off Cape Litvinov, Severnaya Zemlya. Dense multiyear ice characteristically lies off Arctic Cape, but not this year, enabling Sadko to steam north across the continental slope to conduct the first series of oceanographic observations in the central Arctic Basin since Fram. On 13 September, it reached 82°41’N at 87°04’E. Soundings obtained there gave a depth of 2,365 meters, and temperature observations showed a layer of warm Atlantic water extending from 150 meters to 750 meters beneath the colder surface water.

Ushakov’s ideological fervor did not prevent him from becoming a casualty of the political purges instituted by Soviet leader Joseph Stalin. In May 1936, he appeared as a prosecution witness in the trial of Konstantin Semenchuk, head of the station on Wrangell Island, who was accused of a range of crimes including murder and oppressing the natives under his charge. Ushakov’s appearance was calculated to contrast his efficient and benign leadership with Semenchuk’s inefficiency and neglect. Not long afterward, however, it was Ushakov’s turn to be dismissed from his post, arrested, and sent to a labor camp. The Chief Administration of the Northern Sea Route was experiencing difficulties in fulfilling its commitments to the Five-Year Plan and, as deputy director, Ushakov was a convenient scapegoat. Luckier than most, he survived the experience to be rehabilitated after the conclusion of World War II. Sadko’s program of high-latitude voyages was continued under the leadership of Rudolf Samoylovich, who himself would soon fall victim to the purges, as would Shmidt.

See also: Arctic Ocean; Nansen, Fridtjof (1893–1896); Samoylovich, Rudolf; Severnaya Zemlya; Shmidt, Otto; Stefansson, Vilhjalmur; Vil’kitskiy, Boris; Wrangell Island

References and further reading:
Vasil’yev, Mikhail
(1770–1847)

The little-known expedition of the Russian naval officer Mikhail Vasil’yev was the northern counterpart of the considerably better-known expedition of Fabian von Bellinghausen, during which Antarctica was seen for the first time. The two divisions of what was conceived as one combined enterprise were to accompany each other for much of the outward voyage until they separated to explore the opposite ends of the Earth, Vasil’yev’s purpose being to search for the Northwest Passage through Bering Strait.

Russia Continues the Search for the Northwest Passage, 1819–1822

At the conclusion of the Napoleonic Wars in 1815, Tsar Alexander I was persuaded to organize two major round-the-world voyages: one led by Fabian von Bellinghausen was to explore far south in the Southern Ocean; the other led by Mikhail Vasil’yev was to seek the western entrance to the Northwest Passage from the Pacific. The aims of these expeditions were not purely exploratory. Both were to look for anchorages suitable for future use by the Imperial Russian Navy, and both commanders were instructed to pay particular attention to the training of junior officers. Alexander was well aware of the importance of the navy in binding together his vast empire and knew that the lack of officers adequately skilled in navigation hampered its expansion.

Russian interest in the Northwest Passage followed conclusive proof by detachments of Vitus Bering’s Great Northern Expedition (1733–1743) of the near impossibility of finding a navigable route along the Northeast Passage to the north of Russia. With the Russian Empire extending nearly halfway around the world, however, it was as convenient to sail in one direction as the other. A Northwest Passage north of America would serve Russian purposes equally well. In 1815–1818, Otto von Kotzebue had led the first Russian expedition to search for the Northwest Passage. Although unsuccessful, he had made significant discoveries in the region of Bering Strait that were somewhat promising for finding a navigable route. Kotzebue’s expedition had been privately sponsored. Perhaps a better-resourced naval expedition would now be successful? Captain Lieutenant Mikhail Nikolayevich Vasil’yev was to have as his second-in-command Captain Lieutenant Gleb Semenovich Shishmaref. Having previously served as second-in-command with Kotzebue, Shishmaref knew the coast of northwest Alaska as well as anyone. Vasil’yev and Shishmaref were to sail in the sloops Otkrytiye and Blagonamerenyy.

In company with Bellinghausen’s two ships, Otkrytiye and Blagonamerenyy embarked from Kronstadt on 1 July 1819, calling first at Copenhagen and then at Portsmouth, England, to acquire the best available navigational instruments and charts. Sailing south from England, both expeditions reached Rio de Janeiro within a day of each other in mid-November, from where they pursued separate courses, Bellinghausen to South Georgia and the Antarctic, and Vasil’yev around the Cape of Good Hope east to Tasmania and the Pacific. New islands were discovered as the expedition headed north through the Pacific. On 26 May 1820, approaching the Bering Sea, Shishmaref was dispatched to Unalaska in the Aleutian Islands to take on interpreters while Vasil’yev made for Petropavlovsk, Kamchatka, reaching it on 17 June. Arrangements had been made for the two vessels to rendezvous in Kotzebue Sound, and they were reunited there on 29 July. Shishmaref had been unable to obtain interpreters and had instead forcibly taken on board four Aleuts encountered hunting offshore in their baidarkas, kayaks made from walrus skins. Two days later, Vasil’yev set out with both ships in an attempt to get as far north as possible off the Alaskan coast. By 13 August, he had reached 71°06’N, 166°08’W. The ice was dense but not completely impenetrable. However, with the boat not yet assembled, there was no means of exploring the shallow waters close to shore, causing Vasil’yev to turn back. While Shishmaref surveyed St. Lawrence Island, Vasil’yev investigated the Pribilof Islands before meeting up at Unalaska. Sailing next to New Archangel—present-day Sitka—where Lieutenant Ignat’yev was left behind with a party to construct the boat, Otkrytiye and Blagonamerenyy and their remaining crews headed south to winter in San Francisco.

Vasil’yev resumed exploration of the Central Pacific in late February 1821, searching in vain for nonexistent islands shown on his English maps. Arriving at New Archangel at the end of May, the new boat was ready and interpreters were available to accompany the expedition. Unalaska was reached on 25 June. To maximize the amount of work accomplished, Vasil’yev now sent Shishmaref to survey the Asiatic coast near Bering Strait, while Lieutenant Aleksandr Avinov explored the Alaskan coast from northern Bristol Bay north to Norton Sound in the boat. Vasil’yev himself headed north toward the Arctic Ocean after first investigating Norton Sound, where Nunivak Island was discovered on 3 August. Keeping close to the Alaskan coast, Vasil’yev was unable to reach beyond 70°40’N, 161°27’W, being stopped by dense ice near Icy Cape, where James Cook had been halted in 1778. Vasil’yev fixed the position of Icy Cape before heading south to Petropavlovsk on 21 September. The two other parties had met mixed fortunes. Whereas Avinov had been able to accomplish little, with scurvy
Vaygach Island (Russia)

Located in the Russian Arctic at 70°N and 60°E, Vaygach Island occupies a prominent place in polar exploration because of its location athwart two points of entry to the Kara Sea and thus to the Northeast Passage. The name appears to be derived from the Old Dutch word vaigat, meaning passage. Since this was already in use by 1556, when visited by Stephen Borough, this suggests Dutch voyages dating back at least to the first half of the sixteenth century, long previous to any for which records survive. Vaygach is separated from Novaya Zemlya to its north by Kara Gate (Karskiye V orota), and from the Russian mainland to its south by Yugor Strait (Yugorskiy Shar). Two other possible routes into the Kara Sea lie farther north: Matochkin Strait, and around the northern tip of Novaya Zemlya to its north by Kara Gate (Karskiye V orota), and from the Russian mainland to its south by Yugor Strait (Yugorskiy Shar). Two other possible routes into the Kara Sea lie farther north: Matochkin Strait, and around the northern tip of Novaya Zemlya, but neither was regularly used until the late nineteenth century. Whereas few expeditions have come to explore the island itself, its position has made it an Arctic crossroad. Some explorers have sought to improve navigability by conducting hydrographic studies of the shallow straits to either side. Others have run into difficulties farther east or north, making their way here to be rescued.

Reindeer have been pastured on Vaygach Island by the Nentsy since time immemorial. The Pomor inhabitants of the White Sea region of northern Russia were probably familiar with the island and with the straits on either side of it from the early middle ages. In 1032, Uleb is reported as having sailed from the Dvina River to the "Iron Gates." Since Kara Gate is also known by this name, it seems likely that he came here, and from early on it is probable that the Pomors sailed through the straits to explore the Kara Sea beyond. The first recorded Western European visitor was Stephen Borough in July 1556, who arrived in company with a Pomor fleet. Although he saw no Nentsy, he was shown hundreds of their carved wooden idols at Cape Bolvanovskiy, the northeastern point of the island. This remained a sacred place to the Nentsy until the Soviet era.

The first documented passage by a Western European through Yugor Strait was made by Arthur Pet in July 1580. He had earlier attempted to get through Kara Gate but found it impassable. It is possible that Pet was anticipated by Olivier Brunel, who may have accompanied Pomor hunters some time before on his way to the Ob’ River. Yugor Strait is navigable to sailing vessels for about six weeks each summer, and much depends on arriving at the right time of the year. Thus, Brunel was unable to get through in 1584, probably because he came too late. Cornelis Cornelisoon Nai and Brant Ysbrantszoon had to wait for the ice to clear but got through in early August 1594. A hard winter meant that the following year Nai and Willem Barents could not get through until September, and only then with difficulty. Yugor Strait is shallower and best navigated in shallow-draft vessels such as the Pomor lodyas. The problems it poses for larger vessels led to a continued investigation for alternative entrances to the Kara Sea, though few had much success with Kara Gate.

One of the worst disasters in Arctic history occurred in 1652–1653, when a Russian mineral prospecting expedition led by Roman Neplyuyev was forced to winter off Cape Medynskyi Zavorot during a bad ice year. The bulk of supplies had been sent ahead separately, together with materials for the house in which they were to live, leaving the party unprepared for the rigors of an Arctic winter. By 9 March 1653, fourteen out of the fifty men were dead, and the others were all suffering from scurvy. By the time that the relief expedition organized by Tsar Aleksey Mikhaylovich arrived, Neplyuyev himself was dead; only a few survivors remained.

Hydrographic knowledge of Yugor Strait was significantly improved by Stepan Murav’ev in 1734 and Fedor Litke in 1824. The first recorded circumnavigation was made by the Norwegian walrus hunter Elling Carllsen in 1868, though Pomor hunters may have accomplished this much earlier. The knowledge that Vaygach was frequented by Pomor and Nentsy was an important factor in the survival of several members of expeditions facing difficulties in Novaya Zemlya and the Kara Sea. Thus, in 1873 six of those participating in Svert Tobiesen’s walrus-hunting expedition to Novaya Zemlya eventually found safety living among the Nentsy until they were picked up by a ship. Ten years later, members of the Dutch International Polar Year (1882–1883) expedition led by Maurits Snellen were rescued after making their way to Yugor Strait following the besetment of their ship, Varna, in the Kara Sea.

Relatively few have come to Vaygach specifically to study the island. Those doing so in the nineteenth century include Adolf Erik Nordenskiöld, who collected fossils in 1875; Frederick Jackson, who spent two weeks mapping the interior in 1893; and Henry Pearson, who made natural history collections in 1897. Aleksandr Varnek conducted hydrographic surveys in 1902, which were extended the following two years by F. K. Drizhenko.

Reflecting the significance of this location athwart the
Northern Sea Route, one of the earliest stations in the Russian Arctic was established here in 1914. Vaygach Island (70°14’N, 58°28’E) is one of very few stations still operating. Other stations have been maintained at various times at Yugor Strait (69°29’N, 60°27’E), established pre-1917; Varneka Bay (69°28’N, 59°22’E), established 1930; Cape Greben’ (69°24’N, 60°00’E), established 1934; and Cape Bolvanski Nos, established 1945.

See also: Barents, Willem (1594, 1595); Borough, Stephen; Brunel, Olivier; Indigenous Peoples; Jackson, Frederick (1893–1894); Muravyev, Stepan; Northeast Passage; Pet, Arthur; Pomor Contribution to Arctic Exploration

References and further readings:


**Vega Island (Antarctic Peninsula)**

Located at 63°50’S, 57°25’W, this island—17 miles long and 6 miles wide—lies to the east of the Antarctic Peninsula, separated from James Ross Island by Herbert Sound and from the Trinity Peninsula by Prince Gustav Channel. It was named by Otto Nordenskjöld for the vessel in which his uncle Adolf Erik Nordenskjöld made the first transit of the Northeast Passage. It was here, at Cape Well-Met, that Nordenskjöld and Ole Jonassen, sledging north from Snow Hill Island, met Gunnar Andersson, Samuel Duse, and Toralf Grunden sledging south from Hope Bay on 12 October 1903. The meeting is memorably described by Nordenskjöld, who was so taken aback by the sight of his blubber-coated colleagues with their primitive wooden eye protectors that he failed to recognize them, even considering them possibly dangerous as members perhaps of an undiscovered people indigenous to the Antarctic Peninsula!

See also: Andersson, Gunnar (1902–1903); Antarctic Peninsula; Hope Bay; James Ross Island; Nordenskjöld, Adolf Erik; Nordenskjöld, Otto; Snow Hill Island; Trinity Peninsula

**Victor, Paul-Émile**

(1907–1995)

Ethnographer, author, engineer, and master of logistics, the French explorer Paul-Émile Victor transformed his country’s involvement in polar exploration. In applying lessons learned during wartime service with the U.S. Army to the Greenland ice sheet, he also revolutionized the conduct of large-scale expeditions.

**Early Expeditions to Greenland, 1934–1937**

The young Paul-Émile Victor dreamed of living among the Inuit. After qualifying as an engineer, he had obtained a diploma in ethnomusicology in Paris. His problem was how to get to Ammassalik. Until being discovered by Gustav Holm in 1884, the East Greenlanders there had lived their lives unaffected by any outside contact. Although changes had been introduced with the establishment of a mission and trading station ten years later, this remained the best place in Greenland to study traditional Inuit life and culture. Knowing that the veteran explorer Jean-Baptiste Charcot often visited East Greenland during his annual summer cruises in Pourquoi-Pas?, Victor applied to join him. Ammassalik was off Charcot’s route. Upon hearing Victor’s plan to stay for one year to collect artifacts for the Museum of Ethnology, he agreed to land him here together with his colleagues, Robert Gessain, Michel Perez, and Fred Matter. Victor spent a productive year, accumulating not only artifacts but also impressions with which to fill several books. Two years later, he undertook a rather different kind of expedition, crossing the Greenland ice sheet from Christianshåb to Ammassalik, accompanied by Gessain, Perez, and a Danish count, Eigil Knuth. In 1936, he returned to East Greenland to spend a year wintering with fifteen Inuit families at Kangerdlugssuatsiaq. As in 1934, he was brought by Charcot on the latter’s last voyage. Just one month later, Pourquoi-Pas? was lost in a storm off Iceland. Victor was to write up his experiences in two best-selling books, Boréal (1938) and Banquise (1939), which were to form the basis of his popular reputation.

**A Revolution in Polar Logistics, 1948–1953**

Victor’s charm, energy, and ability as a writer were to make him an effective publicist. Following the end of World War II, he succeeded in persuading his government that national honor required French involvement in the polar regions and, furthermore, it best be conducted by a logistical agency with specialist expertise in organizing expeditions to the Arctic and Antarctic. On 27 February 1947, Expéditions Polaires Françaises (Missions Paul-Émile Victor, or EPF) was founded. Sponsored by Terres Australes et Antarctiques Françaises (TAAF), within the Ministry of State for Overseas Departments and Territories, Victor was charged with responsibility for organizing scientific expeditions, primarily to Greenland and Antarctica, but also to other regions as need arose. In the following year, funds were granted to Victor to direct two expeditions, one to Greenland and the other to Adélie Land in Antarctica. Since his personal involvement was much greater in the expeditions to Greenland, these are covered in some detail here. For EPF’s Antarctic activities, see the entries for Adélie Land, Crozet Islands, and Kerguelen Islands.

If Victor’s ethnographic interests were most in evidence during his prewar expeditions, his postwar expeditions to the Greenland ice sheet were to benefit particularly from his practical competence as an engineer. In 1930, the German scientist Alfred Wegener had established a station at the center point
of the Greenland ice sheet. Members of his expedition had also made the first measurements of ice thickness. What Wegener had begun, Victor now planned to continue in the most comprehensive research program to date. In addition to meteorological, glaciological, and geological research, a geodetic survey would be made of the ice sheet’s profile, seismic reflection and refraction soundings would assess its changing thickness, and a gravimetric survey would indicate the nature of underlying rocks. Meteorological measurements would be obtained throughout the year at a station in the center of the ice sheet that would also provide essential support for the wide-ranging field parties.

On 14 May 1948, Victor sailed from Rouen in Force. For this first year, his objective was to establish a means whereby heavy equipment could be transported up to the ice sheet from his landing place in northeast Disko Bay. This involved constructing a 6-mile trail and then a cable lift up a 200-meter cliff, on top of which a temporary camp was built. Victor had learned much from his time with the U.S. Army Air Corps in the war, during which he had served as an expert on Arctic rescue. He had first learned many of the practices that he would now apply to the organization of an Arctic expedition from the U.S. military. For example, while in Alaska he had made use of the tracked snow vehicles known as Weasels. These, rather than dogs, would provide the transportation muscle of his expedition.

His main objective for the second year was to establish Central Station close to the position previously occupied by Wegener’s Mid-Ice Station. There was a disadvantage of returning to France rather than wintering in Greenland: by the time operations could be resumed, the spring melt was under way. It was thus with considerable difficulty that the heavy stores were moved up above the level of the thaw line—about 1,500 meters—and then across the ice sheet to where the station was to be constructed at 70°55’N, 40°38’W. On the basis of the experience of stations previously established inland by Wegener and Gino Watkins, Victor had decided that his station would be built entirely under the snow to offer better protection against wind and cold. The prefabricated unit was made of a special insulating plastic; just 5 centimeters thick, it was equivalent to a 1-meter brick wall. In addition to bunks for the eight occupants, it contained a kitchen, dining and living rooms, and two laboratories—for meteorology and photography—in a space measuring 8 meters by 5 meters. Some 150 meters of tunnels were dug nearby to accommodate stores of fuel, food, and equipment.

As Victor waited for a second Weasel train to make its way across the ice sheet, additional supplies were requested from Iceland. To begin with, these were dropped by parachute. This proved slow and resulted in an unacceptable proportion of damaged loads. Victor therefore asked the pilot to adopt a different technique, employed in the forces but not previously on an expedition. He was to fly as low as possible—less than 10 meters above the snow—and free-drop all but the scientific instruments. Not only did the unloading proceed more rapidly; perhaps surprisingly, fewer packages were lost. On 24 August, Robert Guillard and seven colleagues were left behind to winter at Central Station, the others heading back to the west coast in the Weasels.

In April 1950, Victor set out once more from France. Central Station was relieved on 30 June, and by 12 July forty-seven men were assembled there, ready to begin the most extensive studies by far of the ice sheet to date. Already, it was known that their station was situated on top of ice 3,200 meters thick. Seismic, gravity, and geodetic surveys had been made from the coast to the station, and those were now extended south, east, and north as far as 74°N. Meanwhile, the glaciologists drilled holes reaching down to 150 meters, providing information on climate back to the eighteenth century. With everything proceeding well, Victor decided to take up the invitation of the Danish scientist Lauge Koch and attempt a 700-mile crossing of the ice sheet to the vicinity of Ella Island, where Koch would arrange a motorboat to pick him up. Leaving behind Paul
Voguet and seven colleagues to winter at Central Station, Victor took with him Guillard's previous party of winterers to complete the first mechanized crossing of the Inland Ice with six Weasels.

The following year, Victor remained in France to provide overall direction while Gaston Rouillon took charge of field operations in Greenland. Two teams of three Weasels each were to extend the seismic survey across much of the southern half of the ice sheet, successfully accomplishing this task despite the deaths of Alain Joset and Jens Jarl, who were killed when their Weasel turned upside down in a crevasse. At the end of the summer, Central Station was closed, ending the studies of the interior. Small scientific parties were to visit Greenland in 1952 and 1953, but they confined their research to the margins of the ice sheet; Victor himself was engaged in North Greenland in collaborative projects with the Americans.

During the course of six seasons, Victor's Weasels had traveled more than 600,000 miles. The 600 seismic soundings made possible the compilation of the first map showing the likely topography and bedrock underlying the ice sheet. These results confirmed the suggestion put forward by members of Wegener's expedition, previously doubted by some, that Greenland's Inland Ice was deeper in the middle than at the edges and thus occupied a basin surrounded by higher ground. Victor's logistical innovations, in particular his use of Weasels and air supply, were to transform the conduct of polar expeditions. Among the first to apply his lessons outside EPF were Jim Simpson's British North Greenland Expedition (1952–1954) and Vivian Fuchs's Commonwealth Trans-Antarctic Expedition (1955–1958).

In 1955, on the basis of the success of his earlier expeditions, Victor was asked by the Snow and Ice Commission of the International Union of Geodesy and Geophysics to organize and direct the International Glaciological Expedition to Greenland (EIGIG). EPF was charged with logistical arrangements, which involved establishing the wintering station Jarl-Joset, 200 miles from the east coast, and air supply to the teams of Weasels conducting scientific traverses. Between 1957 and 1974, researchers from Austria, Denmark, France, Switzerland, and West Germany participated in this major long-term research program, which conducted wide-ranging studies, including the first investigation of the ice sheet's mass balance.

Although major EPF involvement in Greenland ended with EIGIG, Victor succeeded in persuading his government that France should continue its research program in Antarctica, logistical arrangements being subcontracted to EPF, while the scientific work was coordinated by TAAF. EPF continued in this role long after Victor's retirement in 1976; in 1992 its logistical function was taken over by the newly founded French Institute for Polar Research and Technology. Victor resumed his ethnographic interests in later life, writing yet another book on the basis of his recollections of life at Ammassalik during the 1930s. The French polar program is his legacy.

See also: Adélie Land; Charcot, Jean-Baptiste; France; Fuchs, Vivian; Greenland, Inland Ice; Holm, Gustav; King Christian IX Land; Knuth, Eigil; Koch, Lauge; Simpson, Jim; Watkins, Gino (1930–1931); Wegener, Alfred (1930–1931)

References and further reading:

Victoria Island (Canada)
The second largest island in the Canadian Arctic after Baffin Island, Victoria Island extends between 68° and 73°N and 101° and 119°W. Located south of Melville Sound, it lies to the west of Prince of Wales and King William Islands, from which it is separated by McClintock and Victoria Straits, respectively, and to the east of Banks Island, separated by Prince of Wales Strait. Dease Strait, Coronation Gulf, and Dolphin and Union Strait lie between it and the North American mainland to the south. At 320 miles long and 170–370 miles wide, it has an area of 83,896 square miles.

The story of its discovery is complicated. The presence of so large an island afloat anticipated routes through the Northwest Passage rendered considerably more difficult the process whereby several possible passages were eventually discovered. In particular, it lay across Sir John Franklin's proposed course southwest from Cape Walker, a significant factor in the resulting loss of 129 men.

It was long inhabited by the Inuit. From the perspective of exploration history, the first sighting was made by John Richardson in August 1826 of the southwest coast across Dolphin and Union Strait during Franklin's second expedition. Richardson named his discovery "Wollaston Land" for the British scientist Dr. William Hyde Wollaston (1766–1828). In 1839, the eastern part of the southern coast was followed by Peter Dease and Thomas Simpson, having been seen by Simpson the previous year. Simpson named it "Victoria Land" for Queen Victoria, unaware that this was part of the same landmass already seen by Richardson. Until proved to be a single island, "Wollaston" and "Victoria" Lands were assumed to be separated by a strait, along whose shores Franklin might possibly have passed. Thus, several expeditions were directed here during the Franklin search, during the course of which much of the coastline was explored (by John Rae in 1851, as well as by sledging parties from the expeditions led by Robert...
McClure and Richard Collinson between 1851 and 1854). Collinson spent two winters on the island, at Walker Bay on the west coast (1851–1852), and at Cambridge Bay on the south coast (1852–1853). These journeys left unexplored most of the east coast adjacent to McClintock Strait and the eastern half of the north coast. The southern part of the eastern coast was first investigated by Godfrey Hansen on Roald Amundsen's expedition in 1905, the northern coast in 1915 and 1917 by Storker Storkerson on the Canadian Arctic Expedition of Vilhjalmar Stefansson. Prior to Stefansson’s overland journey from Simpson Bay to Prince Albert Sound in 1911, the interior remained unknown to all but the Inuit who hunted caribou there. Stefansson’s Polar Bear spent the winters of 1915–1916 and 1916–1917 off Armstrong Point and in Walker Bay, respectively.

The presence of arctic foxes in large numbers encouraged the Hudson’s Bay Company (HBC) to establish trading posts in 1923 at Cambridge Bay and Port Brabant, 18 miles east of present-day Holman on the north shore of Prince Albert Sound. As elsewhere in the Canadian Arctic, these posts soon attracted resident Inuit populations, encouraging the Royal Canadian Mounted Police to locate a station at Cambridge Bay in 1926. Port Brabant was abandoned in 1939 and replaced in 1940 by Holman, where a Catholic mission had been opened the previous year. Until 1962, HBC also maintained a post at Read Island in Simpson Bay. Cambridge Bay (69°06′N, 105°07′W) and Holman (70°43′N, 117°43′W) remain the main settlements.

Between 1938 and 1941, Lincoln Washburn and his wife, Tahoe, traveled widely across the southern parts of the island looking for evidence of former glaciation. In 1940–1941, Henry Larsen wintered at Walker Bay, during his first voyage through the Northwest Passage. Washburn continued his field studies in 1949, when pilot Ernie Boffa landed him at various points across the island, accompanied by geographer John Jenness and botanist Alf Erling Porsild. In 1954, the icebreaker USCGC Northwind became the first vessel to navigate along the northern coast, traveling from Prince of Wales Strait to Cape Elvira at the tip of the northeast peninsula.

Immediately north of this peninsula lies Stefansson Island, with an area of 1,723 miles. First seen by Storker Storkerson in 1917 and named “Leffingwell Island” for the explorer Ernest de Koven Leffingwell (1875–1971), for some reason Storkerson did not show it on his map. It was not seen again until 1946 when observed from the air, being given its current name in 1952.

See also: Amundsen, Roald (1903–1906); Collinson, Richard; Dease, Peter; Franklin, John (1825–1827); Larsen, Henry (1940–1942); McClure, Robert; Rae, John (1850–1851); Stefansson, Vilhjalmar

References and further reading:

Victoria Island (Russia)
This small, completely ice-covered island lies between Svalbard and Franz Josef Land in the northern Barents Sea at 80°10′N, 37°00′E. It is difficult to approach, as it is surrounded by shoaling waters and generally dense ice. It was discovered on 20 July 1898 by the Norwegian walrus hunters Johannes Nilsen and Ludvig Sebulonsen in an unusually open summer and later named for Viktoria, the vessel of P. W. Nilsen, who circumnavigated it the next day. The official Russian name is Ostrov Viktoriya.

Norwegian sealers occasionally visited it, and Frank Worsley and Grettir Algarsson landed on it in 1925 from Island. Three years later, further visits were made by Hobby (see Boyd, Louise) and the Soviet icebreaker Sedov in their search for six men still missing from Umberto Nobile’s Italia expedition. The first scientific studies were made by Gunnar Horn in 1930 from Bratvaag. At the same time, a hut was erected denoting Norwegian occupation. This was ignored by the Soviet Union, on whose behalf the island was claimed during a landing by Nikolay Zubov in 1932, on the grounds that it lay within the sector claimed by the Soviet Union in 1926. A Soviet polar station was established in 1959, manned initially by six staff. This was closed some time before 1995.

See also: Barents Sea; Boyd, Louise; Nobile, Umberto

Victoria Land (Antarctica)
Discovered by James Clark Ross in January 1841, this extensive region forms the western side of the Ross Sea, extending south from about 70°30′S to 78°00′S and westward up to the polar plateau. It is in Victoria Land that the Transantarctic Mountains reach closest to the sea in a series of ranges, rising to 4,025 meters at Mount Lister (Royal Society Range) and 4,165 meters at Mount Minto (Admiralty Range).

The first landing on Victoria Land was made by the American sealer Mercator Cooper, who landed on an ice shelf on 27 January 1853. This was the first continental landing on East Antarctica and the first landing sufficiently documented so that we can be sure that it took place on the continent rather than on an island immediately offshore. Much better known is the landing at Cape Adare (71°17′S, 170°15′E) on 24 January 1895, made by a party led by Henrik Bull. Whereas Bull himself did not make much of this, one of the other expedition members, Carsten Borchgrevink, forged a career for himself on the claim—whether true or not—that he had been first out of the boat and thus first to land on the Antarctic continent. (Cooper’s landing was unknown at this time, as were those by John Davis and Andrew McFarlane in 1820–1821; see Davis, John [fl. 1820].) Borchgrevink returned to Cape Adare four years later,
when he led the first expedition to winter on the continent, staying from 17 February 1899 to 2 February 1900.

Farther south, the first explorations of the Royal Society Range were made by members of Robert Falcon Scott's first expedition, which was based on nearby Ross Island between 1902 and 1904. The first major journey was made by Albert Armitage, who in December 1902 and January 1903 led a party up the Ferrar Glacier to the polar plateau. Unfortunately for Scott’s purposes, he had not been able to reach quite far enough and was unable to determine whether Victoria Land was an island and thus had a west coast, or whether it formed part of an Antarctic continent. Scott himself resolved the issue the following year when he reached 150 miles onto the plateau to prove Victoria Land was not an island. While making his way up the Ferrar Glacier, Scott had sent a three-man party led by the geologist Hartley Ferrar to examine interesting rock exposures reported by Armitage. Among the fossils collected by Ferrar was the first specimen of *Glossopteris indica*, a species found in all parts of the world once constituting the supercontinent of Gondwana. Ferrar was unlucky in that the presence of this fossil was not actually discovered until 1928, after the rock in which it was contained was cracked open by a curator at London’s Natural History Museum. Ferrar was also unlucky in missing out on discovering the Dry Valleys.

This extensive ice-free area, the largest in Antarctica, was first sighted by Scott on 17 December 1903 during his return from the polar plateau; this was the first Antarctic "oasis" to be discovered.

Edgeworth David was assigned the task of leading the three-man party that would attempt to reach the South Magnetic Pole during Ernest Shackleton’s first expedition. This involved finding a way up through the Transantarctic Mountains onto the high ice plateau beyond. Setting out from Cape Royds on Ross Island in October 1908, David experienced considerable difficulty in locating a suitable route but eventually hit on the Larsen Glacier, up which the plateau was reached together with the South Magnetic Pole at 72°25’S, 155°16’E in January 1909.

Scott’s original intention when he returned to Antarctica in 1911 was to explore Victoria Land with just one party led by Thomas Griffith Taylor. In the event, however, Victor Campbell’s Eastern Party was unable to find a suitable operating base from which to explore Edward VII Land, forcing Campbell to opt instead to land at Cape Adare, where Borchgrevink had wintered previously. Remaining there with his now renamed Northern Party from 17 February 1911 to 4 January 1912, Campbell confirmed what had previously been suspected: although Cape Adare was a convenient place to
land, the surrounding cliffs and impassable mountains meant that little exploration of northern Victoria Land could be attempted from this location. When Terra Nova returned, Campbell was keen to be landed farther south, where his party might at last carry out their intended survey work. Again he met misfortune, surviving the next winter in an ice cave at Terra Nova Bay; see the entry under his name. Meanwhile, Taylor’s Western Party made the first preliminary investigations of the Dry Valleys in January and February 1911 (an area that later became one of the most intensively studied regions on Earth) before returning in November to conduct a geological survey in the vicinity of Granite Harbor (76°57’S, 162°40’E).

At the conclusion of these various explorations, Victoria Land was better known than any other part of Antarctica, with the possible exceptions of Ross Island and the west coast of the Antarctic Peninsula. It was not until 20 February 1947, however, that the full extent of the Dry Valleys was discovered by Richard Byrd, during a flight from the Bay of Whales during Operation Highjump. In 1957, Sir Edmund Hillary chose the Skelton Glacier rather than the Ferrar Glacier for the ascent of his tractor party to the polar plateau in order to pathfind a route along which depots were to be laid for Vivian Fuchs, who was leading a party across Antarctica from the southern coast of the Weddell Sea. Subsequent studies of Victoria Land have been largely conducted from the New Zealand Scott Base, established by Hillary during this expedition, and from McMurdo, the major U.S. station, both on Ross Island.

From the 1950s onward, a number of other stations have operated in Victoria Land. The joint U.S.–New Zealand station Hallett (72°18’S, 170°13’E) opened in February 1957 at the tip of Cape Hallett, near the foot of Mount Sabine in northern Victoria Land. The smallest station on the continent during the International Geophysical Year, this station was subsequently expanded and occupied year-round between 1957 and 1964, after which it was maintained as a summer-only station until February 1973. Farther south, the Italian summer station Terra Nova (74°41’S, 164°07’E) was opened in 1986 in Terra Nova Bay, where Campbell had wintered in an ice cave in 1912. Nearby is the West German summer station Gondwana (74°40’S, 164°13’W), which was opened in 1983–1984 near Mount Melbourne. Between 1968 and 1992, farther south still, New Zealand operated Vanda Station (77°32’S, 161°33’E), beside Lake Vanda in the Wright Valley, one of the Dry Valleys of south Victoria Land.

See also: Armitage, Albert; Borchgrevink, Carsten; Campbell, Victor; David, Edgeworth; Italy; New Zealand; Operation Highjump; Ross, James Clark (1839–1843); Scott, Robert Falcon; Taylor, Thomas Griffith

References and further reading:
The literature concerning Victoria Land is extensive and the major works may be discovered through study of the “see also” entries listed above, particularly those relating to the expeditions exploring this region.


Vil’kitskiy, Boris
(1885–1961)
On 27 May 1905, during the Russo-Japanese War, the Baltic Fleet of Admiral Zinoviy Rozhdestvenskiy, following a ten-month, 12,000-mile voyage from St. Petersburg, was blown out of the water by a Japanese squadron at the Battle of Tsushima. A direct result of this notable disaster was the organization by the Imperial Russian Navy of the Arctic Ocean Hydrographic Expedition (1910–1915). During that expedition Boris Vil’kitskiy discovered Severnaya Zemlya, the last major land discovery in the Arctic Ocean, and completed the second transit of the Northeast Passage.

From Peter the Great onward, Russian rulers had been aware of the vulnerability of its Far East territories. Indeed, much of the history of Russia’s involvement in polar exploration—north and south—concerns attempts to investigate the navigability of the Northeast Passage—or else to discover anchorages on previously unknown islands for use by naval vessels sailing to the Pacific. The disastrous defeat in the Russo-Japanese War confirmed the wisdom of those earlier investigations and prompted the imperial navy to mount a major campaign to open up the Passage to shipping as the Northern Sea Route. Two icebreakers were commissioned, both of 1,200 tons and with 1,200-horsepower engines. In theory, they could break ice up to a full meter thick, but in practice they were to achieve less than that. Launched in 1909 at St. Petersburg, Taymyr and Vaygach first had to undertake the long voyage to Vladivostok before they were ready for operation the following year.

Overall command was vested in the elderly I. S. Sergeyev, colonel of the Corps of Marine Navigators, with Taymyr and Vaygach initially charged to Boris Vladimirovich Davydov and Aleksandr Vasil’evich Kolchak, respectively. Davydov was a distinguished hydrographer, and Kolchak had knowledge of the Arctic coast, having captained Zarya during Eduard von Toll’s expedition of 1900–1903. Their instructions were to collect information on the time of ice formation and breakup, discover what they could about ice movement and thickness, study currents and seafloor bathymetry, record meteorological conditions, and generally investigate the practicalities of navigation off the Arctic coast. This constituted the first systematic survey of these waters.

The Discovery of Severnaya Zemlya, 1913
In 1911, Kolchak was replaced by K. V. Loman as commander of Vaygach, the latter continuing in that capacity until the end of the 1912 season, when Davydov also was transferred to other duties. By this time, accurate surveys had been con-
ducted of the coast as far west as the Lena Delta. Wrangel Island, the Bear Islands, and the Lyakhovskiy Islands had all been accurately charted for the first time. Although Sergeyev retained overall command, Boris Andreyevich Vil’kitskiy was appointed captain of Taymyr and Per Alekseyevich Novopashennyy captain of Vaygach. Vil’kitskiy was the son of Andrey I. Vil’kitskiy, who as head of the Chief Hydrographic Directorate had been intimately involved in organizing the expedition. On 9 July 1913, the expedition left Vladivostok. Fifteen days later, Sergeyev was incapacitated by a stroke; after a short delay, instructions were received from St. Petersburg placing Vil’kitskiy in charge.

The objective for this season was to extend the previous survey west from the Lena to the Taymyr Peninsula. It was soon apparent that Vil’kitskiy would be a bold leader compared to the cautious Sergeyev when Taymyr completed the first passage north of the New Siberian Islands. It discovered a new member of the De Long Islands and searched in vain for nonexistent “Sannikov Land.” Taymyr was reunited with Vaygach on 23 August, and the two icebreakers next steamed across the Laptev Sea to begin survey work on the Taymyr Peninsula. Nine days later, heavy ice off Cape Chelyuskin forced them north. A small, low-lying island was discovered the next day and named for the Tsarevich Alekseya (today Little Taymyr Island). Several such discoveries had been made during the course of the Arctic Ocean Hydrographic Expedition, but nothing like what they were about to see. For some time, Vil’kitskiy had been puzzled by the appearance of icebergs of such size that they could only have originated from large islands, but none were known nearby. Early the next morning, on 3 September, high land was seen unmistakably on the horizon. Vaygach was sent to investigate the south coast while Taymyr sailed northwest along the east coast. Vaygach was unable to get far, and the two icebreakers were soon reunited. At Cape Berg, a party was sent ashore to obtain an astronomical fix and claim “Emperor Nicholas II Land” for Russia. Coasting farther north, a polynya enabled them to keep close to shore for much of the way, but once beyond that they were forced away from land, making it more difficult to distinguish the now low-lying land from the surrounding sea, both being covered by snow. The presence of heavy multiyear ice signaled the northern termination of their discovery at 81°07’N. There, on 5 September, Vil’kitskiy decided to turn back, concerned that his ships might be trapped if the direction of the wind changed, pressing the pack against the coast. One final attempt was made to sail west through the strait now known for him, but without success. At this stage, it was clear that an extensive new land had been discovered. Whether it was an archipelago or a single landmass was unclear, as was its extent to the west. For all Vil’kitskiy knew, it might be of continental dimensions.

On 12 September, the two icebreakers began their return voyage, again passing north of the New Siberian Islands to reach Bennett Island in the De Long Islands, where Eduard von Toll’s collection of rocks and fossils was collected. Vil’kitskiy hoped to continue along the great circle route east to Wrangel Island but was forced farther south by dense ice. On 25 November they arrived in Vladivostok after a memorable season.

**The Second Transit of the Northeast Passage, 1914–1915**

For the next voyage, Vil’kitskiy was instructed to complete a transit of the Northeast Passage, as well as to conduct hydrographic studies as long as those did not jeopardize the primary objective. Shortly before setting out, however, he was ordered to visit Wrangel Island, where the crew of the Canadian schooner Karluk had been forced to winter after their ship sank (see Bartlett, Bob). Departing from Vladivostok on 7 June to reach Nome, Alaska, on 4 August, Vil’kitskiy learned of the outbreak of World War I. Returning to Novy-Maryinskiy at the mouth of the Anadyr River for further instructions, he was informed that his mission should continue. If anything, its strategic significance was now even greater.

Once he was through Bering Strait, he made several abortive attempts to reach Wrangel before the two icebreakers continued west. While Taymyr searched in vain for “Andreyev Land” north of the Bear Islands, Vaygach investigated ice conditions closer to the mainland before making for the De Long Islands, where Zhokov Island was discovered on 27 August. The two ships were reunited off Cape Chelyuskin on 2 September. Ice conditions in Vil’kitskiy Strait were much better than during the previous year, and they were able to enter the Kara Sea without difficulty. They were also able to survey the southern coast of Severnaya Zemlya, where a landing was made on 5 September. Four days later, Taymyr was caught between two large ice fields and badly damaged. There was little that Vaygach could do to help, for it was also leaking and had broken a propeller blade. With Taymyr in real danger of sinking once pressure was resumed, Vil’kitskiy thrice ordered his crew to prepare for its imminent abandonment before he succeeded in edging it to safety in Dika Bay on 24 September. There, at 76°40’N, 100°30’E, it would winter, with Vaygach some miles distant.

On the night of the intense squeeze, Taymyr’s radio operator had picked up a transmission from Otto Sverdrup in Eclipse, some 175 miles farther west. By this means, a message was eventually relayed to St. Petersburg informing the Chief Hydrographic Directorate of the plight of the icebreakers. Since it was possible that they might be forced to remain another winter for which they had insufficient provisions, Sverdrup was instructed to evacuate thirty-nine men to Eclipse. This he accomplished by sledging along the coastal ice with three men and three dog teams. On 19 May 1915, he left Taymyr accompanied by twenty-six of its crew and thirteen from Vaygach, arriving back at Eclipse on 4 June. On the next day, the veteran polar traveler Nikifor Begichev reached Eclipse with 650 reindeer. He then escorted the thirty-nine evacuated
men in a long overland journey southwest to Gol’chikha on the Yenisey Estuary.

By late July, it was clear that the ice was breaking up; both icebreakers were released on 8 August. After picking up the evacuated men from Gol’chikha, Taymyr and Vaygach resumed their transit of the Northeast Passage, which they completed by arriving at Archangel on 16 September 1915.

During the Russian civil war that followed the October Revolution of 1917, Vil’kitskiy supported the Whites, who were led in Siberia by Aleksandr V. Kolchak, Soviet government, no attempt was made to rename Vil’kitskiy contribution to knowledge of this region.

Strait, which remains a fitting testament to his considerable of the Kara Sea route. Despite his political differences with the Ussels. However, at the invitation of Arkos, a Soviet-owned trading company in Great Britain, he did return to the Soviet Arctic several times to oversee convoys of freighters making use of the Kara Sea route. Despite his political differences with the Soviet government, no attempt was made to rename Vil’kitskiy Strait, which remains a fitting testament to his considerable contribution to knowledge of this region.

See also: Bartlett, Bob (1913–1914); Bear Islands; De Long Islands; Lyakhovskiy Islands; New Siberian Islands; Northeast Passage; Severnaya Zemlya; Sverdrup, Otto; Toll, Eduard von (1900–1903); Wrangell Island

References and further reading:


Vindication Island (South Sandwich Islands)

Located at 56°42'S, 27°09'W, this small, ice-covered island—5 miles by 4 miles—lies toward the northern end of the volcanic arc forming the South Sandwich Islands and is one of the three Traversay Islands discovered by Fabian von Bellingshausen. First seen on 4 January 1820, it was initially named “Torson Island” by Bellingshausen for Lieutenant Konstantin Petrovich Torson of the Vostok. But the current name of Vindication Island lies toward the northern end of the volcanic arc forming the South Sandwich Islands and is one of the three Traversay Islands discovered by Fabian von Bellingshausen. First seen on 4 January 1820, it was initially named “Torson Island” by Bellingshausen for Lieutenant Konstantin Petrovich Torson of the Vostok. But the current name of Vindication Island was independently rediscovered in December 1830 by the American sealer James Brown (Pacific), who named it “Willey's Island.” In 1908, Vindication Island was rechanted by Carl Anton Larsen during his investigation of the archipelago's whaling potential. The first landing was made in 1956 by helicopter from HMS Protector, with later landings made from RRS Shackleton in 1961 and from Protector in 1960, 1962, and 1964. The most recent scientific visit was by HMS Endurance in 1997 during a comprehensive geological and biological survey of the South Sandwich Islands.

See also: Bellingshausen, Fabian von; De Long Islands; Discovery Investigations; Great Britain; South Sandwich Islands

References and further reading:


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See also: Bellingshausen, Fabian von; Larsen, Carl Anton; Sealing and Antarctic Exploration; South Sandwich Islands; Whaling and Antarctic Exploration

References and further reading:

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Watkins, Gino (1907–1932)
The charismatic Gino Watkins was widely recognized as the most promising British explorer of his generation. Only twenty-five when he died while hunting seals in a kayak, his achievements during three previous expeditions ensured his place in polar exploration history.

Student-Explorer, 1927
Watkins was an undergraduate at Cambridge University when he led his first Arctic expedition. Already a skilled mountaineer and skier at the age of nineteen, he had been promised a place on an expedition to East Greenland planned by James Wordie, a veteran of Sir Ernest Shackleton’s Endurance. When that expedition failed to materialize, Watkins decided that he would organize his own. Edge Island is the third largest island in the Svalbard Archipelago. Despite its size, it had remained largely unexplored beyond its coastline. For example, there was no record of its ever having been crossed despite considerable hunting and trapping activity over the years. The eight-man party included two who were almost twice as old as their leader, one being the very experienced mountaineer, Major H. T. Morshead, DSO.

Reaching Edge Island in the Norwegian sealer Heimen, Watkins had one month to discover whatever he could about an island 70 miles long and 40 miles wide. After taking stock of what he could see from the nearest high point, he began by leading a five-man survey party across the island and back. Frequently laid up in bad weather, he rapidly concluded that airplanes were essential for Arctic survey work. For his second journey, he abandoned the sledge and arranged to have provisions carried in rucksacks instead. Given the time available and the very limited periods of good visibility, plane-table surveying was just too slow. Instead, he would move rapidly across the country along a traverse, from which compass angles would be measured to prominent features and details sketched in afterward. It was to be a hallmark of Watkins’s style of leadership that he was always prepared to revise his methods in light of experience. After reaching Cape Lee, the northerly tip of the island, he headed east to Cape Heuglin in the northeast, where he had arranged to be picked up by Heimen. He was unable to land on the east coast, so the final day ashore was spent at Cape Negro before he returned to Tromsø and England. As Watkins had hoped, his sponsors at the Royal Geographical Society (RGS) were exceedingly impressed by his fine map, as they were by the presentation in which he reported the expedition’s results.

His next expedition began as a student assignment to study the dispute between Canada and Newfoundland over the boundary of Labrador. Between July 1928 and May 1929, assisted by James Maurice Scott, he mapped the previously unexplored region in the vicinity of the Hamilton River, interrupting his Cambridge studies to do so.

The Man on the Ice Cap, 1930–1931
The plan of what was to become the British Arctic Air Route Expedition (BAARE) was first outlined in a letter to the RGS soon after Watkins had returned to England. Its purpose would be to investigate the practicability of an air route from Great Britain to the west coast of the United States via Iceland, Greenland, Baffin Island, Hudson Bay, and Edmonton. This route had the advantage of being shorter than the current route across the Atlantic Ocean. It was also safer, in that it involved few long sea crossings. Along its course, the least-known areas were the east coast and Inland Ice of Greenland; it was these regions that Watkins proposed to investigate. Information on flying conditions obtained over a relatively long period was required. For this purpose, stations would be maintained on the coast as well as inland high on the ice cap. Ground and air surveys would be conducted of the coastal and inland mountain ranges, along with the profile and altitude of the Inland Ice. It was an impressive scheme, and with RGS support Watkins was able to obtain men and equipment from the Admiralty, the air ministry, and the war office.

As in other matters, Watkins was original in his choice of men. Previous Arctic experience was not essential and, indeed, might constitute a barrier to being chosen. Watkins preferred to take those whom he had personally trained; only thus, he believed, could he know what they were capable of and how they might react in an emergency. The thirteen men selected had an average age of twenty-five, and no less than ten were Cambridge graduates. In addition to his Labrador colleague Scott, who was to act as dog driver and surveyor, the party consisted of Alfred Stephenson (chief surveyor); Augustine Courtauld, Lieutenant Martin Lindsay, and John Rymill (surveyors); Lawrence R. Wager (geologist); Frederick Spencer Chapman (ornithologist and ski expert); Quintin Riley (meteorologist); Flight Lieutenant N. H. D’Aeth (pilot and meteorologist); Captain Percy Lemon (wireless operator); Wilfrid E. Hampton (engineer), Surgeon Lieutenant Edward W. Bingham (medical officer); and Flight Lieutenant H. Iliffe Cozens (photographer).

The expedition left London on 6 July 1930 aboard the historic sealer Quest, the same ship that Shackleton had sailed in during his last expedition. Fifty dogs, collected by Scott in West Greenland, were picked up in the Færøe Islands before
Ammassalik was reached on 24 July. For the base, a site was chosen 40 miles farther west on the mainland at the head of a fiord. There was open water from which the two de Havilland Gipsy Moth biplanes could operate, and a large glacier offered access to the ice cap. Two weeks of hard labor followed before all stores were unloaded, the hut built, and the planes assembled and housed in two hangars. Scott's first task as the only experienced dog handler was to train others in a skill that Watkins believed anyone could learn given sufficient application. Experience was to prove him right, at least with this team.

On 8 September, Ice Cap Station was established at 2,500 meters, 140 miles inland at 67°05'N, 41°48'W. It comprised a 3-meter, double-walled tent covered by a snow house; to keep the cold air out, it was entered not through the side but from below. Around it were placed shelters containing the meteorological instruments, including maximum and minimum thermometers, a cup anemometer to measure wind speed, and a comb nephoscope to observe the speed of passing clouds. Lindsay and Riley formed the first shift.

Meanwhile, with the aid of Quest and one of the planes, Alfred Stephenson's surveying party had succeeded in mapping 200 miles of coastline coast north to Kangerdlugssuak Fjord. *Quest* was the first vessel to penetrate through the coastal ice into the interior of this fiord, where open water was found. From there, several flights were made and a range of high mountains discovered far inland, which Watkins thought might rise to 4,500 meters. They were later to be named in his honor. The Watkins Mountains are the highest mountains in Greenland but do not in fact exceed 3,970 meters at Gunnbjørns Fjeld.

On 2 October, Lindsay and Riley were relieved by Bingham and D'Aeth. Temperatures were dropping sharply on the ice cap, and piles of snow began to obscure the line of flags indicating the route from the coast. On 26 October, the next relief party set out, led by Chapman, taking with it sufficient provisions to last the station's next occupants through the end of March. The already heavy loads were loaded down even further by radio equipment weighing 270 kilograms. Progress was very slow in atrocious conditions. It took six days for men and dogs to haul the sledges up onto the ice cap. Once there, they were exposed to the full blast of almost constant blizzards, which threatened to slice their tents into shards as they huddled within them for protection. Still only 15 miles from their base on 10 November, they were found by Watkins, who was returning from a journey to the south. Appreciating Chapman's difficult situation, he was given permission to abandon Ice Cap Station if necessary but, at all costs, to relieve its two occupants. Soon afterward, Chapman decided to dump the radio and send three men back. He, Courtauld, and Wager would continue on to relieve Bingham and D'Aeth. Before the station was reached on 3 December, all three men had frostbite, and they had had to kill the weakest of their dogs. They were three weeks late and had been unable to bring sufficient food to maintain two men through the winter. Courtauld volunteered to stay on alone, remarking wryly, “As I had frostbite in my toes, I had no wish to make the journey back” (1957, 61).

Back at the base hut, Watkins tried out Inuit hunting methods with limited success. Although Cambridge graduates clearly took well to dog-driving, hunting was a more demanding art, and most of the seals eaten had to be bought from the Inuit, who had the advantage of hunting from kayaks. Watkins planned to learn how to use these the following summer. Flying operations continued throughout the winter, chiefly to obtain supplies from Ammassalik, though an attempt was made also to drop additional provisions to Courtauld at Ice Cap Station. Despite reasonable visibility, the pilot was unable to see the station, a matter arousing little concern at the time, since the station was marked only by a flag, which could easily be masked by the deep shadows created by snowdrifts.

As winter drew on, Watkins laid plans to relieve Courtauld. On the third attempt, Scott, Riley, and Lindsay reached the vicinity of Ice Cap Station in mid-March. On 17 April they returned—but without Courtauld. For several days, they had searched in intense cold and appalling weather but found no trace of the station, despite being certain that they were very close to it. Wherever it was, it appeared to have been buried in the deep, drifting snow. Two days later, Watkins, Chapman, and Rymill set out on another attempt. Before leaving, a message was sent to the London organizing committee informing it of the situation. Soon, sensational stories began to appear in British newspapers. Courtauld was from a wealthy well-known family, and just before setting out he had become engaged. The search was on for “the man on the ice cap,” and in this Watkins was soon to be joined by the Swedish aviator Albin Ahrenberg, who announced, amid much publicity, that he would conduct a systematic search in his large Junkers monoplane.

By 5 May, Watkins was within a mile of the station. Using the huskies to sniff for signs of it, they were advancing slowly across the snow when, amid the white, something colored was seen—the tattered fragments of a Union Jack. Also protruding above the ice were the scientific instruments and a few centimeters of ventilator pipe. All else was buried beneath snow. Could Courtauld be still alive? Watkins placed his mouth to the pipe and shouted a few words. To his intense relief, he heard a voice in response. Not only was Courtauld alive; he was clearly well and sane. He was rapidly dug out by the rescue party to emerge with soot-blackened face and heavy beard, but otherwise just the same as when he had been left in early December.

At first all had gone well for Courtauld on the ice cap. He had found the solitude supportable and had maintained the regular schedule of meteorological observations every three hours without difficulty. The lowest temperature recorded was −53°C (−64°F). Following heavy snowfall in early January, he had to dig his way out through the tunnel. One day, he made the mistake of leaving his spade outside. Although he was able to force another exit through the roof, the spade was not
recovered, and when his roof exit soon drifted over, he found himself imprisoned. He remained trapped for five weeks, the snow walls slowly encroaching toward him. Running low on fuel, he lay in the dark and used up his last drop of paraffin on the day he was found. He never gave up hope that he would be rescued, having perfect confidence in Watkins.

News of Courtauld's rescue reached London before Watkins was back at the base hut. Ahrenberg had spotted his party making their way back and radioed the news home. Every newspaper carried the story: the "man on the ice cap" had been found.

Several major journeys were made before the expedition finally departed from Greenland. Wager and Stephenson climbed 3,316 meters up Mount Forel, the highest altitude achieved in the Arctic to that date, though they were not to reach the summit. Two crossings were made of the Inland Ice to collect additional information on its altitude and profile. Scott, Lindsay, and Stephenson headed southwest across the ice sheet to Iqigtut while Rymill and Hampton crossed due west to Holsteinborg. Both parties found traveling conditions difficult, the summer warmth making the surface soft and slushy underfoot and creating numerous rivers and lakes. Conditions were marginally better at night, the preferred time for travel. Finally, Watkins, Lemon, and Courtauld traveled south in two motorboats, mapping the coast from Ammassalik to Umivik, then continuing through Prince Christian Sound to Julianehaab. To reserve as much space as possible for petrol, kayaks rather than food were taken, and with their aid sufficient seals and birds were shot to feed the party.

BAARE was immediately recognized as the most important British polar expedition since 1918, the most successful Arctic expedition in more than fifty years. In addition to meteorological information from the two stations, extensive survey work had been conducted and a previously unknown mountain range discovered. In Watkins, Great Britain appeared to have discovered a new polar leader on par with the greatest names of the past. Still only twenty-four when he returned, Watkins was a veteran of three expeditions. During BAARE in particular, he had demonstrated considerable ability in combining techniques learned from earlier explorers and the Inuit with innovative use of modern technology such as planes and motorboats. He also trained a new generation of explorers in the techniques of polar travel.

The Lost Leader, 1932–1933

For his next expedition, Watkins's original plan was to circumnavigate the world around the Arctic Circle. Although probably useful from an ethnographic perspective, this idea appeared to his influential supporters at the RGS as a some-
what frivolous venture compared to the rapidly increasing significance of his three previous undertakings. For someone who they hoped might develop into the great polar leader of his time, it seemed obvious that he should go next to the Antarctic, where, as Shackleton's heir-apparent—their view, not his—he should seek to achieve what Shackleton had attempted in 1914: to cross Antarctica between the Weddell and Ross Seas and thus prove whether it was one continent or two. Instead of crossing via the Pole, Watkins would head straight for the Bay of Whales, a journey of 1,500 miles. In addition to the crossing party, the expedition would include a survey team, whose objective would be to map the unexplored southern and western coasts of the Weddell Sea. This was indeed a grand plan, but it required a great deal of money. Unfortunately, little funding could be raised due to worldwide economic depression. Watkins scaled back his plans and then adopted Wordie's suggestion that an expedition be mounted to Graham Land instead. This would be cheaper, but sufficient funding could again not be raised. Watkins now faced something of a quandary. He had a team of trained men whom he had promised to lead on another expedition within the year. Since Antarctica was impossible, he would return to Greenland, where Pan-American Airways was prepared to pay him to extend the work begun during BAARE.

On arrival at Ammassalik on 1 August 1932, the Danish supply vessel Gertrud Rask was immediately surrounded by kayaks, from which familiar faces of friendly Inuit beamed up at Watkins and his three companions Rymill, Chapman, and Riley. They stayed for a week before Gertrud Rask could take them to Lake Fjord, the site chosen for their new base. During Stephenson's survey of the coast north to Kangerdlugssuak in 1930, a large lake had been found near the head of a fiord; it appeared to offer great potential for air operations. Rymill would conduct a detailed survey and Chapman complete his ornithological research, while Riley maintained a register of meteorological observations. Watkins's primary responsibility would be to feed the others through his hunting. In the spring, he would make the first solo crossing of the Inland Ice, with the purpose of ensuring that the meteorological results were communicated to Pan-American Airways in time for a new expedition to be sent out later in the year, should the company so wish.

A rapidly flowing glacier debouched into the northern arm of Lake Fjord. From it large icebergs calved, sending frequent great waves across the fiord. This was a dangerous place to hunt, but it was where seals were to be found, and so Watkins had no choice. He also had little option but to hunt alone, his three companions being occupied by other duties. Watkins was confident in his abilities but nevertheless had a narrow escape on 14 August when a large piece broke off the glacier when he was on an ice floe just a few hundred yards away. Fortunately, he had thought to attach a line to his kayak, which was turned over and all its hunting equipment lost. The floe was washed against the cliff and smashed to pieces, leaving Watkins hanging on a ledge. Recovering his kayak, with some difficulty he managed to get back through the ice to safety. Some days later, he was not so lucky. Rymill and Chapman were in the motorboat surveying when they saw an empty kayak and, not far from it, a paddle floating about a half-mile from the dangerous ice front. Less than 200 meters from the glacier, they found a pair of trousers and a kayak belt, both soaking wet. Of Watkins himself, there was no sign.

Once it became clear that Watkins was dead, his three companions decided to stay on to complete their work under Rymill's leadership. Rymill would fulfill Watkins's hopes in Antarctica. Accompanied by many former members of BAARE, he organized the British Graham Land Expedition. Along with BAARE, it was the most important British polar expedition of the interwar years.

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Weddell, James 
(1787–1834)
Antarctica's Weddell Sea preserves the name of arguably the greatest of the sealer explorers, James Weddell. In 1823, he penetrated the normally ice-strewn Weddell Sea to reach a farthest south of 74°15'S, bettering James Cook's record by more than 3 degrees; it was not surpassed until 1841 by James Clark Ross. The Weddell seal is also named for this most prominent of Antarctic explorers.

Possibly born in Massachusetts, Weddell from an early age was brought up in Scotland to a Presbyterian father and a Quaker mother. This was an unusual parental combination at the time and undoubtedly influenced the development of his tolerant but deeply held religious views. First going to sea at the early age of nine, he alternated between the British Royal Navy and the merchant navy, establishing a reputation in both as a competent and respected seaman until his promising career in the Royal Navy was cut short by the end of the Napoleonic Wars.

A Sealing Voyage to the South Shetland Islands, 1820–1821
Weddell first sailed south in 1820 as master of the 160-ton brig Jane, an American prize taken in the War of 1812 and
now owned by Strachan and Gavin, shipbuilders of Leith. On this voyage, Weddell searched in vain for the Aurora Islands in hopes of finding new sealing grounds before spending the winter in the Falkland Islands, where he characteristically occupied himself by compiling sailing directions to the islands. While there he must have heard of William Smith’s discovery of the South Shetlands, where he acquired a full cargo of seal skins by 5 January 1821, when he sailed back to London, arriving that April.

**A Sealing Voyage to the South Shetlands and South Orkneys, 1821–1822**

The profits of this voyage enabled Weddell and John Strachan to buy the 65-ton cutter *Beaufoy*, which was to sail in consort with *Jane* on future voyages. Setting out in July, the two vessels reached the South Shetlands in late October. Since seals even then were already scarce, *Beaufoy* was sent to search for new sealing grounds. On 11 December, land was sighted 240 miles east of Elephant Island. This was the South Orkney Islands, and *Beaufoy*’s sighting came only six days after the discovery of this archipelago by George Powell and Nathaniel Palmer. Weddell did not investigate further until February 1822, when he himself visited the South Orkneys in *Jane*, having been unable to obtain sufficient seal skins in the South Shetlands and hoping for more seals here, as well as an opportunity to chart a newly discovered land. In the event, few seals were found, and Weddell had time to compile only a rough chart before rejoining *Beaufoy* at South Georgia and sailing for England in late March. This voyage was less profitable than the first but still sufficiently so to encourage the organization of a third voyage.

**Farthest South in the Weddell Sea, 1822–1824**

Weddell’s reputation rests chiefly upon his third voyage, during which he was to achieve his farthest south. In September 1822, the two vessels set out from London, *Beaufoy* now commanded by Matthew Brisbane rather than Michael MacLeod, its master on the previous voyage. South of the Cape Verde Islands, *Jane* was discovered to be leaking, repair being effected during an enforced anchorage on the Patagonian coast. By now it was too late in the season to visit the South Shetlands, where the beaches would long ago have been cleared of the few surviving fur seals. Weddell therefore decided to make straight for the South Orkneys, which he reached on 12 January 1823. There, he found seals when he landed on Saddle Island three days later. They were not the desired fur seals but rather a different...
species with leopard-like spots; he called them sea leopards. In fact, they were not leopard seals but *Leptonychotes weddelli*, a new species soon to be known as the Weddell seal. Very few fur seals were found, but Weddell was now able to compile a reasonably accurate chart of the islands.

Following reports of high land seen in the distance, Weddell headed south from the South Orkneys on 22 January, only to find that the reported land was nothing but icebergs. Indeed, land and iceberg are often confused in such high latitudes, where the land itself is largely ice-covered. Faced with the decision of continuing south or returning north to search for land between the South Orkney and South Sandwich Islands, Weddell decided on the latter, turning about at 64°58’S on 27 January, but again no land nor seals could be found. It was evident that if there was undiscovered land, then it must lie farther to the south. Weddell therefore turned in that direction once more on 4 February. Sailing south close to 30°W, Weddell sighted land at 66°S, only to dematerialize again into an iceberg. This one was studded with rocks and stones and particularly deceptive. With the wind against them and the sea strewn thickly with icebergs, it seemed unlikely that they would penetrate far, especially so late in the season, but on 16 February the wind changed, blowing instead from the west. With the wind with them and through a sea increasingly clear of ice, *Jane* and *Beaufoy* reached 71°34’S on the following day, thereby surpassing James Cook’s record farthest south, which had stood since January 1774. In these conditions—true extraordinariness for the Weddell Sea, which has since acquired a notorious reputation for ship-crushing ice—Weddell continued until he reached 74°15’S at 34°16’W on 20 February. There, with an extended view, he was surrounded by open sea with but three icebergs in sight. However, the wind had changed to the south, there was no imminent prospect of land, and the season was very late. Aware that any further progress south would be slow and that there was a very real danger of being trapped by ice forming to the north, Weddell reluctantly turned about and headed—like Sir Ernest Shackleton but in different circumstances—for South Georgia.

The comparison with Shackleton is not inapt. Weddell was not far from where *Endurance* was lost and, like Shackleton, knew of no place of safety closer than South Georgia. He was determined to get north at speed and make the most of the following wind to escape what he suspected would soon turn into an ice trap. His voyage was uneventful, but it could easily have been otherwise. In particular, on the night of 7 March, as the two vessels lost sight of each other, *Jane* sailed at 10 knots through a sea infested with small icebergs. These are not easily seen, especially at night, even with the aid of an experienced seaman at the masthead to shout out warnings. *Jane* was fortunate to escape unscathed, but then Weddell was desperate to exploit every favorable wind, even a southwest gale in such a sea. On 12 March, *Jane* and *Beaufoy* were reunited and shortly afterward reached Undine Harbour near the western tip of South Georgia’s southern coast. There they repaired vessels, recuperated, and feasted off whatever culinary delights could be culled from the island’s bleak shores. Weddell, a man of many parts, revealed himself now as a naturalist, and his account of South Georgia’s wildlife is still highly regarded.

South Georgia was left behind on 17 April and course was set for the Falkland Islands, which were reached after a rough passage of three weeks. Indeed, as if to make up for Weddell’s extreme good fortune in the Weddell Sea, little was to go right for him afterward. With *Jane* and *Beaufoy* still largely empty of sealskins or any other cargo, further sealing was attempted with little success off the Falklands, South Shetlands, and Tierra del Fuego. The voyage to the South Shetlands was particularly unproductive, with thick pack ice preventing even a close approach during two months of fruitless effort in October and November, normally when the islands would be accessible. Weddell was forced to withdraw his battered vessels to Tierra de Fuego, where a stay of several months yielded more in ethnographic observations than seals, with Weddell again proving himself an acute observer with wide interests. *Jane* and *Beaufoy* separated there to attempt further sealing along the Patagonian coast and in the Falklands as they made their way back to London, which *Beaufoy* reached on 20 June 1824 and *Jane* on 9 July.

Weddell’s classic account *A voyage towards the South Pole performed in the years 1822–24 containing an examination of the Antarctic Sea* was published in 1825. Naturally, he was particularly keen to publicize his record farthest south, which at the time and afterward was received with some skepticism, particularly when other navigators were unable to penetrate beyond even the margins of the Weddell Sea. Indeed, Weddell had been exceptionally fortunate, and the ice conditions of 1823 were not experienced again for almost another 150 years. After the Admiralty rebuffed his proposal to lead an Antarctic exploring expedition, Weddell found employment in later life as a ship’s master, sailing all over the world but making no more voyages of exploration. On 9 September 1834, he died at the age of forty-seven.

See also:: Cook, James (1772–1775); Farthest South; Palmer, Nathaniel (1821–1822); Powell, George (1821–1822); Ross, James Clark (1839–1843); Sealing and Antarctic Exploration; Shackleton, Ernest (1914–1916); Smith, William; South Georgia; South Orkney Islands; South Shetland Islands; Weddell Sea

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**Weddell Sea (Antarctica)**

This generally ice-covered sea occupies a large embayment in the Antarctic continent east of the Antarctic Peninsula and west of Cape Norway, Queen Maud Land. Although its outer
margins were first penetrated by Edward Bransfield, who reached 64°50'S east of the peninsula on 23 February 1820, its discovery is generally credited to the British sealer James Weddell. In February 1823—in an exceptionally ice-free year—he sailed south to 71°34'S, the farthest south achieved anywhere to that date. Weddell named his discovery “King George IV Sea” for the monarch of Great Britain, the current name—now in universal use—being proposed in 1900 by Karl Fricker.

In the Weddell Sea much of the dense water mass known as the Antarctic Bottom Water is formed. This cold, saline water spreads north beneath warmer, less dense water masses above, penetrating as far as 17°N in the Atlantic Ocean. The water is saline because salt is precipitated out when water freezes to form sea ice, and the Weddell Sea is notorious for sea ice, which circulates in a clockwise gyre, driven south and east by the prevailing high-latitude easterly winds and then west, north of the Antarctic Peninsula, where caught by the prevailing westerlies. From there, the ice streams out across the mouth of the sea, making the only feasible passage in most years close to the eastern coast off Coats Land.

Just one month after Weddell achieved his farthest south, the American sealer Benjamin Morrell also reported achieving a high latitude—70°14'S, 40°3'W—before being driven north by lack of water and fuel. He also noted seeing land. If he is to be believed at all—and not everyone is prepared to do so—this would have been the east coast of the Antarctic Peninsula. Regardless of what one thinks of Morrell, 1823 was clearly an extraordinarily ice-free year, and its conditions were probably not matched until 1967.

Both Jules Dumont d’Urville and James Clark Ross attempted to enter the Weddell Sea. Dumont d’Urville meet so little success that he doubted Weddell’s veracity. It was not until Carl Anton Larsen in December 1892 that anyone managed to penetrate far, reaching 64°40'S, 56°30'W and then 68°50'S, 59°59'W in December 1893. On his next expedition, Larsen was less fortunate, being forced to abandon his ship *Antarctic* in Erebus and Terror Gulf, 25 miles from Paulet Island on 12 February 1903. In the same year, William Speirs Bruce reached 74°01'S off the relatively benign coast of Coats Land. Even there, however, he was exceedingly fortunate to escape a similar fate when *Scotia* was caught in a northeasterly blizzard and lifted bodily out of the water by the ice rather than being crushed within it. Wilhelm Filchner was also lucky. His ship *Deutschland* was trapped for nine months in 1912, having become beset far south in the Weddell Sea not far north of the
Filchner-Ronne Ice Shelf. Deutschland was eventually released from the ice after drifting a considerable distance north and east. Sir Ernest Shackleton's Endurance was not as lucky, being caught in the ice on 19 January 1915 at 76°34'S, 31°30'W—close to where Deutschland had been first beset—drifting south to 77°00'S, 35°W and then northeast before finally being abandoned at 69°11'S, 51°05'W. RRS Discovery II barely escaped a similar fate in 1932. Although his ship Theron was never in any danger of becoming beset, it took Vivian Fuchs thirty-two days in 1955 to reach his destination on the Filchner Ice Shelf. He made the mistake of assuming that the air reconnaissance would enable him to find a navigable route through the center of the Weddell Sea. The lateness of his arrival at Vahsel Bay was ultimately responsible for the uncomfortable winter spent by his advance party at Shackleton Base, when much irreparable equipment and provisions were lost when the sea ice was blown out in a blizzard. With more time, this would have been safely stored at the base. The next year, Fuchs followed the safer but less indirect route east along the coast of Coats Land. The formidable difficulties posed to even modern ships by this sea should never be underestimated.

See also: Antarctic Peninsula; Bransfield, Edward; Bruce, William Speirs (1902–1904); Coats Land; Discovery Investigations; Dumont d'Urville, Jules; Filchner, Wilhelm; Filchner-Ronne Ice Shelf; Fuchs, Vivian; Larsen, Carl Anton (1902–1903); Morrell, Benjamin; Queen Maud Land; Ross, James Clark (1839–1843); Sealing and Antarctic Exploration; Shackleton, Ernest (1914–1916); Weddell, James (1822–1824)

Wegener, Alfred
(1880–1930)

The German scientist Alfred Wegener is best known as the originator of the theory of continental drift. In the modified form of plate tectonics, his ideas underpin contemporary understanding of the Earth. Also a noted polar explorer, his views were originally inspired by watching sea ice during his first visit to the Arctic. He was to die in 1930 on the Greenland ice sheet.

Alfred Lothar Wegener's first visit to the Arctic was as meteorologist, glaciologist, and surveyor on Ludwig Mylius-Erichsen's expedition to northeast Greenland in 1906–1908. During this expedition he met Johan Peter Koch, with whom he was subsequently to cross the Greenland ice sheet in 1912–1913. Shortly before departing on this second expedition, Wegener, previously known only for meteorological and glaciological studies, presented a paper outlining a revolutionary concept, according to which the continents—far from being static—were subject to horizontal movement. Later known as the theory of continental drift, his suggestion was to provoke intense controversy for the next fifty years. Wegener was inspired to develop his theory by observing the behavior of sea ice, watching with fascination as Danmark forced its way through to the Greenland coast in 1906. He perceived each floe as a miniature continent; the rifts and pressure ridges formed as winds and tides smashed the floes together seemed precisely analogous to the Earth's faults and mountain ranges. But he would suffer for his temerity in putting forward so sweeping a thesis in a field outside his own expertise. Not until 1924 was he finally appointed professor, and then not in Germany but in Austria at the University of Graz.

A Preparatory Expedition to Greenland, 1929

Prior to the outbreak of World War I, Wegener and Koch had planned further expeditions to Greenland, but none came to fruition before Koch died in 1928. In the same year, Wegener received a letter from one of his former students, Dr. Johannes Georgi, with the suggestion that a meteorological station be established high on the Greenland ice sheet. Since he himself had made similar proposals long before, he wrote an encouraging reply. Shortly afterward, he was invited by Professor Wilhelm Meinardus of Goettingen University to lead an expedition to Greenland. Scientists at Goettingen had developed a new method of seismic sounding, which Meinardus thought could be employed to measure the thickness of ice. Funding for the expedition would be provided by the Emergency Society for German Science, an organization established in 1920 to provide support to scientists in the difficult times following World War I. The opportunity to return at last to Greenland was too good to be missed, and Wegener combined the two suggestions with his own ideas for further geophysical and meteorological research. By establishing three stations in the center and at the western and eastern margins of the ice sheet in the hitherto unexplored latitude of 71°N, he planned to conduct studies right across the Inland Ice, something never before attempted. Mid-Ice, the station in the center of the ice sheet, would have to be established from the west, and to ensure that he had a practical means of doing this, Wegener concluded that a preliminary expedition was essential. In addition to its most important task of finding a route through the coastal mountains, up which heavy loads could be hauled, this would provide opportunity for members to be trained in dog-handling and other skills, as well as to make an initial trial of the seismic sounding equipment.

In late March 1929, Wegener sailed for Greenland accompanied by Georgi, the glaciologist Dr. Ernst Sorge, and the meteorologist Dr. Fritz Loewe. They traveled north by motorboat from Holsteinborg; the Greenlander Tobias Gabrielsen was added to the party at Jakobshavn. Like Wegener, Gabrielsen was a veteran of Mylius-Erichsen's expedition and had extensive experience in polar travel. Several exploratory journeys were made up glaciers in the vicinity of Umanak, but only one met Wegener's purpose. This was Kamarujuk Glacier. Flowing down 1,000 meters over two and a half miles, it was steeper and more heavily crevassed than he would have wished, but had the advantage of leading up to Scheideck
Nunatak, where an area of exposed rock would offer a suitable platform for West Station. The next task was to investigate the nature of the route from here, across the ice sheet, to where Mid-Ice would be sited. Apart from occasional blizzards and the inevitable cold, Wegener and Georgi found no major difficulties during an exploratory dogsledge journey of 124 miles. Meanwhile, Sorge and Loewe tested the seismic sounding technique with promising results.

**Tragedy on the Inland Ice, 1930–1931**

All was ready for the main expedition, for which Wegener now assembled a strong scientific team. He himself was to winter at West Station, where he would be assisted in his glaciological studies by Loewe. Others based here would include the geodesists Dr. Karl Weiken and Hugo Jülg, the meteorologist Dr. Rupert Holzapfel, and the physicist Dr. Kurt Wölcken. Georgi and Sorge would man Mid-Ice; East Station, above Scoresby Sound, would be staffed by the meteorologists Dr. Walther Kopp and Arnold Ernsting, along with the zoologist Dr. Hermann B. Peters. The chief difficulty to overcome was establishing and supplying Mid-Ice. Ideally, Wegener would have liked to use airplanes, but they had been ruled out by his sponsors due to their expense. Instead, he would rely for transportation on Icelandic ponies up Kamarujuk Glacier, using dogs to travel across the ice sheet to Mid-Ice. To assist the dogs, he brought two experimental motorized sledges driven by propellers, powered by 110-horsepower airplane engines.

Setting out from Copenhagen on 1 April 1930 in the Royal Greenland Trading Company vessel Disko, the expedition transshipped twenty-five ponies and 98 tons of equipment and supplies at Holsteinborg to Gustav Holm, which was to take them north to Umanak. This early in the year, the ice was all but impenetrable, and it was not until 16 June that Wegener was able to land at Kamarujuk. He was now thirty-eight days behind schedule, and further delays were to follow when the route up the glacier proved even more difficult than anticipated and completely impossible for the motorized sledges, which had to be added to the heavy load of supplies to be hauled up by manpower and the overworked ponies.

On 15 July, Georgi set out with twelve dogsledges to establish Mid-Ice Station as near as possible to the center point of the Greenland ice sheet. The ten Greenlanders had an instinctive dread of traveling on the Inland Ice, but Georgi nevertheless was able to reach his target of, across 2,957 meters inland. There, at 71°03’N, 40°03’W, he was left behind to construct shelters for himself and his instruments at an elevation of 2,957 meters. Loewe arrived with the next dogsledging party on 18 August. The third party arrived on 13 September, Sorge now joining Georgi at the station. Georgi had become increasingly concerned about the quantity of paraffin at Mid-Ice; according to his calculations, the supply was insufficient to last two occupants through the winter. He therefore sent a message to Wegener with the returning dogsledging party: unless more supplies were sent, he and Sorge would have to abandon the station and walk back to West Station.

As each day passed, Georgi and Sorge waited expectantly for the motorized sledges to arrive with the requested supplies. Unfortunately, those machines had proved a great disappointment. Getting them up the glacier to West Station had proved exceptionally time-consuming, and they were not ready to make their first journey until 31 August. From Wegener’s perspective, this was a complete waste of fuel. Not surprisingly, with what was essentially an experimental form of transportation, there were many teething problems: the axle suspension was unable to cope with the uneven terrain, and the engines were insufficiently powerful when faced by headwinds and soft snow. Much fuel was expended in accumulating petrol depots at regular intervals sufficient for the sledges to be driven to Mid-Ice and back. But when they were finally on their way there with heavy loads, they were laid up in a blizzard and eventually forced to return without completing the task. Even before this failure, Wegener was already sufficiently concerned about the supply situation at Mid-Ice that he decided to undertake another journey with dogs.
was strictly against the rules he had drawn up at the onset of the expedition specifically to prevent repetition of circumstances similar to those that had led to the deaths of Mylius-Erichsen and his two companions in 1907. They had still been out on the Inland Ice in November. Wegener’s rules stipulated that no travel was to be attempted between mid-September and mid-April.

On 21 September, Wegener, Loewe, and thirteen Greenlanders left West Station with fifteen sledges. Early on in his journey, he received Georgi’s message. This increased his anxiety still further, since without dogs there was no chance of Georgi and Sorge reaching West Station. Indeed, even with dogs it was hard enough, the reluctant Greenlanders soon turning back, leaving only the twenty-two-year-old Rasmus Villumsen to continue on with Wegener and Loewe through heavy snow, darkness, and intense cold. Instead of the anticipated twenty days’ journey, forty days elapsed before they finally reached Mid-Ice on 30 October after a nightmarish crossing. Having taken so long, they had been forced to consume the supplies they were bringing for Georgi and Sorge. Loewe’s toes were badly frostbitten. The two occupants of Mid-Ice, however, were more sanguine than they had been when Georgi had written his ultimatum. He had recalculated their provisions and now considered them sufficient for the winter. There was even enough to add a third member to the party, Loewe being incapable of completing the return journey. Wegener and Villumsen, however, could not remain, and with seventeen dogs they set out back to West Station the following day. They were to perish along the way.

As fall became winter, those at West Station became increasingly concerned at the failure of their leader to return, with little hope remaining once December had arrived. There was nothing they could do except wait for spring. On 8 May 1931, about halfway between the two stations, two upright skis were found marking Wegener’s grave. He lay deep in the snow, wrapped in two sleeping bags, which Villumsen had painstakingly sewn together. There was no sign of Villumsen or of Wegener’s diary, which Villumsen must have taken with him on his final attempt to reach safety at the station. It is thought that Wegener died on 15 or 16 November, probably of a heart attack, and Villumsen not long afterward, possibly in a crevasse, though there are many ways to die on the Inland Ice, with little food, darkness, and winter coming on.

Scientifically, Wegener’s expedition was an outstanding success. Meteorological results from the three stations showed that cyclones regularly passed across the ice sheet, thus disproving a previous theory that Greenland was dominated by a glacial anticyclone. The seismological soundings provided the first proof of the ice sheet’s great depth, particularly toward the center, where a maximum figure of 1,800 meters was obtained. In fact, in places the ice is 3,400 meters thick, something to be established by later studies. Inevitably, however, attention focused on Wegener’s death. Although it was initially declared that no one was to blame, questions were raised about Georgi’s role. When Wegener and Villumsen set out on their fatal return journey, it was on the basis of Georgi’s calculations that there were supplies at Mid-Ice sufficient for just three men. In a later recalculation, he found that he was mistaken and that there had in fact been enough for five. It was also mistakenly thought that his ultimatum had been the precipitating factor causing Wegener to make his journey so late in the year. In fact, however, he had already set out when the message was received (Lüdecke 2000).

References and further reading:

Wellington Channel (Canada)
This channel between Cornwallis and Devon Islands leads from Barrow Strait north toward Penny Strait. Beechey Island lies near the southern entrance. Penny Strait is generally blocked by ice, making access into the Arctic Ocean impossible for all but icebreakers.

Wellington Channel was discovered on 22 August 1819 by Edward Parry, who named it for Arthur Wellesley, Duke of Wellington (1769–1852), general and politician. Parry described it “as open and navigable . . . as any part of the Atlantic” (1821, 53), encouraging the British Admiralty to instruct Sir John Franklin to investigate it should he be unable to find passage to the southwest. Franklin managed to reach 77°N in 1845 before presumably being turned back by heavy ice. He made his way south through Crozier Strait, thus completing the first circumnavigation of Cornwallis Island.

Assuming that Franklin was principally concerned with getting through the channel as quickly as possible and had little time for detailed investigation, the first systematic exploration was made in 1851 by sledding parties of William Penny’s Franklin search expedition. Penny, however, was preceded by Edwin De Haven, whose two vessels were caught up in the ice in September 1850 and drifted as far north as 75°24’N on 21 September. During this drift, a number of features on either side of the channel were named. The Admiralty chose to preserve Penny’s names on its charts, but it did adopt De Haven’s Grinnell Peninsula, despite his probably never seeing this westernmost extension of Devon Island.
The channel was the main focus of attention during Sir Edward Belcher's Franklin search expedition of 1852–1854. It was thought that finds made by Horatio Austin and Penny in the vicinity of Beechy Island indicated that Franklin, having failed in an attempt to head southwest from Cape Walker, had followed his contingency instructions to examine whether a route might be found through Wellington Channel, as indeed he had. In August 1852, Belcher succeeded in reaching Northumberland Sound at the northern end of the channel, where he wintered in 1852–1853. The following winter was spent off Baring Bay. There, HMS Assistance and HMS Pioneer were abandoned on 25 August 1854; their crews made their way south to Beechy Island by boat and sled. Meanwhile, other explorations of Wellington Channel were conducted from Beechy Island, where the depot vessel HMS North Star had remained under William Pullen’s captaincy. Boat parties led by Robert McCormick and Pullen explored Maxwell Bay in the hope of finding a waterway leading through to Jones Sound. Pullen also sledged up the channel to bring mail to Belcher. The French naval officer Joseph-René Bellot died while undertaking a similar journey on 17 August 1853.

After this brief period of intense interest, Wellington Channel ceased to feature much in polar exploration. Its coastline and that of regions farther north had been intensely scrutinized without success for signs of Franklin, and it was clear that it would not be possible to reach the open polar sea. The last significant journey in support of an exploratory expedition was made in 1902, when three members of Otto Sverdrup’s expedition sledged south along it from their winter quarters on southern Ellesmere Island to examine the condition of a sloop and depots left on Beechy Island.

See also: Austin, Horatio; Barrow Strait; Beechy Island; Belcher, Edward; Cornwallis Island; Devon Island; Franklin, John (1845–1848); Franklin Search Expeditions; Open Polar Sea; Parry, Edward (1819–1820); Penny, William (1850–1851); Sverdrup, Otto (1898–1902)

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Wellman, Walter (1859–1934)
The American journalist and explorer Walter Wellman made five attempts to reach the North Pole in the 1890s and 1900s. Although all were unsuccessful and he never reached much farther than 82°N, he did accomplish some pioneering exploration on his second expedition in Franz Josef Land, and on his last three he was the first to experiment with airships.

A Journalist Attempts to Reach the North Pole, 1894
A correspondent for the Chicago Herald newspaper, Walter Wellman first came to prominence in 1891 during an expedition in which he claimed to have identified the exact location of Christopher Columbus’s landfall in San Salvador. As Beau Riffenburgh (1993) has demonstrated, popular journalism and exploration formed a particularly close alliance at this time, with newspaper magnates prepared to spend large sums of money sponsoring expeditions, in return for which they gained excellent copy as the explorers reported their frequently sensational exploits. With public interest in the polar regions being so intense, many Arctic and Antarctic expeditions were to receive substantial funding from newspapers during the last decades of the nineteenth century and into the twentieth century.

Wellman made his first attempt on the North Pole from Walden Island, one of the Seven Islands, north of North East Land, Svalbard. Sledging north with thirteen men and forty dogs on 24 May 1894, he was informed soon afterward that his ship, Ragnvald Jurl, had been crushed by ice four days after his departure. Wellman returned to investigate the situation, helping his captain, Johan Bottolfsen, to construct a makeshift hut and arranging for the latter to go for help in a boat. He then rejoined his sledging party, only to find that the same northerly winds that had wrecked his ship by piling up the pack against the land had made the ice all but impossible to traverse. By now it was dissected by high pressure ridges and hummocks. He was unable to reach even 81°N before being forced to turn back to await rescue on Walden Island.

Franz Josef Land Explored in a Second Attempt to the Pole, 1898–1899
Having experienced the difficulties involved in seeking the North Pole over the ice from Svalbard, Wellman's next attempt was made from Franz Josef Land, another High Arctic archipelago some way farther east. It had been discovered in 1873 and was still imperfectly explored. Frederick Jackson had recently returned from spending three winters there between 1894 and 1897, during which his ambitions to achieve a high latitude had been thwarted when he found Franz Josef to consist of numerous small islands rather than a landmass of near-continental proportions, as reported by previous explorers. On 17 June 1896, an amazed Jackson had met Fridtjof Nansen making his way south after reaching 86°13’N far out on the Arctic Ocean. Nansen had sought to reach the Pole from a ship, Fram, but the fact that his return path lay through Franz Josef again marked the promise of this archipelago as a point of departure for attempts on the Pole.

On 26 June 1898, Wellman set out from Tromsø in the Norwegian sealer Frithjof accompanied by three Americans—Evelyn B. Baldwin of the U.S. Weather Bureau (second-in-command and meteorologist), Dr. Edward Hofma (medical officer and naturalist), and Quirof Harlan (physicist and surveyor) —
and five Norwegians (Bernt Bentsen, Paul Bjørvik, Emil and Olaf Ellefsen, and Daniel Johannesen). Of these, Bjørvik had been with Wellman in 1894, Baldwin on Robert Peary’s expedition to North Greenland (1893–1895), and Bentsen with Nansen on Fram (1893–1896). After landing at Archangel to take on eighty-three dogs, Frithjof headed north to Franz Josef Land, which was reached on the second attempt, Frithjof having to return to Vardø to take on extra coal when unable to find a way through the ice on the first try.

When Jackson’s hut on Cape Flora, Northbrook Island, finally came into view on 28 July, Wellman had high hopes of finding the Swedish balloonist Salomon Andrée. With two companions, Andrée was last sighted on 11 July 1897, floating north toward the Pole from northern Spitsbergen. Cape Flora was one of the very last places where the balloonists might yet be found alive; if they had reached Franz Josef Land, it was almost certain that they would come here, where they knew there was food and shelter. What a scoop this would be for the Chicago Herald! But it was not to be. The doors were barred on Jackson’s hut, and the windows were still boarded up.

For Wellman’s plans, it was essential that his winter quarters be established as far north as possible. But with ice blocking all channels, he instead had to settle for Cape Tegetthoff on Hall Island, to where he transferred one of Jackson’s four storage huts together with a considerable quantity of the latter’s supplies. On 3 August, Frithjof departed, leaving the nine men behind to winter. Two days later Baldwin was charged with leading a four-man sledging party to establish a subsidiary base as far north as he could go. With increasingly rotten ice and growing patches of open water, the inadequacies in the expedition’s sledging equipment and canvas boats became apparent. With considerable difficulty a depot was finally established in September on the west coast of Wilczek Land. Since dogs as well as supplies were to remain there for the polar journey the next spring, two of the Norwegians—Bentsen and Bjørvik—were left behind to winter. They were instructed by Baldwin that they should be as frugal as possible to ensure that the maximum quantity of clothing and food was kept for the Polar party.

On 18 February 1899, Wellman set out from Cape Tegetthoff with three sledges pulled by dogs, accompanied by the three remaining Norwegians. On reaching the northern base nine days later, he was horrified to discover that Bentsen had died on 2 January and that Bjørvik was living in conditions that would drive most to insanity. In his concern to maximize the provisions for the Polar party, Baldwin had been prepared to largely ignore the needs of the winterers. To prevent Bentsen’s frozen body from being eaten by scavenging bears and foxes, Bjørvik had kept it with him; it now lay wrapped in a sleeping bag at the far end of the hut.

On 17 March, Wellman set out again with forty-two dogs pulling four sledges, Bjørvik being added to the party. On 20 March, Wellman sprained his leg but did not consider it sufficiently serious to call a halt and rest up. The next day, he was partly lame but still insisted on carrying on, his leg worsening all the while. Before he could do irreparable damage to the leg and travel beyond any possibility of rescue, they were roused from their sleeping bags at midnight on 22 March—off the east coast of Rudolf Island—by the sound of ice crushing against ice. A violent storm had arisen, driving the floe upon which they had camped against a stranded iceberg. With some luck, they managed to escape to solid ice, rescuing three of the sledges but losing eight dogs and all of the dog food. They could not go on.

By 9 April, Wellman had returned to Cape Tegetthoff; he had to be carried there much of the way on a sledge. Although his attempt on the Pole had failed, there was further work to be done, though leadership in the field would now have to be delegated to Baldwin. By this date, the western islands of Franz Josef had been mapped in some detail, particularly by Jackson. But land to the east of Austrian Sound was still largely
unknown. Julius Payer in 1873, and now Wellman, had sledged north through this sound. Payer had compiled a rough chart showing what could be seen from it, but no one had actually explored farther east. On 26 April, Baldwin departed with the four Norwegians to sledge along the southern coast of Wilczek Land. Beyond it he discovered Graham Bell Island, the easternmost island in the archipelago and the third largest in size. Returning along the north coast of Wilczek Land, Baldwin was able to demonstrate that Payer’s “La Roncière Peninsula” was in fact another island. Further discoveries were made following the arrival of Capella at Cape Tegetthoff on 27 July. Before departing seven days later, they discovered Alger and two other small islands between Hooker and McClintock Islands. As Wellman sailed south through British Channel on his way home, he met Luigi, Duke of the Abruzzi, the next polar aspirant, on his way north to Rudolf Island. Wellman was now looking for an easier way of getting to the Pole than slogging toward it on foot.

Wellman Pioneers Exploration by Airship, 1906

Wellman had considered the possibility of flying to the North Pole in a balloon as early as 1894 when he had traveled to Paris to seek the advice of the balloon manufacturers Godard and Surcouf after the failure of his first expedition. Fortunately, he had decided to wait until the technology was more advanced. Ten years later he again approached Godard to commission the construction of an airship with funding provided by the Chicago Record-Herald, as eager as ever for sensational stories. What could be more sensational than an airship flight to the Pole?

The airship, America, was 50.3 meters long and 15.8 meters at its maximum diameter. Without a rigid frame, its shape was maintained solely through pressure of hydrogen contained within an envelope consisting of two thicknesses of cotton and one of silk, with three coatings of rubber. Power was provided by three gasoline engines driving two propellers at the airship’s fore and aft. Beneath it hung a large leather bag, designed to provide both ballast and a means of carrying additional stores.

On 4 June 1906, Wellman sailed north from Tromsø in Frithjof, which had already taken the advance party to Danes Island led by H. B. Hersey, an employee of the U.S. Weather Bureau, along with much of the equipment and stores. By the time Wellman arrived in late June, Hersey’s party had made good progress constructing the hangar. Although work was to continue on the facilities throughout the summer, Wellman soon concluded that no flight could be attempted that year. To reduce costs, he had decided not to test America’s engines in Paris and now found them much too powerful; the furious whirling of the propellers shook the car so violently that the engineer conducting the test, Melvin Vaniman, could hardly keep his footing. On 4 September, Wellman returned to Norway, leaving his base in the care of a three-man wintering party led by Felix Riesenberg.

A Second Flight Comes to Naught, 1907

During the winter, various modifications were made to America in Paris, including installation of new engines and enlargement of its envelope to 56.4 meters. On 8 June 1907, Wellman returned to Danes Island. Although preparations for the flight were complete by the end of July, persistent northerly winds prevented takeoff until 2 September; he was accompanied by Vaniman and Riesenberg. They had not gone far before the wind again veered around to the north and a blizzard set in, driving them back toward Spitsbergen, where they made a forced landing on a glacier. They had been airborne for just 4.5 hours.

America II Goes out with a Bang, 1909

Wellman was not to return to Danes Island until two years later, this time with a larger, more powerful airship named America II. Two caretakers, Paul Bjørvik and Knud Johnson, had been charged with looking after his base through the winter, but they could do nothing when a severe storm arose in December 1908 that largely destroyed the hangar. Further tragedy was to follow when Johnson fell through a hole in the ice and drowned. After his experiences on Wilczek Land, Bjørvik must have considered himself either a very lucky man or a Jonah—two winters, two companions, both now dead. It was Wellman’s brother, Arthur, who discovered this state of affairs when he arrived with the advance party. He immediately began rebuilding the hangar, but the work delayed the main expedition for several weeks. On 27 June, the expedition vessel Arctic was finally able to return to Tromsø to collect the expedition leader and his party. Again, unfavorable weather delayed flight, but on 15 August, Wellman was able to take off in America II, accompanied by Vaniman, Louis Loud, and the Russian millionaire Nikolay Popov. All went well until they reached the pack. The leather bag hanging below the airship—the equilibrator—had been designed on the mistaken assumption (which Wellman knew enough to have corrected) that the ice would provide a smooth surface across which it would slide. Given the reality of the ice’s ridged, hummocky surface, the equilibrator was banged from side to side, eventually oscillating violently under the airship, which itself swung side to side as a result. About 30 miles north, the guide rope broke, taking with it 450 kilograms of stores. Wellman was not particularly concerned, but out of fear that America II would soar upward with its load now much reduced, Loud pulled the gas release valve and refused to let go until the airship had dropped down onto the ice, crushing two of its petrol tanks as it landed. Fortunately, this incident had been observed by the Norwegian survey vessel Farm, which was able to attach a rope and tow America II back to Danes Island.

The end of America II was dramatic. Back on land, Albert Corbitt, one of the engineers, was busy loosening the engines from their mountings when Vaniman decided to empty the
petrol tanks by punching holes in them with a pick axe. The result was to lighten the airship at one end and cause its nose to lift. Just in time, Corbitt leaped to safety from a height of 8 meters as the gasbag shot upward to 2,000 meters. There, it burst with a thunderous roar, sending a shower of fragments hurtling downward into the sea.

This was the spectacular end to Wellman’s fifth and final polar expedition. On his voyage back to Norway, he was informed that Frederick Cook had reached the North Pole. There seemed little point in his trying again. In the following decades, considerable progress was made in airship design. In 1926, Roald Amundsen flew an airship to the Pole, continuing beyond to reach the far side of the Arctic Ocean. Wellman’s pioneering voyages may have accomplished little in terms of exploration, but they were not unsuccessful in terms of their primary object: no newspaper ever lost readers by sponsoring him!

See also: Abruzzi, Luigi Duke of; Airships; Alger Island; Amundsen, Roald (1926); Andréé, Salomon; Baldwin, Evelyn; Cook, Frederick (1907–1909); Danes Island; Franz Josef Land; Graham Bell Island; Hall Island; Jackson, Frederick; Nansen, Fridtjof (1893–1896); North Pole; Northbrook Island; Payer, Julius von; Seven Islands; Spitsbergen; Wilczek Land

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Weymouth, George
(fl. 1601–1612)

Interesting comparisons may be drawn between the expedition of the English navigator George Weymouth in 1602 and the famous last voyage of his compatriot Henry Hudson in 1610–1611. Both explored areas of what was to become the famous last voyage of his compatriot Henry Hudson in 1602 and continuing beyond to reach the far side of the Arctic Ocean. Weymouth was now intent on finding a passage far to the north, to the rising disquiet of his crew, including his chaplain, the Reverend John Cartwright. On 19 July, at a location somewhere north of 68°53’N, Weymouth was locked in his cabin while asleep; the helm was seized, and his ships were turned about to the south. A document was drawn up by the mutinous crews stating their terms: They were not prepared to winter at a high latitude; they considered there to be no advantage in wintering rather than returning to England and setting out early the next year; they were willing to explore farther south between 57° and 60°N. This document was presented to Weymouth the next day. He was allowed to resume control and to punish the mutineers severely, but there was nothing he could do to make them change course to the north. By 26 July, the two ships were at 61°40’N, where Weymouth now investigated the southernmost of Davis’s openings. Into what was almost certainly Hudson Strait, he sailed southwest for 100 leagues (about 400 miles), turning back four days later greatly encouraged that this might indeed be the long-sought Northwest Passage, particularly because of its lack of ice. Why he did not pursue this discovery further can only be conjectured, though after all that had happened he may not have been fully in control of his ships. He next sailed south along the Labrador coast to 55°N, investigating another promising inlet at 56°N before turning for home about 20 August. He reached Dartmouth, England, on 5 September.

Mutiny in Davis Strait, 1602

At some point in 1601, the experienced seaman George Weymouth (or Weymouth) wrote a letter to the East India Company requesting sponsorship for an expedition to seek a route to Cathay. The East India Company had been founded in 1600 by leading London merchants and in 1601 sent its first ships to India around the Cape of Good Hope. Although it was known that India and the Far East could be reached by this route, it was considered long and dangerous, and ships using it were open to attack from the Portuguese. As a consequence, there were those in the company, especially its governor, Sir Thomas Smith, who prepared to support Weymouth’s proposal. Since the compa-
Weymouth was to be cross-examined by the court of the East India Company on 24 November, when he defended himself against the accusation of breaking his agreement to spend at least one winter away. John Drew, the master of *Godspeed*, as well as others were cross-examined. They blamed Reverend Cartwright for instigating the mutiny, a charge that he denied; he may have been the most convenient scapegoat. Weymouth's sponsors found other aspects of the voyage to be encouraging, most particularly his report of a likely entry to the Northwest Passage at 61°40'N. For several months, meetings were held to plan another expedition the following year under Weymouth's command. It never took place. Weymouth was to lead no more Arctic expeditions, though three years later he investigated possibilities for colonization on the coasts of Massachusetts and Maine. Weymouth's reported passage was next explored by Hudson in 1610–1611.

See also: Davis, John (ca. 1550–1605); Davis Strait; Hudson, Henry (1610–1611); Hudson Strait; Northwest Passage

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Whaling and Antarctic Exploration

The naturalist William Speirs Bruce sailed to Antarctica with the Dundee Whaling Expedition in 1892–1893. He was given limited opportunities for research and never came within 6 miles of land. The aim of the expedition was to hunt whales, preferably right whales, and the whalers had no interest in geographical discovery despite visiting a largely unknown area. The surprising thing about the Antarctic whaling industry is that not all whalers felt the same way, and that two in particular—Carl Anton Larsen and Lars Christensen—were to make major contributions to geographical knowledge.

Whereas the sealers had a natural interest in the discovery of new land in their rapacious search for new beaches on which fur seals hauled out to breed, whalers had little interest in land except insofar as it afforded secure anchorages and sites for whaling stations. Even these became of reduced interest in the later pelagic phase of whaling, when ships were able to operate in the open ocean independently of any land base, and yet it was precisely during this period that the whaling industry's contribution to knowledge of Antarctica was greatest.

The expedition of James Clark Ross (1839–1843) played a similar role for the whalers to that unwittingly performed by James Cook for the sealers. While Cook had reported numerous fur seals on South Georgia, Ross described seeing right whales in the Ross and Weddell Seas. Later in the nineteenth century, as right whales became increasingly scarce in the Northern Hemisphere, interest grew in Ross's report of a large Southern Hemisphere population close to Antarctica until, in the 1890s, several expeditions were sent south by whaling entrepreneurs to investigate whether the industry might be conducted there on an economically viable basis. In addition to Bruce's Dundee Whalers, Carl Anton Larsen led two expeditions to the Antarctic Peninsula (1892–1893 and 1893–1894) and Henrik Bull led one to the Ross Sea (1893–1895). None of these found right whales in any number, and indeed had the results of Eduard Dalman's sealing and whaling voyage of 1873–1874 been more widely known, hopes might have been less sanguine about the prospects of finding any right whales at all close to Antarctica. Some mystery surrounds what whale species Ross himself saw. Since he had spent some time with northern whalers, he should certainly have been capable of distinguishing the slow-moving right whale from other less suitable species, and it is probable that the populations of southern hemisphere right whales were significantly reduced after his voyage by whaling in the breeding grounds close to South Africa and South America. In any case, just one whale was taken by these pioneering expeditions, though all reported seeing many fast-swimming rorqual whales. Aware of techniques developed by Svend Foyn to hunt rorquals off the Norwegian coast, Larsen saw enough of these during his two expeditions and as captain of *Antarctic* on Otto Nordenskjöld's Swedish Antarctic Expedition (1901–1904) to set up the first whaling station on South Georgia in November 1904, backed by Argentine capital and equipped with ships and techniques specially designed to hunt the rorquals: blue, fin, humpback, sei, and minke whales in descending order of size and desirability.

Larsen's initiative was followed soon afterward by the migration to the Antarctic of virtually the entire Norwegian whaling industry from its traditional whaling grounds off the coast of Finnmark, the northernmost county in Norway. What precipitated this move was not the decline in northern stocks of rorqual whales, as sometimes asserted, but legislation introduced by the Norwegian government banning whaling in this region in response to protests by Finnmark's fishermen who blamed falling catches on the reduced number of whales available to drive the fish inshore. Although other countries were to become involved in the southern whaling industry, Norwegians continued to play the most prominent role, particularly with regard to exploration.

The southern whaling industry became concentrated in two main centers: South Georgia with six shore stations and Deception Island in the South Shetlands, where one station operated in combination with a number of factory ships. From 1911 onward, factory ships began to extend their activities southward from Deception along the Antarctic Peninsula, benefiting from information supplied to them concerning numbers of whales and the availability of anchorages by the French explorer Jean-Baptiste Charcot. In return, Charcot received coal and help in repairing his ship. Indeed, the presence of the whaling industry at South Georgia and Deception Island provided support and a potential safety net for many
exploring expeditions at this time, Sir Ernest Shackleton’s *Endurance* expedition being the most notable example, though whalers on South Georgia also offered great assistance to Wilhelm Filchner (1911–1912) and, after Shackleton’s death, to Frank Wild in 1922. Whaling ships ferried John Cope’s expedition to Deception Island before landing him on the Danco Coast of the Antarctic Peninsula. Had it not been for the whalers, two members of his expedition might never have been recovered from their wintering site on Waterboat Point. The aviator Sir Hubert Wilkins was also to receive considerable assistance, with whaling vessels carrying his aircraft to and from Deception in the late 1920s.

Larsen’s exploratory activities did not end once he had established the Compañía Argentina de Pesca whaling station at Grytviken, though his final contributions to Antarctic exploration were all made in connection with his whaling interests. In 1908, he searched for anchorages suitable for use by whalers along the coasts of South Georgia and the South Sandwich Islands, making the most detailed survey to date of the latter islands and only the second documented landing on Zavodovski Island. In 1923 and 1924, he led pioneering expeditions to the Ross Sea, where he was responsible for opening up an important new whaling ground.

Lars Christensen was the son of Christen Christensen, the owner of the steam whaler *Jason*, in which Larsen had made his first two Antarctic expeditions. By the 1920s, the southern whaling industry had begun to search for new stocks of whales outside the South Atlantic waters where it had originated. Larsen had demonstrated the potential of the Ross Sea, but to Lars Christensen other regions appeared equally promising. In 1927, he sent one of his whale catchers, *Odd I*, to investigate the waters around Peter I Island. The results were disappointing; the island offered no potential anchorage, and very few whales were seen during the voyage from Deception. Realizing that he needed a more suitable ship, Christensen next purchased *Norvegia*, a small wooden-hulled whaling and sealing vessel, which he planned to use specifically for the purposes of exploration. An account of *Norvegia*’s four voyages together with Christensen’s subsequent exploratory activities in Thorshamn is given under his name, while under Hjalmar Riiser-Larsen’s name may be found a detailed description of *Norvegia*’s 1929–1930 voyage, during which Queen Maud Land was discovered. The apparent paradox of discoveries made at this time and by other whalers inspired by Christensen’s example is that, with Petter Sørle’s invention of the stern slipway in 1922, a new generation of whaling ships came into use that was
free from the need to operate in conjunction with any shore base because the ships were able to haul the whale carcasses on board for processing with minimal wastage. Why therefore should it have been at this time that Christensen and his colleagues attached such importance to making and reporting new land discoveries?

The answer lies in politics. For years, the largely Norwegian whalers had been obliged to pay dues and operate under restrictions imposed by the Falkland Islands Dependencies, a colonial administration established by Great Britain in 1908. Because they operated off islands and mainland in the most part discovered by British explorers, and because Great Britain's territorial claims were respected by the Norwegian government, the whalers found themselves paying increasingly heavy licensing fees—though these were always small in relation to the profits to be made from whaling—and required to observe legislation that became more restrictive as concern grew about diminishing whale stocks. Given that Norwegians—and not least the whalers—had made many significant discoveries in the Antarctic, Christensen and his colleagues became especially disturbed when it became apparent that similar arrangements to those pertaining in the Falkland Islands Dependencies were to be extended to cover the Ross Sea and other new whaling grounds. Christensen's solution was simple: the whalers themselves must discover new land, which should then be claimed for Norway. This policy proved remarkably successful, both in what was achieved by Christensen's own ships but also in persuading other Norwegian whaling entrepreneurs to go out of their way to make new discoveries. In 1930–1931, the year following Riiser-Larsen's discovery of Queen Maud Land in Norvegia, R. K. Headland (1993, 199) estimates that there were probably 300 whaling ships in Antarctic waters, the greatest number ever. Not surprisingly, this year was also unprecedented for the number of discoveries made by whalers, greatly extending knowledge of Antarctica's coastline between 14° and 69°E, which had previously been among the least known on the continent.

Providing oil, lubricants, glycerine (for nitroglycerine in explosives), margarine, and other essential products, whaling offered many fortunes and led to the establishment of great industrial concerns in Norway and Great Britain in particular. Christensen's farsightedness in linking whaling activities to geographical discoveries, which were then claimed on behalf of Norway, provoked in response organization of expeditions on behalf of the British Empire (see Mawson, Douglas) and Germany (see Ritscher, Alfred). Indeed, in the heightened atmosphere of the years immediately preceding the outbreak of World War II, it was the capacity of the whaling industry to generate almost unimaginable sources of wealth that convinced previously skeptical national governments of the need to consolidate preexisting territorial claims in Antarctica and, where possible, to extend them through further expeditions. Thus, the influence of the whaling industry on Antarctic exploration was both direct, through discoveries made by the whalers, and indirect, through the responses these provoked in others. It is with good reason that the years between 1919 and 1942 have been referred to as the "Whaling Period" in Antarctic history (Headland 1993, 191). Certainly, no activity was more influential at this time.

See also: Bull, Henrik; Charcot, Jean-Baptiste; Christensen, Lars; Cook, James; Cope, John; Dallmann, Eduard; Deception Island; Discovery Investigations; Dundee Antarctic Whaling Expedition; Flörner, Wilhelm; Larsen, Carl Anton; Mawson, Douglas (1929–1931); Nordenskjöld, Otto; Queen Maud Land; Riiser-Larsen, Hjalmar; Ritscher, Alfred (1938–1939); Ross, James Clark; Sealing and Antarctic Exploration; Shackleton, Ernest (1914–1916); South Georgia; Whaling and Arctic Exploration; Wild, Frank (1921–1922); Wilkins, George Hubert (1928–1929, 1929–1930)

References and further reading:

Whaling and Arctic Exploration

The relationship between whaling and exploration is long and complicated in the Arctic. Although whalers did occasion discover major new whaling grounds, usually they were first reported by exploring expeditions. This was partly because explorers were able to take greater risks, and partly because their vessels tended to have greater ice-strengthening, but largely because it was the business of whalers to make a profit for their owners. Competition was intense, and no owner would thank an enterprising captain who missed whales for the slight possibility of discovering new whaling grounds. Yet significant discoveries were made by whalers—undoubtedly more than we know of today. They also developed techniques for navigating through the ice, and many exploring expeditions made a point to employ experienced whalers as ice pilots.

Many cetacean species migrate seasonally between the lower latitudes, where they breed, and the polar regions, where the richest feeding grounds are found close to the ice. Whaling in the Atlantic was pioneered by the Basques of southwestern France and northern Spain who hunted the North Atlantic right whale (Eubalaena glacialis) in the Bay of Biscay. As stocks became depleted, they looked for new whaling grounds and followed the fishermen across the ocean to Labrador and Newfoundland, where a rich cod fishery had been reported in 1497 by John Cabot. By the late 1530s, Basque whaling was well established, with a tryworks erected onshore at Red Bay (Newfoundland). There, the preferred species was the bowhead (Balaena mysticetus) on account of its higher oil
yield (5–10 more barrels per whale than right whales) and longer baleen plates. True Arctic whaling began as the whalers followed this species north each summer into Davis Strait with the retreating ice.

In 1607, Henry Hudson reported many whales off Svalbard. The first English and Dutch whaling fleets arrived in 1611 and 1612, respectively, followed soon afterward by French, Spanish, and Danish vessels. By 1614, the Dutch had established control in the north, compelling the English to look for new grounds to the south and west, resulting in a number of discoveries. English activity declined after 1619, when the Muscovy Company organized the last of its expeditions. Dutch whaling was initially shore-based and then, increasingly, was conducted on the high seas after whale populations were hunted out in the fjords and close inshore. Beginning in 1670, whaling was chiefly carried out among the ice floes toward East Greenland—it generally inaccessible coast was occasionally sighted—and in the northern Barents Sea, where Cornelius Giles probably saw White Island and Cornelis Roule possibly Franz Josef Land.

As the so-called Greenland Fishery off Svalbard declined with the whale population, Dutch whalers began mounting regular expeditions to Davis Strait from the early eighteenth century. There, they were succeeded first by vessels from colonial America and then, after the Revolutionary War, from Great Britain. In 1763, William Christopher’s report of whales in northern Hudson Bay led the Hudson’s Bay Company to organize whaling expeditions until 1772; whaling was not resumed until 1866. Davis Strait, however, and Baffin Bay to its north had much larger stocks of whales, though the whalers appear not to have explored farther north than 71°N off West Greenland until the pioneering voyage by Larkins of Leith and Elizabeth of Hull in 1817, when the North Water and its large whale population was discovered at 77°N. This was a rare occasion in which a major whaling ground was discovered by the whalers themselves, who would undoubtedly have exploited it regardless of John Ross’s expedition the following year. Ross’s voyage indeed was organized following reports from whalers, including William Scoresby Jr., of unusually ice-free waters off Northeast Greenland, where Scoresby was to make significant discoveries in 1822 during another good ice year. The voyages of Ross and Edward Parry drew attention to waters farther west, particularly Pond Inlet (Baffin Island), where they reported many whales, and Lancaster Sound. Farther south, the whaler William Penny rediscovered Cumberland Bay and other inlets of southwest Baffin explored by John Davis in the 1580s but not visited since. In the western Arctic, the American whaler Thomas Roys learned from those participating in Russian expeditions of whales being seen north of Bering Strait; his compatriots later explored the Beaufort Sea east to the Mackenzie Delta in the wake of expeditions searching for Sir John Franklin. Just as the presence of whalers in southern Baffin Bay had enabled Charles Francis Hall to rediscover Fro-bisher Bay in 1861, so Vilhjalmur Stefansson first learned of the “blond Inuit” of Victoria Island from whalers at Herschel Island. The existence of whaling stations established by Americans in regions claimed by Canada led that country to organize regular patrols of its Arctic territory, beginning with the expeditions of Albert Low and Joseph-Elzéar Bernier.

Whalers acquired their skills in ice navigation by dint of hard experience. The chief dangers facing vessels in ice were being struck by ice blocks during a storm or of being “nipped” and, in the worst case, crushed between floes. During storms, or when the pack ice was breaking up, ships would often seek shelter in the lee of large icebergs. They could also cut ice docks into floes, within which one or two ships might find respite while the pack as a mass forced up pressure ridges as it was compressed against land and fast ice. The whalers developed various techniques to make their way through pack ice when this was impossible by sail power alone. During warping, a hawser was fixed to ice in front of the ship and hauled in by the capstan. During tracking, the crew used hawser to pull the boat in a manner analogous to towing a canal barge. Vessels might also be towed by the ship’s boats. This knowledge was passed down within the whaling community and was not published until 1820 in the second volume of William Scoresby’s _An account of the Arctic regions._

**References and further reading:**


**White Island (Svalbard)**

Located at 80°15’N, 32°30’E, this small island of roughly 100 square miles lies to the east of North East Land in the Svalbard Archipelago. It is almost entirely covered by ice except for two narrow beaches at either end, where landings can be made. It was discovered in 1707 by the Dutch whaling captain Cornelius Giles; for many years it was named “Gillis Land.” Despite repeated attempts to find it, the island was probably not seen again until 1876 by Johan Kjeldsen on a Norwegian walrus-hunting expedition. Kjeldsen named the island “Hvide-ø” (White Island). The official Norwegian name is Kvitoya.

This island was reached on 5 October 1897 by Salomon Andrée, Nils Strindberg, and Knut Frænkel after they were forced to abandon their attempt to reach the North Pole by balloon. Landing on the southwest coast, it was the first landing
on White Island. The fate of Andrée and his companions remains a mystery, but they died shortly after reaching the island. In 1930 the Norwegian sealer Bratvaag discovered the skeletons of Andrée and Strindberg (Frænkel’s body was found later); Andrée’s diary and a camera still loaded with film were recovered. Only ten months after Andrée’s party had landed on White Island, Alfred Nathorst led a Swedish scientific expedition there, landing on 18 August 1898 and completing a circumnavigation of the island the following day, during which the coast was charted. The identification of “Gillis Land” with White Island was not accepted by all, and expeditions continued to search for the former as late as the 1930s.

See also: Andrée, Salomon; Nathorst, Alfred (1898); Svalbard; Whaling and Arctic Exploration

**Wiencke Island (Palmer Archipelago, Antarctic Peninsula)**

Located at 64°50’S, 63°25’W, this mountainous island—16 miles long and varying in width from 2 to 5 miles—is the southernmost island in the Palmer Archipelago, separated from Anvers Island by Neumayer Channel and from the Danco Coast of the Antarctic Peninsula by Gerlache Strait. The island was almost certainly seen by John Biscoe in February 1832 and by Eduard Dallmann in January 1874. The honor of discovery, however, is generally credited to Adrien de Gerlache, who was the first to make rough charts and to circumnavigate the island on 8–9 February 1898, naming it for Auguste-Karl Wiencke, a young seaman who had fallen overboard on 22 January while trying to clear Belgica’s clogged scuppers. Jean-Baptiste Charcot landed in 1904, carrying out further charting work and discovering Port Lockroy on 13 February, which he named for Edouard Lockroy, vice president of the French Chamber of Deputies, who had helped Charcot obtain government funding. Goudier Island, the future site of the British Base A, was named by Charcot for his chief engineer. From 1911, the sheltered anchorage at Port Lockroy was much used by whalers, who chose this location on the basis of information supplied by Charcot.

Sir Hubert Wilkins took off from Port Lockroy on 19 December 1929, flying across the Antarctic Peninsula to Evans Inlet before he was forced to turn back by a malfunctioning engine. On 5 January 1930, he made a second survey flight from here north to Deception. In January 1934, stores and equipment for John Rymill’s British Graham Land Expedition
Wilczek Land (Franz Josef Land)
Located at 80°40'N, 61°00'E, this mostly ice-covered island is the second largest (802 square miles) in Franz Josef Land and contains its highest point (670 meters). It was discovered by Julius Payer, whose second sledding journey, between 26 March and 22 April 1874, took him through Austrian Sound along this island’s west coast. It was named for Count von Johann Nepomuk Wilczek (1837–1922), the expedition’s chief private sponsor and a good friend to both Payer and coleader Karl Weyprecht. The official Russian name is Zemlya Vil’cheka. Wilczek Land is not to be confused with Wilczek Island, a small island farther south off which Togetthoff was beset. Named first, this was later considered altogether inadequate to honor Wilczek’s contribution.

Walter Wellman set up a subsidiary winter quarters at Cape Heller on the northwest coast of Wilczek Land, where Bernt Bentsen and Paul Bjørvik wintered in 1898–1899. This was intended as the expedition’s northern base, the main base being at Cape Togetthoff, Hall Island. The hut, named “Fort McKinley” for the current U.S. president, was extremely crude and resembled the one built on Jackson Island by Fridtjof Nansen and Hjalmar Johansen. The walls consisted of loose stones over which two driftwood logs were placed to support a roof of walrus skins. It measured 4 meters by 2 meters and was 1 meter high. Six bearskins inside helped provide minimal warmth and comfort. Bentsen and Bjørvik were given an allowance of just four candles to last them through the winter by Evelyn Baldwin, the leader of the party charged with setting up the hut. Otherwise, they had to rely for light on moss to fuel their blubber lamp, since they were left only enough blubber to cook two meals per day, these consisting almost exclusively of polar bear meat and coffee. With no spare fuel to heat the hut, they spent most of their time in their wet sleeping bags in temperatures of −20°C (−4°F). To assist Wellman’s polar journey, which was to be made in the spring, twenty-three dogs were left here sheltered by walls of snow, with 1 ton of walrus meat being deposited. On 2 January 1899, Bentsen died. Bjørvik had promised Bentsen that he would not allow his body to be eaten by bears or foxes, but the ground was too hard to dig a grave. Bentsen’s body was therefore kept in the hut wrapped in a sleeping bag. On 27 February, Wellman arrived with the polar party. After first digging a grave for Bentsen, Wellman continued north on 7 March, having picked up the provisions and dogs, with Bjørvik joining this party. Later that same year, between 26 April and 30 May, Baldwin circumnavigated the island with a sledding party, in the process discovering Graham Bell Island farther east. On his own expedition two years later, Baldwin arranged for his supply ship Frithjof to land stores and dogs on Wilczek Land to assist his planned polar journey, which subsequently failed to materialize.

Wild, Frank
(1874–1930)
The British seaman and explorer John Robert Francis “Frank” Wild served on Antarctic expeditions led by Robert Falcon Scott, Ernest Shackleton, and Douglas Mawson before finally inheriting leadership of the Shackleton-Rowett expedition in 1922 following Shackleton’s death. On each expedition his con-
tribution was considerable. An able seaman under Scott (1901–1904), he saved the lives of six men when an inexperienced party was caught in a blizzard above ice cliffs near Hut Point, Ross Island. With Shackleton (1907–1909), he was one of three men chosen to accompany their leader when he came within 97 nautical miles of the South Pole. His major roles during Mawson’s and Shackleton’s last two expeditions are described below.

**West Base on Mawson’s Australasian Antarctic Expedition, 1912–1913**

Scott was keen to enlist Wild as a member of his second expedition, but Wild opted instead to join the Australian geologist Dr. Douglas Mawson, his former colleague on Shackleton’s 1907–1909 expedition. Mawson intended to establish three stations on the virtually unexplored coast of Antarctica south of Australia. Wild was asked to take command of one.

On 19 January 1912, under the command of Captain John King Davis, *Aurora* sailed from Commonwealth Bay, where Douglas Mawson had set up Main Base. Davis’s task was to find a suitable place farther west to land Wild’s eight-man party. This proved difficult. Not only did the icebound coast lie south of where previously inaccurately charted by Charles Wilkes and other navigators; its high ice cliffs afforded no obvious places to land and establish a winter station. With coal stocks running low, on 17 February Davis finally opted to land Wild on the Shackleton Ice Shelf in newly discovered Queen Mary Land, 1,500 miles west of Mawson’s Main Base. Selecting a site a half-mile inland—hopefully sufficiently far from the edge not to risk breaking off during the year—their food, stores, and equipment had to be hauled up a 30-meter ice cliff. Four days later *Aurora* departed for Hobart, which it reached on 12 March.

Wild’s party at West Base consisted of George Dovers (cartographer), Charles T. Harrisson (biologist), C. A. Hoadley (geologist), Dr. Sydney E. Jones (medical officer), Alexander L.
Kennedy (magnetism specialist), Morton H. Moyes (meteorologist), and Andrew D. Watson (geologist). Their first task was to construct the 6-meter-square hut, which they named “the Grottoes.” Once it was erected, Wild led a six-man party on a depot-laying expedition eastward, returning on 6 April to find the hut already almost buried by snow. West Base was marginally less windy than Commonwealth Bay but was otherwise subject to similar unpleasant conditions.

Wild had hoped to be able to communicate with Commonwealth Bay by wireless, but the radio mast came down in the first strong winds. The men spent a quiet winter in preparations for the coming sledging season, occupying their spare time in reading, playing bridge, and writing for the base’s newspaper, the Glacier Tongue, the latter at the instigation of Wild, who remembered the value of an expedition newspaper during the long winters he had spent with Scott and Shackleton on Ross Island.

On 14 August, Dovers, Harrisson, Hoadley, and Watson sledged 15 miles to investigate a capsized iceberg. The stones embedded in its former bottom provided the first clear evidence that although the Shackleton Ice Shelf might be above water, the adjacent ice sheet was certainly underlain by rock.

Wild had been charged by Mawson with surveying as much of the coast as possible. To that end, he planned to send out sledging parties to the east and west. Depot-laying began on 22 August and was more successful to the east—where a six-man party succeeded in laying a depot 84 miles out. In the west, a four-man party could lay its depot no more than 28 miles away, having been forced to spend seventeen days of a four-week journey confined in their tents by atrocious weather.

By 30 October, they were as ready as they would ever be. Wild, Kennedy, and Watson formed the Eastern Party, assisted for the first part of the journey by Harrisson, who was then to return to help Moyes at West Base. However, when Wild reached the depot laid the previous season, he found that strong winds had blown away the sledge. With their provisions being too heavy to haul on one sledge, Wild now had no choice but to add Harrisson to his party for the sake of his sledge—he could not return without it. But he did so with considerable reluctance, realizing that Harrisson’s failure to return would leave Moyes thinking him dead. On 27 November, the Eastern Party turned back after trying unsuccessfully to cross the 12-mile-wide Denman Glacier, the major outlet through which ice of the continental ice sheet disgorged into Shackleton Ice Shelf in a rapid, 1,000-meter descent. The return journey was tough. With food running short, the weakest dog was killed and eaten. The other dogs were saved only because the men found petrels and skuas to kill. Reaching the hut on 6 January 1913, they learned that Moyes had indeed presumed Harrisson dead, but not before making a hazardous six-day solo journey to hunt for him.

Meanwhile, the Western Party of Jones, Dover, and Hoadley man-hauled to the Gaussberg Nunatak, 215 miles away, on 23 December. On that nunatak, they found two cairns built in 1902 by the German Antarctic Expedition of Professor Erich von Drygalski, but not the expedition narrative that had been left sealed in a bottle. On their way to the Gaussberg, Jones’s party had discovered in the Haswell Islands a large colony of emperor penguins, one of very few then known. By 21 January 1913, they had rejoined the others at West Base, where they waited with increasing anxiety to be picked up by Aurora, which eventually arrived on 23 February after being delayed at Commonwealth Bay while waiting for Mawson.

In all, despite frequently appalling conditions, Wild’s party at West Base had succeeded in exploring and making initial surveys of 400 miles of coast, linking the Queen Mary Coast to Drygalski’s Wilhelm II Coast. Given that this coastline is among the most inaccessible in all Antarctica, their achievements were considerable.

Marooned on Elephant Island, 1916

For the story of how twenty-two men came to be marooned on a remote island hundreds of miles from human habitation, see the entry for Sir Ernest Shackleton, whose ambitious plans to cross the Antarctic continent were literally crushed, with his ship Endurance, by the ice of the Weddell Sea.

Elephant Island is one of the bleakest and most precipitous of the South Shetland Islands, forming with Clarence Island the two most northeasterly members of an island chain extending some 300 miles in length off the Antarctic Peninsula. This was the place reached by Shackleton on 15 April 1916. Elephant was by no means his first choice to land, but one by one his other options proved unreachable, leaving him just Elephant or Clarence before the empty waters of the South Atlantic. On 24 April, after deciding that there was no chance that his party would be looked for at his current location, Shackleton embarked with five others in the James Caird on his epic voyage to South Georgia.

On a rocky spit of land 200 meters long and 30 meters wide, Frank Wild was left in charge of the twenty-two men remaining on Elephant Island. This was a very mixed party, including some with considerable Antarctic experience—Alfred Cheetham, Frank Hurley, George Marston; some scientists—James Wordie, Robert Clark, Leonard Hussey, and Reginald James; two physicians—Drs. Alexander Macklin and James McIlroy; and Captain Thomas Orde-Lees of the Royal Marines. The seamen were mainly from North Sea trawlers, good sailors but tough and not particularly given to being told what to do. Also in the party were three whose health would cause Wild serious concern: navigation officer Huberth Hudson, who had suffered a nervous collapse after piloting one of the small boats nonstop for seventy-two hours; Louis Rickinson, who had collapsed with a heart attack upon reaching Elephant Island; and Perce Blackborow, the popular stowaway whose left toes were badly frostbitten and eventually had to be amputated.
Wild’s first task was to make it clear to all that he had now assumed command and that they would take their orders from him. He was to keep all members of the party busy for the remainder of their stay on the island. Nothing could have been more fatal to morale than idleness, and Wild, like Shackleton, was always intensely sensitive of the need to maintain morale. The immediate needs were food and shelter. For food, they had rescued some provisions from the ship, but their survival would depend on penguins and seals. There was the danger that the animals might leave the island during the winter, just as the chinstrap penguins had migrated away immediately after the party landed at Point Wild. This was a source of friction between Wild and Orde-Lees, the latter believing that they should kill as many as they could and stockpile food, whereas Wild refused to kill more than were immediately necessary. Wild was unwilling to take any action that might be interpreted as implying belief that their stay on the island would be anything other than brief. Each morning, he awoke the party with the same call—“Lash up and stow! The Boss may come today!”—and they were expected to roll up their sleeping bags and make other preparations for what might have to be a rapid departure.

For shelter, Wild’s party was less fortunate than Larsen’s men, who had found in the flat basaltic slabs of Paulet Island a natural building material for a sturdy hut (see Larsen, Carl Anton). Yet they were more fortunate than Campbell’s Northern Party during Scott’s second expedition, which had been forced to winter in an ice cave (see Campbell, Victor). At least on Elephant Island they had the boats, though adapting them to provide winter accommodations could compromise their seaworthiness for a voyage to Deception Island should no rescue be forthcoming from Shackleton. At Deception, in the far western South Shetland Islands, whalers operated as they did off South Georgia, Shackleton’s intended destination. This would be Wild’s last throw if the party was still on the island once winter had ended.

To form “the Snuggery,” as they ironically called their hut, the two remaining boats—Dudley Docker and Stancomb Wills—were turned upside down and placed on top of stone walls a little over 1 meter high and just under 6 meters apart. Fringed beneath by tent canvas, they were lashed across on top with more canvas and rope. The area enclosed measured 5.5 meters by 3.7 meters and was nowhere higher than 1.37 meters. In near complete darkness, the luckier men slept above on the thwarts, the remainder on the cold and damp ground below. It was drafty, with fine-blown snow invading through cracks. These were eventually tracked down and successfully caulked with the remains of an old sleeping bag. Meltwater flowing down from the surrounding slopes and right through the hut was less easily overcome, though with much digging the waters were finally diverted along another course.

Although Wild did his best to ensure that all were kept busy, time still dragged by slowly. Any thought that Shackleton might not return went unspoken, but it was in all of their minds. There was little enough to divert their thoughts in other directions. Each Saturday, songs were sung to the accompaniment of Hussey’s banjo, the last item Shackleton had allowed to be brought off Endurance. They had five volumes of the Encyclopedia Britannica (though many pages had been used as fire-lighters), three novels, and—most popular of all—Marston’s Penny cookbook. With the aid of the last, many banquets were mentally improvised—seal and penguin not featuring on the menu!

As the days passed, Wild began to plan for a desperate voyage to Deception Island. If they could make it to regularly fished waters, they might fall in with a whaler without having to go the full 250 miles to Deception, a distance that would probably be beyond their ability. On 30 August, approaching lunchtime, Marston saw a ship unmistakably in the distance. His call of “Ship Oh!” aroused little interest, being interpreted by the others as a call for lunch. Turmoil followed when he ran back to the hut crying, “Wild, there’s a ship! Hadn’t we better light a flare?” The hoosh cooking on the stove was overturned and the canvas trimmings forming the door torn away; the men rushed to the beach, where soon a small rowboat was seen with Shackleton on board. They had been on Elephant Island for 105 days.

The Voyage of the Quest: Shackleton’s Last Hurrah, 1922
With its destination changed at the last minute from the Arctic to the Antarctic, Shackleton’s last expedition had an ambitious but vague program. Among its aims were to survey 2,500 miles of unexplored coastline from Enderby Land west to Coats Land; to search for islands reported by sealers and other early voyagers but not seen since; and to pioneer the use of aircraft in the Antarctic. Unfortunately, his chosen ship, the 125-ton Quest, experienced engine and other difficulties and required extensive refitting in Rio de Janeiro. With matters so delayed, Shackleton was forced to abandon his plan to make for Cape Town, where the aircraft and much of the stores were waiting, and instead head for South Georgia. How he reached that island on 4 January 1922 and died in the early hours of the next morning has been told in the entry under his name. Here, an account is given of subsequent work carried out by the expedition, now led by Frank Wild.

With Wild were seven others who had been with Shackleton in Endurance: Quest’s captain, Frank Worsley, Drs. Alexander H. Macklin and James A. McIlroy, Leonard D. A. Hussey (meteorologist), A. J. Kerr (chief engineer), T. F. McLeod (seaman), and C. J. Green (cook). James Dell (boatswain) was another experienced Antarctic hand, having been on Robert Falcon Scott’s first expedition. Of the eleven others, both James W. S. Marr (one of two Boy Scouts) and George Hubert Wilkins (naturalist) were later to make distinguished names for themselves in polar exploration.

Obtaining food, stores, and coal from the whaling stations,
**Wilhelm II Land**

Wilhelm II Land forms that section of East Antarctica lying between 87°43'E and 91°E, with Princess Elizabeth Land to the west and Queen Mary Land to the east. It was discovered on 21 February 1902 by the German Antarctic Expedition led by Erich von Drygalski and was named for Kaiser Wilhelm II. The next visit was made in December 1912 by a three-man party led by Dr. Sydney E. Jones. By incorporating the Gaussberg Nunatak in his survey, Jones succeeded in linking Drygalski’s topographic work with that carried out under Frank Wild from West Base during the Australasian Antarctic Expedition. Despite being discovered by the German Drygalski, this region was included within the Australian Antarctic Territory in 1933. The first photographic flights were made from **Firen** during Lars Christensen’s expedition of 1936–1937. Further photographic flights were made by the Western Group of Operation Highjump in February 1947, and a survey party was landed 12 miles east of the Gaussberg during Operation Windmill in December later that same year.

Wilhelm II Land remains one of the least-visited parts of Antarctica. Apart from Drygalski’s **Gauss**, the only station ever established was Druzhba, set up by the 5th Soviet Antarctic Expedition for the 1959–1960 season at 66°43'S, 86°24'E. The region was included in the comprehensive trigonometric survey of the Australian Antarctic Territory initiated in 1961–1962 by the Australian National Antarctic Research Expeditions.

**See also:** Australian Antarctic Territory; Christensen, Lars (1936–1937); Drygalski, Erich von; Operation Highjump; Operation Windmill; Wild, Frank (1912–1913)
Wilkes, Charles
(1798–1877)

The 1838–1842 United States Exploring Expedition to the Pacific and Antarctica was surrounded by controversy from the first proposal through the prolonged aftermath of its return. Much of it focused on the character of its leader, Charles Wilkes, but also on his reported discoveries, in particular his claim to have discovered 1,500 miles of coast, which other expeditions were subsequently to sail through without sighting land. Had Wilkes proved the existence of a continent, as he claimed, or was he guilty of the greatest of all hydrographic sins—charting land where none existed?

The United States Exploring Expedition, 1838–1842

Although already forty years old, Charles Wilkes was one of the most junior lieutenants in the U.S. Navy when awarded what was widely seen as a poisoned chalice: command of the long-debated government-sponsored exploring expedition. This expedition had been first proposed during the presidency of John Quincy Adams in the late 1820s, the prime promoter being Jeremiah N. Reynolds. Although it received Adams’s enthusiastic support, arrangements could not be finalized during his term in office, and the project was dropped by his successor, Andrew Jackson. An expedition nevertheless did take place (see Pendleton, Benjamin) but under private rather than government sponsorship; it accomplished little exploration or science. On returning from this expedition, Reynolds resumed his very effective campaign, arguing that the time was long overdue for the United States to demonstrate its equality with the Great Powers of Europe through the organization of a major exploring expedition—this being the “big science” of its day. In May 1836, the U.S. Congress was persuaded to provide funding. Jackson now favored the expedition and did what he could to urge his reluctant secretary of the navy, Mahlon Dickerson, to make all arrangements necessary before Jackson’s presidential term ended. All that was needed were suitable ships, officers, and a scientific staff.

None of these proved easy to find. The naval officer initially selected to lead, Captain Thomas ap Catesby Jones, resigned in December 1837 after constantly disputing with Dickerson. Reynolds, having done so much to bring the expedition about, was widely expected to take on a leadership role, but he too fell out with Dickerson. Their argument culminated in the exchange of a series of “anonymous” letters in the newspapers between “Citizen” (Reynolds) and “Friend of the Navy” (Dickerson). Dickerson was certainly no friend to the expedition, but this dispute closed Reynolds’s chances of joining it in any capacity. Responsibility for organizing the expedition was now transferred from Dickerson to Secretary of War Joel Poinsett. By this stage, no senior naval officer was willing to lead the expedition. Lieutenant Wilkes, however, was available and willing, having returned from Europe, where he had been sent to obtain the expedition’s scientific instruments. Wilkes had established a reputation as an able surveyor with scientific interests but had very little sea experience. With no one better qualified coming forward, he was appointed on 20 March 1838, setting himself the apparently impossible deadline of 10 August for the expedition’s date of departure. Due to his energy and determination this deadline was barely missed; the expedition sailed from Norfolk, Virginia, on 18 August.

Wilkes’s expeditionary fleet consisted of six vessels: two sloops-of-war, the 780-ton Vincennes and the 650-ton Peacock; the 230-ton brig Porpoise; the storeship Relief; and two New York pilot boats, the 110-schooner Sea Gull and the 96-ton schooner Flying Fish. With no expedition leader to supervise their fitting out for much of the time, some of these vessels, particularly the Peacock, were in poor condition, with rotten wood hidden beneath coats of paint. No attempt had been made to refit them for conditions in the far south. With their unreinforced timbers and open gun ports, it would be hard to imagine ships less suitable for an Antarctic voyage.

After calling at Madeira, the Cape Verde Islands, Rio de Janeiro, and Rio Negro, the expedition was reunited at Orange Harbor, Tierra del Fuego, on 17 February 1839. This was very late in the year to attempt the next part of Wilkes’s detailed instructions, which was to attempt to better the farthest souths of James Weddell and James Cook. On 25 February, taking command of Porpoise, Wilkes sailed with Sea Gull toward the South Shetland Islands, intending to follow Weddell’s path far south into the Weddell Sea. Meeting thick ice off the west coast of the Antarctic Peninsula, he soon abandoned the attempt and returned to Orange Harbor, along the way looking for the mythical Aurora Islands while sending Sea Gull to search unsuccessfully at Deception Island for a self-registering thermometer left there in 1829 by Henry Foster. Meanwhile, Peacock and Flying Fish had been sent around Cape Horn into the Pacific to attempt to better Cook’s farthest south of 71°10’S achieved at 106°54’W. The two ships were soon separated in a gale. Despite heavy seas and a profusion of icebergs, Flying Fish reached 70°S at 191°16’W, Peacock 68°05’S at 96°06’W.

The fleet now sailed for Valparaiso, reached by all vessels by 17 May with the exception of Sea Gull, which was lost with all hands shortly after leaving Orange Harbor. The slow-sailing Relief was detached from the expedition, being sent ahead to depot supplies in Hawaii and Australia, then returning home via Cape Horn. From July 13 to 29 November, the remaining four vessels charted islands and collected scientific specimens in the South Pacific. After refitting at Sydney, Wilkes set out on 26 December for his next approach to Antarctica, leaving his civilian scientific staff behind to carry out studies in Australia and New Zealand.

Conditions made it impossible to keep together as instructed, and leaking seams and a crew incapacitated by illness soon forced Flying Fish to withdraw. On 16 January 1840, land was sighted from Peacock’s masthead by Lieutenant
William Reynolds and Midshipman Henry Eld at approximately 66°S, 160°E. This sighting, however, was not recorded in Peacock’s log by its commander, Lieutenant William L. Hudson. Not seeing land himself, he remarked that they would probably see more land in the next few days. The date of this sighting, and Hudson’s failure to record it, would prove significant. Three days later, the crews of both Vincennes and Peacock saw land, but again it was not recorded in the log of either ship; in fact, no record of land was entered until 28 January. The significance of these sightings came to light at Wilkes’s court-martial. He was accused of fabricating sighting land on 16 January in order to forestall Jules Dumont d’Urville’s discoveries in the same region on 20 January. Since James Clark Ross, and later Robert Falcon Scott, were later to sail through areas marked as land by Wilkes, considerable controversy has since surrounded these sightings. It is now generally believed that Wilkes was misled by a looming mirage, making land actually below the horizon appear above it and closer to the course he was following. Thus, the hills and mountains sighted have since been shown to exist, but far to the south of where they were charted. Accompanied by Porpoise until 27 January, Vincennes continued west, skirting as close to the coast as possible but never able to land until reaching “Termination Land” at 64°1’S and 97°37’E. This was another controversial feature and was probably the Shackleton Ice Shelf; from there, with his course blocked to the west, Wilkes decided to head back to Sydney on 21 February. Reaching Sydney on 11 March, Wilkes found Peacock already there, having returned on 21 February after experiencing serious damage to both stern and bows when caught in the ice. The remaining ship, Porpoise, headed back to the agreed meeting place at the Bay of Islands, New Zealand, where the scientists were waiting. Porpoise’s voyage had also not been without incident. On 30 January, its commander, Lieutenant Cadwalader Ringgold, had sighted Dumont d’Urville’s expedition. But the ships, due to misunderstanding one another’s movements, rather than bearing up to exchange news, had turned sharply apart, each continuing on their way without communication. To the French and British, this incident confirmed the reputation of the American expedition for excessive secrecy. In fact, while at Sydney, Wilkes got himself into difficulties by not following instructions enjoining secrecy. He passed to James Clark Ross a chart depicting his discoveries and, in particular, the controversial coast that Ross was soon to sail through.

In June 1842, Wilkes reached New York after further survey work in the Pacific. The achievements of his voyage were con-
siderable: much valuable charting work had been carried out, and large collections of scientific specimens were brought back. In the Antarctic, the expedition had come close to Cook's farthest south, and, most significant, had discovered 1,500 miles of previously unknown Antarctic coast. Wilkes himself was certain that he had proved the existence of an Antarctic continent, previous expeditions having been able to prove only relatively small and unconnected landfalls. Indeed, he could claim that despite being equipped with grossly unsuitable vessels and largely inadequate provisions, particularly clothing, he had successfully fulfilled all tasks enjoined in his instructions. Wilkes, however, came back not to national glory but to a court-martial. Although he was acquitted on all counts except one—illegal punishment of seamen—the stain on his reputation remained.

There is no doubt that as a leader of men Wilkes was flawed and in certain respects—notably in a crisis—inadequate. His own enormous industry could not disguise failures resulting from his inability to inspire others. Indeed, far from inspiring others, he was all too inclined to denigrate their achievements. Despite his own scientific interests, he treated his scientists poorly, refusing to share his plans with them as if they were common seamen. It is no wonder that he was heartily disliked by many who sailed with him. However, whatever his deficiencies in management of personnel, Wilkes's achievements were real, and it is doubtful whether the United States Exploring Expedition would ever have put to sea without him.

See also: Cook, James (1772–1775); Dumont d'Urville, Jules (1837–1840); Foster, Henry (1828–1831); Pendleton, Benjamin (1829–1832); Ross, James Clark (1839–1843); Scott, Robert Falcon (1901–1904); Weddell, James (1822–1824); Wilkes Land

References and further reading:

**Wilkes Land (Antarctica)**

This large sector of East Antarctica extends from 100°00' to 136°00'E between Queen Mary Land and Adélie Land. It is named for Charles Wilkes, leader of the United States Exploring Expedition, who was first to sail along much of this coastline in January and February 1840. In some nomenclatures, Wilkes Land is extended east to include Adélie Land, on the basis that Wilke's sighting of this coast may have preceded that of the French explorer Jules Dumont d'Urville. From west to east, the component coasts are Knox Coast, Budd Coast, Sabrina Coast, Banzare Coast, and Wilkes Coast. In nomenclature systems that include Adélie Land within Wilkes Land, Wilkes Coast is referred to as “Clarie Coast” in recognition of Dumont d'Urville's priority of discovery. Far inland, Wilkes Land also includes the region around Vostok at the South Geomagnetic Pole and the elevated ice feature Dome Circe (“Dome C”).

As described in the entry under his name, Wilkes's claim to have charted 1,500 miles of Antarctica's coastline was disputed by some explorers who later found themselves sailing in open water where Wilkes had charted land. These inaccuracies are greatest to the east of 140°E, where Wilkes depicted the coastline many miles north of its true position, probably as a result of being misled by atmospheric conditions. This inaccuracy, however, has resulted in the subsequent reluctance of some scholars to credit Wilkes's charts elsewhere, and indeed many of those charts also showed land some way north of where it actually lies. Thus, whereas Wilkes is credited with the discovery of Knox and Budd Coasts—though the latter is shown too far north—Banzare Coast is viewed as first seen from the air in January 1931 by Sir Douglas Mawson. Discovery of the Sabrina Coast is ascribed to the British sealer John Balleny, who reported seeing land in 117°E in March 1839, though, like Wilkes, he also showed it north of its correct position. If one accepts Balleny's sighting as genuine, then this was the first observation of land in this region of Antarctica. Dispute continues as to whether Wilkes Coast (Clarie Coast) was seen in January 1840 by Dumont d'Urville or was discovered in January 1912 by John King Davis during Douglas Mawson's Australasian Antarctic Expedition.

Lying directly south of Australia, this sector of Antarctica has long been of special interest to Australians. Sir Douglas Mawson in particular made it a major objective of his life's work that, if this was to be claimed by any country, that country should be Australia. On his first expedition (1911–1914), Mawson had hoped to establish West Base somewhere on this coast. In the event, no suitable site could be found, and Frank Wild's party was landed instead on the Shackleton Ice Shelf in Queen Mary Land farther west. It was during this voyage, following as close to the coast as he was able, that Davis discovered Wilkes Coast and then demonstrated numerous inaccuracies in the charts of Wilkes and Balleny. On his second expedition—the British, Australian, and New Zealand Antarctic Research Expedition (BANZARE)—Mawson sailed west along the coast from George V Land, connecting together previously isolated reports of land and in the process discovering the Banzare Coast. Mawson's discoveries were considerably extended by flights made in January and February 1947 during Operation Highjump by the Western Group, which were followed up in January 1948 by landings on Knox and Budd Coasts during Operation Windmill.

The landing on Budd Coast was made to conduct a ground survey of the Windmill Hills. These rocky islands in Vincennes Bay were later selected as the site for the U.S. International Geophysical Year (IGY) station Wilkes (66°15'S, 110°31'E),...
which was opened in January 1957. This was the most northerly of the U.S. IGY Antarctic stations and the only one north of the Antarctic Circle. Apart from Little America, it had the most comprehensive scientific program of all U.S. stations. It was transferred to Australia in February 1959 following the conclusion of IGY and continued to operate until 1969. In January of that year, Australia opened Casey (66°16'S, 110°32'E), a new, year-round station intended to replace Wilkes, which by then lay deeply buried in snow.

In the far interior of Wilkes Land and at an elevation of 3,488 meters lies the Soviet station Vostok (78°28'S, 106°48'E), the coldest inhabited place on Earth. In the winter of 1973, a temperature of −89.2°C (−128.56°F) was recorded, and temperatures regularly descend below −70°C (−94.0°F). Vostok was opened in December 1957 as part of the Soviet contribution to IGY. Because of its location at the South Geomagnetic Pole, the station is well placed for geophysical research. Exploration continues under the ice, where the vast Lake Vostok—equivalent in size to Lake Baikal in Siberia—lies 4,000 meters beneath the surface. The presence of this lake had been suspected for many years on the basis of Soviet seismic work and radio-echo sounding surveys conducted by the Scott Polar Research Institute. Now that a hole has been drilled through to the ice close to the lake's surface, scientists have been discussing how further exploration can best be pursued given the lake's unique importance, as it has remained sealed off from all external influences for tens of thousands of years. The story of how Vostok was first established and has subsequently been maintained by tractor trains from Mirnyy is told in the entry for Queen Mary Land. A notable traverse from Wilkes to Vostok over 900 miles of previously unvisited terrain was made in 1962 by a four-man Australian party led by Robert Thomson in 1962 for the purpose of glaciological and geophysical studies. From the perspective of those manning Vostok, the most uncomfortable episode occurred when a fire destroyed the electric power station in the winter of 1982 and twenty men had to survive without heat or light for six months in bitterly cold temperatures.

Major drilling projects have also been conducted on Dome Circe at field stations established by the U.S. Antarctic Program in the late 1980s and, since 1993, by the French and Italian Antarctic programs at the jointly operated Concordia (74°40’S, 124°10’E).

See also: Australian Antarctic Territory; Balleny, John; Dumont d’Urville, Jules; France; Geomagnetic Poles; International Geophysical Year; Italy; Mawson, Douglas; Operation Highjump; Operation Windmill; Russia; United States; Wilkes, Charles

References and further reading:

Wilkins, George Hubert
(1888–1958)
On 17 March 1959, the American nuclear submarine USS Skate broke through thick ice to rise to the surface at the North Pole. In temperatures of −32°C (−26°F), the crew lined up on deck with a rifle squad near the bow to hold a memorial service for Sir Hubert Wilkins, pioneer polar aviator and the first man to attempt to reach the North Pole by submarine. As the rifles fired three times in a last salute, Wilkins’s ashes were scattered across the swirling snow. Such an honor would not have been paid to an ordinary man, but then Wilkins’s life and achievements had truly been most extraordinary.

George Hubert Wilkins was born and grew up in the Australian Outback. After a colorful early life as a reporter and photographer in the Balkans, West Indies, and elsewhere, he was invited in 1913 to join Vilhjalmur Stefansson’s Canadian Arctic Expedition. During this expedition he was to learn much about Arctic survival and travel from Stefansson and the Inuit. In particular, he noted that ice would often provide possible places for an airplane equipped with skis to land and take off. In 1920, after a brief but distinguished period as a combat photographer in the Royal Australian Air Force during World War I, he joined John Cope’s star-crossed and disorganized expedition in the expectation of being able to make the first flight in Antarctica. When Cope proved incapable of acquiring a plane—and indeed of achieving anything of significance—Wilkins withdrew and applied instead to join Sir Ernest Shackleton, who was also interested in the potential of airplanes for Antarctic exploration. It has been suggested that Shackleton took Wilkins on with a view to training him as a potential leader to continue his own polar work. If true, Shackleton had chosen well. Wilkins joined as naturalist, photographer, and reserve pilot. But again he was disappointed when the expedition never had an opportunity to pick up its airplane from Cape Town before Shackleton’s untimely death on South Georgia.

In 1923, Wilkins gained his first leadership experience when he was appointed to take charge of an expedition to northern Australia to collect specimens for the British Museum. Much as he loved the desert, however, he was to make his name in the polar regions during a succession of pioneering expeditions first to the Arctic and then the Antarctic, in which he was able to demonstrate the full potential of the airplane for polar exploration. Wilkins was never interested simply in “firsts” or in Pole-hunting. His great hope was that the results of his and other expeditions would lead to the establishment of a network of meteorological stations in the Arctic and Antarctic, resulting in a significant improvement of long-range weather forecasting worldwide and thus in the alleviation of famines.

An Inauspicious Beginning to Ambitious Plans to Explore the Arctic Ocean, 1926
North of North America lays the largest expanse of unexplored territory in the Northern Hemisphere. This was the
area that Sir Ernest Shackleton had wished to investigate in *Quest* before the withdrawal of Canadian government support caused him to head south instead. Ejnar Mikkelsen had spent two years here searching in vain for “Keenan Land,” where distant mountains had been reported in the 1870s by whalers, some way north of Point Barrow on Alaska’s Arctic coast. Wilkins’s plan was to make a series of reconnaissance flights, using Barrow as his logistics base. Initially, he had wanted to use an airship, due to its greater range and payload, but none was available, so he decided instead to rely on airplanes. His first task would be to fly in sufficient stores and equipment from Fairbanks in central Alaska, the farthest north reached by ordinary transportation.

Obtaining the backing of the North American Newspaper Alliance, the American Geographical Society, and a number of wealthy people from Detroit, Wilkins purchased two Fokker monoplanes, one (*The Detroiter*) a big tri-motor with Wright Whirlwind engines, the other (*The Alaskan*) a single-engine plane with a 400-horsepower water-cooled Liberty engine. The expedition began disastrously when a journalist was killed by a propeller after *The Detroiter* had ploughed into a snowbank on its first attempt to take off; then *The Alaskan* stalled as pilot Carl Ben Eielson and Wilkins came in to land, with considerable damage being done to the plane but not to the crew. Things got worse when Major Thomas Lanphier, piloting *The Detroiter* with Wilkins again on board, stalled above the runway but from a greater height and with greater damage resulting. Again, the crew emerged unharmed. With both planes temporarily out of action, and all misadventures widely reported in the newspapers, Wilkins came under considerable pressure to appoint new pilots. Richard Byrd and Roald Amundsen were competing to be first the reach the North Pole by air, and it now looked as if Wilkins would be left behind. For Wilkins, however, being first to the Pole was a matter of small concern. He was much more interested in searching for new land. Loyally, Wilkins stood by his pilots, appreciating that their errors had been caused by optical difficulties in estimating the height of their planes above the narrow runway, lined as it was on both sides by tall snowbanks.

Three weeks later, on 31 March 1926, Wilkins and Eielson took off for Barrow in *The Alaskan*. Across their path lay the Brooks Range, marked on their map as 1,800 meters high. Climbing to their ceiling of 2,740 meters, they found mountains still towering above them and had to wind their way along narrow valleys before reaching a wide-open plain and beyond that the unexplored Arctic Ocean, over which they ventured out for 150 miles before heading back to find Barrow, where they landed safely despite whirling snow in a blizzard. Two more flights between Fairbanks and Barrow followed in *The Alaskan*. During the first Wilkins broke his arm in two places but carried on regardless; he broke his arm in a third place on the return flight after quietly bandaging it himself and telling no one. On one occasion, *The Alaskan* was down to its very last liters of fuel before reaching Fairbanks. On another, the grossly overloaded plane was so close to the mountain slopes in the Brooks Range that its wheels were sent spinning as it brushed over a high crest. On the fourth flight, *The Alaskan* crashed on takeoff from Fairbanks, and Wilkins had no choice but to use *The Detroiter*, the much less reliable tri-motor. The flight was made despite the two pilots quarrelling in the cockpit and at one stage struggling with the controls—one wishing to go on, the other to return. In all, more than 6,000 miles were flown north of the Arctic Circle, mostly over unexplored territory.

**Crash-Landing in the Arctic Ocean, 1927**

Although his 1926 work had provided essential groundwork for planned later flights, Wilkins inevitably appeared something of a laggard in comparison to Byrd and Amundsen, who enjoyed spectacular achievements that same year. But priority to the North Pole had in any case been higher on his sponsors’ than his own agenda. Backed now by the *Detroit News,*
Wilkins returned to Fairbanks in February 1927 with *The Detroiter* and two ski-equipped Stinson biplanes. Amundsen's 1926 flight in the airship *Norge* across the Arctic Ocean via the North Pole had shown that no substantial landmass was likely to be found on the meridian between Barrow and the North Pole. Instead, Wilkins planned to concentrate his flights on regions to the northwest and northeast of Barrow. Finding that weather conditions favored a flight to the northwest, Wilkins and Eielson took off on 29 March, aiming to fly to 80°N, 180° E and W to examine the sector bound on the east by the flight of *Norge* and to the west by the drift of *Jeannette* (see De Long, George). Five hours later and 450 miles out over the pack ice, they were forced down by a misfiring engine at 77°45’N, 175°W. This was the first landing on the Arctic pack and was made without difficulty on a relatively level ice floe. Wilkins had always intended to land on the ice and now spent a half-hour taking soundings, from which he estimated the depth of Arctic Ocean at more than 4,800 meters, the deepest measurement yet obtained for this ocean and making nearby land improbable. Two hours’ work on the engine restored it to a condition where a takeoff could be tried, though it was not until the third attempt that they finally got into the air—and then only for ten minutes before being forced down again. In heavily blowing snow and a biting wind, they spent another hour repairing the engine before they were again airborne in atrocious conditions and growing darkness. For two hours they flew toward land, being held back by headwinds and able to read the controls only by torchlight, the sun long since set. The engine finally died, and from an altitude of 1,500 meters they glided down, hoping to find smooth ice beneath. Instead, they collided with a snowdrift that tore off the undercarriage and broke a wing but left them and their plane otherwise undamaged. They were 75 miles from land; their only hope was to walk to Barrow over the ice. They were prevented from starting out for five days by a blizzard; when they finally did, the ice had drifted northeast so that they were 100 miles northwest of Barrow before they were able to set out. Wilkins had learned much from Stefansson about Arctic survival skills, and all his knowledge was to be fully tested in this flight. Wilkins showed outstanding skills as a navigator, which the first 1,300 had never before been overflown. During the comparative lack of success during his campaigns of 1926 and 1927 meant that he no longer had wealthy sponsors, and in order to purchase a single-engine Lockheed Vega skiplane, he had first to sell his three other planes. On 15 April, Wilkins and Eielson took off on the third attempt across the Arctic Ocean, the planned course taking them over previously unexplored territory. Thus, rather than fly directly to the North Pole—a route already taken by Amundsen in *Norge*—Wilkins set out to fly south of the Pole to 84°N, 75°W, north of Ellesmere Island, overflying the area where Robert Peary had reported Crocker Land and Frederick Cook Bradley Land. Despite clear weather, no land could be seen here or anywhere else along their route; the condition of the ice also did not suggest that land was just out of sight. Having reached his target point, Wilkins turned south until he could see northern Ellesmere. Thirteen hours out from Barrow and with the accuracy of his navigation confirmed, Wilkins now had a choice: land at Cape Columbia to wait out the storm he had forecasted for Spitsbergen around the time of their planned arrival, or continue on. He decided on the latter, and Spitsbergen was sighted seven hours later. The storm arrived as predicted, forcing Eielson to land on Dead Man’s Island in the extreme northwest of Ice Fjord, where they remained for five days until the weather improved. Getting back into the air proved difficult. With Wilkins outside pushing the plane, Eielson twice managed to take off. Both times Wilkins was left stranded on the ground, being unable to climb back on board, and on the second occasion he was hanging from a rope by his teeth as the plane began to lift into the air. The third time, Wilkins stood with one foot inside the cockpit hatch and pushed with the other until the plane finally loosed itself from the snow and hurtled forward. Climbing to 1,000 meters, they could see across the fiord the wireless masts of their intended destination of Green Harbor, where their arrival was announced to the world by the Norwegian government wireless station. In all, they had flown 2,500 miles, of which the first 1,300 had never before been flown. During this flight, Wilkins showed outstanding skills as a navigator, in particular flying across rather than along meridians. He was rewarded by a shower of honors, including a knighthood and the Royal Geographical Society’s Patron’s Medal.

**The First Antarctic Flights, 1928–1929**

Wilkins next turned his attention to Antarctica, where for many years he had wished to fly; indeed, he considered his
Arctic flights mere preparation. Sponsored by the American Geographical Society and by William Randolph Hearst’s American News Service, to which all rights were sold, the Wilkins–Hearst Expedition set out from New York on 22 September 1928. It reached Deception Island in the South Shetland Islands on 6 November on board the whaling ship Hektoria. With secure financial backing, Wilkins had been able to purchase two Lockheed Vega monoplanes and to bring with him two other pilots—Eielson and Joe Crosson—as well as an engineer and a radio operator. His plan was to fly from the Antarctic Peninsula to the Ross Sea, for which he needed a landing strip—on snow or firm sea ice—in order to be able to take off with a full load. Unfortunately, this was not possible at Deception. Even this early in the season, the bay ice was unusually thin, with little snow lying on the beach nearby. The first Antarctic flight took place on 16 November with Eielson as pilot and Wilkins as passenger, making a wheeled takeoff from the short airstrip on the beach. The aim was to scout for a more suitable operating base farther south, but they were forced back after a brief flight when the weather closed in. Ten days later, both planes took off in better weather but were again unable to find a better base. Disaster was narrowly avoided some days afterward, when Eielson attempted a landing on the ice within Deception’s sheltered bay. The ice was thinner than it had seemed from the air; Eielson crashed straight through but fortunately without significant damage to himself or the plane.

Having leveled and lengthened the runway as far as possible, Wilkins and Eielson took off on 20 December with as much fuel as they dared and with emergency provisions for two weeks. Flying across Bransfield Strait at 1,800 meters, they were surprised to see the high plateau of the Antarctic Peninsula still above them, and it was not until they had climbed to 2,500 meters that they were able to cross over the peninsula to fly down the little-known east side. Wilkins now viewed areas of Antarctica that he had planned to survey by boat and on foot with John Cope’s abortive expedition of 1920–1922. How much easier to survey them from the air! After flying for five hours and with fuel tanks half-empty, the two planes turned about at a farthest south of 71°20’S, 64°15’W, naming the unreached land beyond them “Hearst Land” for their sponsor. Eleven hours after leaving, they landed again at Deception, having flown 1,300 miles. Much of the land seen was previously undiscovered, and only some of the coastal areas had been explored in any detail. Not surprisingly given the circumstances, Wilkins’s hurriedly sketched maps were later found to contain errors. In particular, his report that the peninsula was cut through by a series of straits was soon proved incorrect by the British Graham Land Expedition, which showed the “ice-filled straits” to be glaciers, an understandable mistake to make from the air (see Rymill, John).

Further Antarctic Flights and Discovery of the Insularity of Charcot Island, 1929–1930

Wilkins returned to Deception Island in September 1929, this time accompanied by Parker D. Cramer and A. H. Cheesman as pilots, neither Eielson nor Crosson being available. One way or another, Wilkins was determined to avoid having to rely on wheels and would instead use skis. With wheels on the plane, Deception’s runway was too short and twisting to take off with a full load of fuel, thus restricting his range and forcing him to return to Deception to land (for nowhere else could he be sure of finding sufficient level ground). With skis, however, there would surely be many places where he could land—as he had already proved in the Arctic. Wilkins’s initial hope was that the previous year’s thin ice and lack of snow at Deception had resulted from unusually mild conditions that would not be repeated. In any case, an early start would guarantee him suitable conditions, at least during the first part of the season. Again, however, even in September, he found little snow on land, and the bay ice was even thinner than in the previous year.

Fortunately, Wilkins had an alternative. The Discovery Committee of the British Colonial Office had been so impressed by his work during the previous season that it had offered him the use of RRS William Scoresby, one of two ships employed in the series of scientific expeditions known as the Discovery Investigations. On 12 December, William Scoresby left Deception with one of Wilkins’s two planes on board. It sailed south for 400 miles to Adelaide Island without finding sufficient open water for a seaplane or suitable ice surface for skis. On 18 December, returning north, they reached the sheltered anchorage of Port Lockroy, Wiencke Island, where the sea ice had now gone out. Making the most of his opportunity, Wilkins took off the next day and climbed to 3,000 meters, crossing the Antarctic Peninsula to Evans Inlet before the uneven running of the engine led him to turn back. On his return, apparently flat ice was spotted in Beascochea Bay, about 100 miles south of Port Lockroy, but when the plane and its supporting vehicle—an Austin Seven car—were placed on the ice, they began to sink in temperatures well above freezing and had to be hurriedly hoisted back on board. William Scoresby next followed the edge of the pack ice in the hope of finding flat ice farther south. On 27 December, Wilkins finally got his plane airborne again and headed toward Charcot Land. Poor visibility forced him to fly below 150 meters in the knowledge that close by were mountains over 600 meters high. Going on was perilous, and after glimpsing dark cliffs ahead, Wilkins turned back. Two days later he was in the air again, this time in much better conditions. By following the coastline around he was able to prove that French explorer Jean-Baptiste Charcot in 1910 had indeed discovered an island rather than part of the continent. This was the main achievement of this season’s flights, though Wilkins was also to make a survey flight from Port Lockroy north to Deception along Gerlache Strait and beside the Antarctic Peninsula on 5 January.
1930. He also flew as far south as 73°S, 101°W from the vicinity of Peter I Island on 1 February, but in such conditions that little could be seen and nothing new discovered. He was still no closer to his dream of completing the first transantarctic flight.

*The First Submarine Voyage toward the North Pole, 1931*

It was not sufficient for Wilkins to have pioneered aviation by airplane in the Arctic and Antarctic. Having flown many hours above the Arctic Ocean, he knew better than anyone that even during winter it was not covered by a single surface of solid ice. Instead, shifting ice floes formed pressure ridges where they smashed together and leads of open water where they drifted apart. A submarine should, in principle, be able to surface at many points. Typically, Wilkins's plan to reach the North Pole by submarine was inspired by a much larger vision than merely the desire to achieve a first. He foresaw a future in which submarine cargo vessels would eventually sail through the Arctic Ocean, drastically cutting shipping routes between North America and Europe, together with a network of meteorological stations camped out on the ice and kept supplied by submarines.

Understanding that his plans might require some explanation, Wilkins first outlined them in a book. It was successful in persuading a number of distinguished scientific bodies to back him, but the general public remained skeptical and suspected a publicity stunt. Wilkins therefore had to provide much of the funding from his own savings, though he did receive a substantial donation from Lincoln Ellsworth, heir to an industrial fortune and himself a polar explorer of some distinction, having partnered Roald Amundsen during his North Pole flights of 1925 and 1926. This expedition was to be the first of a series on which Wilkins and Ellsworth were to collaborate.

An obsolete O-class submarine built in 1918 and due for scrapping under the terms of an international treaty was now made available by the U.S. Navy. It was named *Nautilus* by Wilkins as a tribute to Jules Verne and his prophetic novel *Twenty thousand leagues under the sea*. It had a submerged speed of 3 knots, and its battery had a range of 125 nautical miles before it needed to be recharged. Since Wilkins expected to find open water every 25 miles, this appeared to provide a substantial margin of safety, as did its maximum diving depth of 60 meters, significantly deeper than he expected the ice to reach even under pressure ridges. Chartered to its constructors, Simon Lake and Commander Sloan Danenhower, for $1 per year for five years, it was fitted with a number of special features for traveling under ice. In addition to strengthened bows, these included a snorkel-like device to allow fresh air into the submarine through a hollow ice-cutting drill in case it became trapped below ice for any length of time, as well as a sledge-deck formed out of steel runners on a wooden superstructure. The purpose of the latter was to allow the submarine to slide along the bottom of the ice in a manner analogous to a sledge above it.

After a series of tests at New York in the Hudson River, *Nautilus* was judged ready to sail on 4 June, captained by Danenhower. While it was crossing the North Atlantic substantial damage was discovered in the engine room, putting the engine temporarily out of action and requiring three weeks' repair in England. At the time, Wilkins put this down to mishandling, but later he was to suspect something more malicious, for it was already becoming clear that some of the crew members shared the misgivings of the general public about his venture.

Slow to start from New York and further delayed in England, Bergen was reached only on 1 August; there the chief scientist, Dr. Harald Sverdrup, came on board. From Bergen, *Nautilus* made its way north along the Norwegian coast to Spitsbergen, where trials finally began on 19 August, more than two months later than Wilkins had hoped. On 22 August, Danenhower gave orders for *Nautilus* to dive for the first time beneath the ice. There was no response. A diver was sent down and reported that both diving rudders were missing. They could not have simply fallen off. When the submarine was anchored at Bergen, someone had sabotaged the submarine by ensuring that after a few days at sea they would drop away. Clearly there was a saboteur on board, and most likely the earlier damage in the engine room had been deliberate and not accidental. The fact that at least one crew member was determined to do all that he could to avoid diving under the ice did not put off Wilkins. He had always intended to use the sledge-deck to slide underneath rather than dive beneath the ice. Now, this was the only option available to him. While preparing to make use of the sledge-deck, Wilkins continued to provide his scientific staff with every opportunity for carrying out their studies as *Nautilus* sailed north to 81°59'N at 17°30'E—the farthest reached by a vessel in this region—and then west toward Greenland. Meeting with ice again on 31 August, Danenhower ordered the ballast tanks partially filled, and *Nautilus* slowly sank beneath the edge of the pack. As soon as the ship began to move forward, the sound of ice scraping against the metal hull was so alarming that Danenhower immediately withdrew. When no signs of damage could be discerned, the ballast tanks were again filled, and *Nautilus* maneuvered under the ice for about an hour; all the while, horrendous sounds mysteriously magnified within the submarine. It was now too late in the season for further experimentation. On 7 September, Wilkins ordered an end to the Arctic voyage and took *Nautilus* back to Bergen, where it was scuttled per prior agreement with the U.S. government.

Although widely regarded as unsuccessful, Wilkins's experimental use of a submarine to investigate the Arctic Ocean was not without its achievements, quite apart from pioneering a form of transport that decades later would become central to exploration. Despite the sabotage to *Nautilus*, Wilkins had proved the possibility of conducting an extensive scientific program from a submarine. For the first time, bottom samples had been obtained from the Arctic Ocean, and a gravity meter had been used on a submarine. A submerged ridge north of...
Svalbard had also been charted. Nevertheless, because Wilkins had spoken of reaching the North Pole and had failed to get anywhere near it, his expedition was portrayed as a failure and treated with ridicule by the press.

Later Expeditions to Antarctica and the Arctic

Although Wilkins was to lead no further exploring expeditions, his career in the polar regions did not end with Nautilus. The millionaire Ellsworth, having previously sponsored a number of expeditions in which he had participated but not led, including Wilkins’s most recent undertaking, decided that he wished to be his own expedition leader. Making the first flight across Antarctica had been the goal of Wilkins’s 1928–1929 and 1929–1930 expeditions, but he now unselﬁshly supported Ellsworth’s plans to achieve the same objective. He provided Ellsworth with whatever advice he could offer—who could give more?—and acted as chief expedition organizer during three expeditions in 1933–1934, 1934–1935, and 1935–1936. Time after time, misfortune befell Ellsworth before he at last achieved his ambition.

In August 1937, Wilkins was back in the Arctic to play a prominent role in the search for the Soviet aviator Sigismund Levanevskiy, lost during a trial flight across the Arctic Basin. Before contact was lost, Levanevskiy’s last recorded position showed him just past the North Pole on a route from Moscow to Fairbanks, Alaska, some 1,200 miles out from land. Wilkins’s immediate ofer of help was gratefully accepted by the Soviet Union, which provided him with funds to purchase a Consolidated Catalina long-range flying boat. Accompanied by former Antarctic colleagues Herbert Hollick-Kenyon and A. H. Cheesman, Wilkins hurried north. From Coppermine and then Aklavik in northern Canada, four ﬂights were made between 22 August and 17 September along a series of meridians toward the Pole; there was no sign of the missing man. By mid-September, the annual freeze-up had begun. With the flying boat no longer usable, Wilkins and his two pilots returned to Washington, D.C., where they reported to the Soviet embassy. A twin-engine Lockheed Electra equipped with skis was purchased, in which they returned to Aklavik. In January 1938 they were able to resume their ﬂights, which now had to be carried out by moonlight in the sunless Arctic winter. Nothing was seen of Levanevskiy, despite many hours of searching over the Arctic Ocean and south across the mountains of northern Alaska. Much was learned, however, of the problems to be surmounted in high arctic aviation and about the behavior of the ever-shifting pack ice. By the time instructions were received from the Soviet embassy to terminate the searches, Wilkins had ﬂown more than 45,000 miles, most of them over areas never previously overﬂown.

Wilkins’s last expedition to Antarctica in 1938–1939 was to place him in an awkward situation. Again he was accompanying Ellsworth as adviser and chief organizer on an apparently innocuous expedition involving a ﬂight over Enderby Land. But after they departed Cape Town, Ellsworth revealed that he had been given secret instructions by the U.S. State Department to claim whatever territory he saw for the United States and to disregard existing Australian claims. As a loyal Australian citizen, Wilkins found himself impossibly placed. He escaped this dilemma by secretly posting containers reasserting the Australian claim wherever he had the opportunity!

This episode ended collaboration with Ellsworth, not to mention Wilkins’s active career in exploration. As a consultant, he continued to visit the polar regions until shortly before his death. His last visit to Antarctica was a ﬁve-month stay with Operation Deep Freeze (1957–1958) to help with the testing of equipment and emergency rations. The 1958 voyage of the nuclear submarine USS Nautilus across the Arctic Basin (see Anderson, William) gave Wilkins enormous satisfaction, fulﬁlling his prophecies of the important role to be played by submarines in Arctic exploration. It was most ﬁtting that USS Skate was able to fulﬁl his last wish—to have his ashes scattered at the North Pole.

See also: Airplanes; Amundsen, Roald (1926); Anderson, William; Antarctic Peninsula, East Coast; Charcot, Jean-Baptiste; Charcot Island; Cook, Frederick (1907–1909); Cope, John; Deception Island; Discovery Investigations; Ellsworth, Lincoln; Mikkelsen, Ejnar (1906–1908); Operation Deep Freeze; Peary, Robert (1905–1906); Stefansson, Vilhalmur (1913–1918); Submarines; Wiencke Island; Wild, Frank (1921–1922).

References and further reading:


Willoughby, Hugh
(d. 1554)

Sixty-two men died when an expedition attempted to winter in the Arctic for the ﬁrst time. Led by the English nobleman Sir High Willoughby, this expedition was also the ﬁrst to search for the Northeast Passage.

The First Northeast Passage Expedition Ends in Disaster, 1553–1554

Whereas Henry VIII had shown little enthusiasm for voyages of exploration, the young King Edward VI and his council took a different view. Established markets for English cloth were saturated, and new ones had to be found. Portugal and
Spain had demonstrated just how profitable exploratory and trading voyages could be. With those two countries controlling the routes south, England retained the possibility of exploring to the north. For London merchants, the prospects of developing trading contacts to the northeast, where some shipping already occurred, appeared much greater than to the northwest. Yet both routes might ultimately provide a most profitable shortcut to the spice lands of China, Japan, and the Indies. Under the governorship of the experienced geographer and explorer Sebastian Cabot, sufficient capital was raised to fit out three ships in which 111 men were to sail, eleven of them merchants. So sanguine were they of reaching the Far East on this first attempt that the ships’ bottoms were expensively sheathed with lead to protect them against the worms rumored to live in that region.

Sir Hugh Willoughby himself was no sailor. With many applicants to lead the expedition, he was chosen primarily for his prowess as a soldier and “his tall personage.” Perhaps it was hoped that this would impress any peoples with whom contact was made. Others were selected to provide the necessary nautical expertise, particularly Richard Chancellor, pilot major of the English fleet, and Stephen Borough. Both would sail in the 160-ton Edward Bonaventure; Willoughby was to sail in the 120-ton Bona Esperanza, with Cornelius Durforth serving as captain of the 90-ton Bona Confidentia.

The three ships departed London on 10 May 1553. Passing Greenwich, they saluted the court and young king, now lying on his deathbed, with shouts and cannon fire. Making landfall in Norway on 14 July, Willoughby’s fleet was scattered by a storm just north of the Lofoten Islands in early August. When fall in Norway on 14 July, Willoughby’s fleet was scattered by a storm just north of the Lofoten Islands in early August. When dawn came, Bona Confidentia was in view, but not Edward Bonaventure. Now bereft of his two most capable navigators, Willoughby sailed first to the northeast and then to the southeast in his hunt for Vardo, the agreed rendezvous. Chancellor in fact spent several days waiting for him there; meanwhile, Willoughby sailed aimlessly farther east, eventually striking land at 72°N, almost certainly Novaya Zemlya. Unable to land because of ice and shoaling water, and noting no signs of habitation, Willoughby decided to turn about to look for a safe harbor where Bona Confidentia, now leaking badly, might be repaired. After an extended search, a suitable place was found on 18 September at the mouth of the Varzina River (68°20’N, 38°30’E) on the north coast of Lapland. There, with the navigable season evidently drawing to a close, Willoughby realized that he would have to winter, but not before first attempting to make contact with the region’s inhabitants. Parties were sent out to the south-southwest, west, and southeast, but after traveling three to four days all returned without success. Clearly, the expedition would have to winter unaided. At this point Willoughby’s brief journal ceases.

Perhaps because as a soldier he lacked the seaman’s tradition of maintaining a log, no record was maintained as to what then ensued. The expedition had been supplied with food for eighteen months, and quantities of woolen products had been carried aboard by the merchants, so neither lack of food nor cold would explain the fatalities. When the two ships were reached by Russian fishermen the next year, a will was found indicating that Willoughby and at least the majority of his men were still alive in January 1554, by which time they had spent seven months on the Varzina. They must have died soon afterward—but from what? A letter from the Venetian ambassador in London records the bodies of the men being so positioned as if life had suddenly been struck out of them, some writing and others in the act of eating. There appears to have been a catastrophic accident, and nothing seems more likely than carbon monoxide poisoning (Gordon 1986). Perhaps they had sealed the ship to keep out the intense cold, but in doing so they had also sealed in the poisonous fumes from their stoves.

Willoughby’s disastrous fate did not, however, put an end to English expeditions searching for the Northeast Passage. Chancellor and Edward Bonaventure succeeded in establishing trading contacts with the Russian tsar, and many more expeditions were to follow.

See also: Borough, Stephen; Cabot, Sebastian; Chancellor, Richard; Northeast Passage; Novaya Zemlya

References and further reading:

Wilson, Edward
(1872–1912)
In his classic account of Robert Falcon Scott’s last expedition, Apsley Cherry-Garrard called it “the worst journey in the world.” Perhaps surprisingly, this was not a reference to the fatal journey undertaken by Scott to the South Pole. Rather, it was a midwinter journey, during the same expedition, that was led by the English naturalist Edward Wilson to study the emperor penguin colony at Cape Crozier, Ross Island.

A Winter Journey to Collect Some Penguin Eggs, 1911
Standing sometimes 130 centimeters high and weighing up to 40 kilograms, the emperor is the largest of all the penguins. The Cape Crozier colony had been discovered by Reginald Skelton in 1902 during Scott’s previous expedition, and no other colony was known to exist at the time. In the belief that penguins were particularly primitive among bird species, and the emperor penguin most primitive of all, Dr. Edward Adrian Wilson had tried on two occasions during this expedition to collect an egg, anticipating that by studying the embryo some connection might be established between penguin feathers and reptilian scales, thus proving a close relationship between birds and reptiles. In November 1902 and again in September 1903, suitable eggs could not be found. It was clear that, unlike as it seemed, this species laid its eggs during deep
midwinter. To acquire an egg was Wilson’s chief reason for deciding to return to Antarctica.

To assist Wilson’s studies, Scott had originally planned to winter at Cape Crozier, a site that also offered the advantage of leading directly on to the Ross Ice Shelf, his route south toward the Pole. Scott, however, was unable to land there, instead being forced to establish his winter station on the other side of Ross Island at Cape Evans.

On Scott’s second expedition, Wilson was head of the scientific staff, as well as the vertebrate biologist and artist. His watercolors and drawings remain unequalled for their depiction of Antarctic landscapes, atmospheric effects, and wildlife. A qualified doctor, Wilson had also served as assistant physician during the first expedition; with Scott and Ernest Shackleton, he had been among the party that achieved the then-record south of 82°17’S in December 1902. When Scott decided to return to Antarctica, he was particularly keen that Wilson should go with him. Scott relied heavily on his advice and, just as important, knew that Wilson’s presence and example would provide inspiration and comfort to the less experienced members of the party.

Cape Crozier was 65 miles from Cape Evans. To get there, Wilson and his chosen companions, Cherry-Garrard and Lieu-tenant Henry Robertson Bowers, would have to trek across the sea ice south to Hut Point, climb onto the Ross Ice Shelf, and then head northwest across the ice shelf to Cape Crozier. It did not seem too great an undertaking, except for one fact: the journey had to be made in the deepest midwinter, when no previous party had ever attempted to travel for more than a few days. They were to be away thirty-six days.

On 27 June 1911, the three men set out with supplies and equipment for six weeks on two sledges, hauling a total load of 343 kilograms without assistance from dogs or skis. To begin with, they had to make their way in near-total darkness, unable even to see where they were placing their feet. Worse than the darkness was the cold, regularly below –40°C (–40°F) and falling to –61°C (–77°F) on 5 July. Often the temperature did not rise above –51°C (–60°F) all day. In such cold, their breath froze to form ice masks around their mouths, clothes soaked in perspiration encased them in ice, and at the start of each day, upon exiting the tent, they had to stand ready-hunched for the sledge harness so as to be frozen into a position suitable for pulling. Rest brought no relief; only Bowers was able to sleep as night temperatures plummeted, and only the heat of their bodies thawed the iced-up sleeping bags. Once on the ice shelf, they found it impossible to move the sledges
through the soft snow without relaying: all three men worked together to haul each sledge in turn and thus moved forward only 1 mile for every three traversed.

Eventually, Cape Crozier was reached on 15 July. There, they built a stone igloo roofed by a canvas sheet on a knoll 240 meters above the penguin colony, some 4 miles away. Reaching the colony in the darkness across a zone of pressure ridges proved difficult, and on the second attempt, on 20 July, they managed to do so. To their disappointment, they found only 100 birds. Three birds were killed and skinned; with five eggs, they clambered back to their igloo, the shortsighted Cherry-Garrard breaking two of them during the climb.

Wilson's birthday was 23 July, and it was a day not to be forgotten. A violent gale arose, first uprooting their tent, which had been pitched outside the igloo, then slicing their canvas roof into fragments as they lay huddled for minimal protection in their sleeping bags underneath. Without their tent, they could not hope to survive, as they had nothing else to shelter them on their way home. The blizzard now blown out, the three forlornly went out to search for the tent, and by some miracle it was found, completely undamaged, by Bowers.

It was clearly time to return. On 25 July they began their journey, making much improved speeds over better surfaces with reduced loads and steadily increasing light to see the way. They made it to Hut Point six days later, and three haggard figures stumbled into the hut at Cape Evans at 10 P.M. on 1 August. They literally had to be cut out of their clothes.

Wilson and Bowers were to die with Scott just 11 miles short of One Ton Depot during their return from the South Pole. Cherry-Garrard led their last hope of relief, a dog team sent out by Dr. Edward Atkinson to provide assistance to the Polar Party during the last stages of its journey. At One Ton Depot, Cherry-Garrard waited until he had no choice but to return. For the rest of his life, he blamed himself for not traveling farther south where—just possibly—he might have met Scott. His book The worst journey in the world is his testament to the expedition but, most of all, to his two friends, Wilson and Bowers. He also tells what happened to the Polar Party during the last stages of its journey. At One Ton Depot, Cherry-Garrard waited until he had no choice but to return. For the rest of his life, he blamed himself for not traveling farther south where—just possibly—he might have met up with Scott. His book The worst journey in the world is his testament to the expedition but, most of all, to his two friends, Wilson and Bowers. He also tells what happened to the emperor penguin eggs brought back by dint of such extreme endeavor from Cape Crozier. After handing over the eggs to a custodian at London's Natural History Museum, he was then kept waiting for what seemed an eternity before being handed a receipt. The results of the examination were not published until 1934. The penguin embryos provided no evidence of any relationship between penguins and reptiles.

See also: Atkinson, Edward; Ross Island; Scott, Robert Falcon

References and further reading:

Women Explorers

Women have participated in polar exploration since at least the eighteenth century and long before that among indigenous Arctic peoples. The belief that expeditions should be conducted exclusively by men appears to have resulted from the dominance of exploration by single-sex expeditions organized by national navies, for whom the presence of women on ships traditionally presented problems for discipline. It also reflected changing views of what was or was not appropriate for a woman. Whatever the explanation, by the late nineteenth century and through much of the twentieth century polar exploration was viewed as a male activity from which women were excluded.

To the Amerindian Matonabbee, no extended journey should be attempted without women who were “made for labor; one of them can carry, or haul, as much as two men might do. They also pitch our tents, make and mend our clothing, keep us warm at night.” They also required very little feeding, since “the very licking of their fingers in scarce times is sufficient for their subsistence” ( Hearne 1958, 35). On many occasions when explorers traveled in company with native peoples, women made an important contribution to the party. Thus, southeast Greenland was first reached and explored by Europeans in umiaks—the traditional women's boat—by the Danish explorers Peder Walløe (1751–1753), Wilhelm Graah (1828–1831), and Gustav Holm (1883–1885). While the Inuit men ranged alongside in their kayaks to hunt, the umiaks carrying the explorers and their supplies were rowed by women. The most helpful maps were also often drawn by women. Edward Parry’s discovery of Fury and Hecla Strait in 1822 was made on the basis of maps drawn by the Inuit woman Iliquitig at Winter Island, of whom John Barrow wrote, “to her alone...is the merit due of the discovery of the extreme northern boundary of America” (1846, 179). John Ross obtained his most detailed maps of the Gulf of Boothia and Boothia Peninsula from Tiriksiu in 1830, while another Inuk woman drew a fine map of the Alaskan coastline in 1837 for Thomas Simpson (see Dease, Peter).

The first nonnative women to visit the polar regions were wives of whalers, sealers, fur traders, and explorers. The earliest known example—and thus possibly the first woman explorer—was Tatyana, the second wife of Lieutenant Vasily Pronchishchev, who was a member of her husband’s detachment of the Great North Expedition (1735–1737). The wife of second-in-command Francis Smith sailed with William Moor’s expedition in 1746–1747. Robert Peary was keen for his wife, Josephine, to participate in his expeditions to northwest Greenland in 1891–1892 and 1893–1895. Fridtjof Nansen's...
wife, Eva, was similarly eager to sail in Fram but withdrew when she became pregnant with their first child—unlike Josephine Peary, who gave birth to Marie Ahamito—"the "Snow Baby"—in 1893. More recently, Thomas and Ella "Jack" Manning made a highly effective team when they explored Foxe Basin between 1938 and 1941. Although Jack Manning essentially took on the lifestyle and duties of an Inuit woman—making clothes, preparing food, tending the blubber lamp, and so on—and participated in her husband's travels, Josephine Peary never journeyed far and was less inclined to leave her southern mores behind. Some time prior to his marriage, Peary had expressed his philosophy of the role of women on expeditions in notes written in 1885 before his first Arctic expedition. "The presence of women an absolute necessity to render the men contented; farther than this they are in many respects as useful as men, and nearly if not quite their equals in strength. . . . Though the results may be failure with women it is sure to be without them" (quoted in Weems 1967, 71–72).

For many years the only women visiting the Antarctic were the wives of explorers or whaling captains. Andrée Aubert de la Rüe was responsible with her husband, Edgar, for carrying the wives of explorers or whaling captains. Andrée Aubert de la Rüe was responsible with her husband, Edgar, for carrying the wives of explorers or whaling captains. Karoline Mikkelsen, wife of the whaler Klarius, is generally credited with being the first woman to set foot on Antarctica on 20 February 1935. The first new discovery was made on 4 February 1937, when the Prince Harold Coast was seen for the first time by Ingrid Christensen and two others. Ingrid was the wife of Lars Christensen (see her entry). First to winter on the continent were Edith Ronne and Jennie Darlington during Finn Ronne's expedition of 1947–1948.

Those who were not wives got their first opportunity to travel to the polar regions in traditional female occupations, such as cook or nurse. Thus, the first nonnative woman to winter in the Arctic was probably the cook Amanda Wennberg on Adolf Erik Nordenskiöld's expedition of 1872–1873, when Onkel Adam was unexpectedly beset in Mossel Bay, Spitsbergen. The nurse Yermiinya Aleksandrovna Zh丹ko joined Georgiy Brusilov's St. Anna in 1912 in the absence of a medical officer. Unlike Wennberg, she did not survive the experience. Reflecting women's relatively emancipated status in the Soviet Union, women were employed as cooks, cleaners, secretaries, and the like on Soviet whaling fleets, and the scientist Nina Petrovna Rjabceva-Demme was a member of the second party to winter at Tikhyaya Bay, Franz Josef Land, in 1930–1931. Between 1932 and 1934, she was stationed at Domashniy, Severnaya Zemlya, where she became the first female base leader.

Elsewhere women had fewer opportunities. Nansen might have been prepared to countenance his wife on board Fram but not a French woman from Algiers who described herself as a tomboy (un petit homme manqué). The "three sporty girls" who applied to join Sir Ernest Shackleton's Endurance received similar short shrift. An exception continued to be made for native women. Ada Blackjack accompanied a four-man party during Vilhjalmur Stefansson's attempted colonization of Wrangel Island, and Arnarulínguaq was one of two Inuit participating in Knud Rasmussen's epic sledding journey across Arctic America in 1923–1924. Prior to Louise Boyd, women of independent means might occasionally sponsor expeditions—for example, Dame Janet Stancomb-Wills—but they did not lead them.

Women scientists participated in the Soviet Antarctic Program from its initiation in 1955, the marine geologist Marie Klenova being the first to go south. The Australian National Antarctic Research Expeditions included women in parties visiting Macquarie Island from 1959. Other countries remained unconvinced that there was a place for women in Antarctica, particularly on wintering stations. In 1962, Mary Alice McWhinnie and Phyllis Marciniak became the first to participate in the U.S. Antarctic Program. It is noticeable that these early pioneers generally conducted their research from ships rather than at the stations, where their presence was considered intrusive by some. Thus, only after many seasons of offshore work did McWhinnie finally visit McMurdo, in 1971–1972, and an invisible barrier was overcome when she was appointed chief scientist at McMurdo for the winter in 1974. The first to command an Antarctic base was Alison J. Clifton at Macquarie Island in 1988–1989. The first base leaders on the continent were Joan Russell at Casey and Monika Puskepaleit at Georg von Neumayer in 1989–1990. The latter led the first all-woman station (R. K. Headland, personal communication).

Although the manly ethic endures among some modern adventurers, women also have sought to pursue ultimate challenges in the polar regions. Myrtle Simpson became the first woman to cross the Greenland ice sheet in 1965 on a four-person expedition led by her husband, Hugh. The idea for Sir Ranulph Fiennes's Transglobe Expedition (1979–1982) was conceived by his wife, Virginia, who served as radio operator and became the first woman to winter in both polar regions. She also became the first woman to be awarded the prestigious Polar Medal. The first woman to reach the North Pole was Ann Bancroft, with Will Steger in 1986. In 1993, Bancroft led the first all-woman expedition to the South Pole, thus becoming the first to reach both Poles. In 2001, she and Liv Arnesen became the first women to cross Antarctica.

See also: Adventurers; Boyd, Louise; Christensen, Lars; Fiennes, Ranulph (1979–1982); Franklin, Jane; Hearne, Samuel; Indigenous Peoples; Inuit Contribution to Polar Exploration; Manning, Thomas; Nansen, Fridtjof (1893–1896); Peary, Robert; Pronchishchev, Vasily; Rasmussen, Knud (1921–1924); Ronne, Finn (1947–1948); Shackleton, Ernest (1914–1917); Stefansson, Vilhjalmur (1921–1923); Steger, Will (1986)

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Wood, John (fl. 1676)

John Wood led the last British expedition to the Northeast Passage before its commercial possibilities were realized by Joseph Wiggins in the 1870s.

British interest in northern voyages was revived in 1670 with the incorporation of the Hudson's Bay Company, with privileges to exploit the resources and develop the trading potential of a region first discovered and explored by expeditions searching for the Northwest Passage. Hopes of finding the Passage had been abandoned after the twin failures of Luke Foxe and Thomas James in the early 1630s. No British-sponsored expedition had sought the rival Northeast Passage since 1608, when Henry Hudson returned convinced that it was not to be found. Hudson's conviction did not prevent other European countries from sending expeditions to explore the waters north of Russia, and indeed Hudson himself had been funded by Dutch merchants to investigate this region in 1609, though in the event he was to redirect his search to the northwest at the earliest opportunity. The Danes also showed an interest in the Northeast Passage, Jens Munk leading expeditions in 1609 but it was never entirely effective. Thus, in 1625 the Dutchman Cornelis Bosman reached the Kara Sea, and in 1653 a Danish expedition visited Novaya Zemlya and Vaygach Island.

In 1675, a note was published in the Transactions of the Royal Society of London suggesting that the search for the Northeast Passage had been abandoned too soon. The Dutchman Willem de Vlamingh was reported in 1664 to have rounded the northern tip of Novaya Zemlya and to have found open water there and across the Kara Sea. So sanguine were the merchants sponsoring his expedition of reaching the Far East that they had applied to the States-General for a charter but had been refused by the machinations of the Dutch East India Company, clearly unwilling to brook competition. A spat of similar stories now surfaced. Joseph Moxon, a fellow of the Royal Society, told of overhearing a conversation many years before in an Amsterdam drinking house in which one Dutch whaler claimed to have reached the North Pole itself. Moxon had questioned him about this and was told that there was no ice at the Pole and that the weather was as hot as an Amsterdam summer.

Marooned on Novaya Zemlya, 1676

Captain John Wood was an experienced naval officer who had assisted Sir John Narborough in making the first scientific survey of Magellan Strait in 1699–1701. Wood now made a point of collecting whatever evidence he could find to support the possibility of a high-latitude seaway to the Far East via the Northeast Passage. In addition to noting stories like those told above, he reported the view of Willem Barents that ice did not extend farther than 20 miles from the coast of Greenland and Novaya Zemlya. He also pointed out the supposed finding of Dutch and English harpoons in whales caught in the Pacific Ocean. These arguments were sufficient to convince Charles II and the Admiralty to equip him with two ships, Speedwell and the 120-ton Prosperous, the latter commanded by Captain William Flawes. The ships were provisioned for sixteen months and carried a cargo of goods thought suitable for establishing trade with the Far East.

Wood sailed from London on 28 May 1676, rounding the North Cape in mid-June and encountering the pack ice of the Barents Sea on 22 June at 75°59'N. Wood's log is insufficient to reconstruct his exact course, but it appears to have been similar to Hudson's in 1608. Like Hudson, he had hoped to reach open water after a short passage through the ice west of Novaya Zemlya, but that was not to be. Seeking for an easier way through the apparently impenetrable pack, Wood followed the edge of the ice east to Novaya Zemlya, which was sighted on 26 June. Three days later Speedwell ran aground on a ledge of rocks and broke up. Wood's given latitude is 74°30'N, though others have suggested that he was farther north at 77°40'N. All but two of the crew members managed to get ashore. At this time, Prosperous was nearby but was impeded by ice from any rescue attempt. Soon afterward fog came down, and contact was lost between the two parties.

Sixty-six men were marooned with Wood. Some food had been brought off Speedwell, and the carpenter had the foresight to save his tools, enabling a rough shelter to be fashioned out of spars from the wreck and driftwood. Should Prosperous not return, Wood's plan was to patch up the longboat and set out south toward Vaygach Island, since he knew it to be frequented by Pomor hunters and fishermen. However, the longboat could accommodate no more than thirty, and it was beyond Wood's powers of leadership to dampen the arguments over who should or should not be left onshore. His final recourse was to pass around the brandy and keep them "fox'd." Wood's relief was all the greater when Prosperous finally reappeared on 8

References


July. He had been marooned for nine days, but it had seemed much longer.

On his return to London on 23 August, Wood was to blame Willem Barents and those afterward who had espoused the view that Novaya Zemlya was an island. Instead, he asserted that truth lay with the ancient belief in a massive peninsula extending north through Novaya Zemlya and Spitsbergen and culminating in Greenland. There was certainly no hope of a Northeast Passage.

See also: Barents, Willem; Foxe, Luke; Hudson, Henry; Hudson's Bay Company; James, Thomas; Munk, Jens; Northeast Passage; Northwest Passage; Novaya Zemlya; Open Polar Sea; Pomor Contribution to Arctic Exploration; Whaling and Arctic Exploration

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Wrangell, Ferdinand von (1797–1870)

Even as late as 1820, major questions concerning the geography of northeast Siberia remained unresolved. Was this region joined to America by an isthmus? Did a great peninsula extend from America north of the Siberian coast? It was to be the achievement of a Russian naval lieutenant, Ferdinand von Wrangel—also known as Ferdinand Petrovich Vrangell—to disprove the first theory and to render the second improbable.

Asia and North America Finally Proved Separate Continents, 1820–1824

Reports of a great peninsula extending from America into the Arctic Ocean and lying to the north of Siberia had inspired the privately sponsored expedition of Mathias von Hedenström (1808–1811). Hedenström had proved that the New Siberian Islands did not form part of this peninsula, and he had cast doubt upon its existence farther east while searching in vain for "Andreyev Land." But his explorations had not reached sufficiently far to disprove the theory of the Englishman James Burney, who, on the basis of observations made during James Cook's voyage of 1776–1780, had concluded that North America and Asia were joined by an isthmus that met the Siberian coast between Cape Shelagskiy and Cape Schmidt on the north coast of the Chukotka Peninsula. Burney's theory assumed that the voyage of the cossack Semen Dezhnev around that peninsula from the Kolyma to the Anadyr' in 1648 was mythical; given that no subsequent expedition had been able to repeat it, he was not alone in this view. But this was not the only unresolved question concerning the geography of northeast Asia. Although Hedenström had searched diligently for land north of Chukotka, which had been reported by the cossack Stepan Andreyev in 1764, he had not fully disproved its existence. The local Chukchi inhabitants also spoke of land lying north of the mainland, and Hedenström and a member of his expedition, Yakov Sannikov, had themselves sighted possible land—"Sannikov Land"—but had been unable to reach it. Whether these were islands or part of some great American peninsula what mattered to the Russian Admiralty was that this region should be explored and claimed first by Russia and not by Great Britain or any other country.

This was the background to the organization of the major expedition to northeast Siberia, which was to be led by Lieutenant Wrangel. He was to personally lead a division to the Kolyma River. Another division based at Ust'-Yansk on the Yana River, and led by his friend Lieutenant Peter Anjou, was also under his overall authority. The two detachments operated largely independent of one another, and an account of Anjou's expedition is given in the entry under his name. Wrangel had been a midshipman during Vasily Golovnin's round-the-world voyage of 1817–1819, and it was at the suggestion of Golovnin and Adam Johann von Krusenstern that he was appointed commander of the northeast Siberian expedition. Two other participants in Golovnin's voyage were to join him: warrant officer Fedor F. Matyushkin, and steersman Prokopiy T. Koz'min. With the full resources of the state available for exploration now that the Napoleonic Wars had been won, Wrangel's expedition was much better equipped compared to its predecessors.

On 23 May 1820, the Kolyma and Ust'-Yansk divisions left St. Petersburg, traveling together via Moscow and Irkutsk to Yakutsk and the Lena River before separating, with Wrangel proceeding farther east to the Kolyma River, where Nizhné-Kolymsk had been selected as his base. They arrived there on 2 November, and preparations were made through the winter before Wrangel and Koz'min set out with dog teams in early spring 1821 to survey the coast from the Kolyma east to Cape Shelagskiy. Returning on 15 March, Wrangel led a party of ten men across the sea ice eleven days later to search for the land reported far offshore. Visiting first the easternmost of the Bear Islands, he then headed northeast and north until reaching 71°43'N, nearly 150 miles from the mainland. There, the ice cover was fragmented, the first indication that a large area of open water—a polynya—is to be found during all seasons in this region. Known for much of the nineteenth century as "Wrangel's Polynya," it was to be one of his most important discoveries, influencing the subsequent course of exploration of the Arctic Ocean. This observation had proved that at least some areas of this ocean were ice-free throughout the year. By 28 April, Wrangel was back at Nizhné-Kolymsk, having surveyed the Bear Islands on his return to land.

During the warmth of late spring and summer, sea ice is treacherous for travel. By contrast, open water close to land facilitates coastal surveying. Koz'min now led a party to chart the coast from the Kolyma west to the Indigirka, while
May, he had returned to the Kolyma, from where the coastal survey was extended east to the Gulf of Chaun and then along the Chaun River. Some way farther east of his previous attempt, at this location the ice was much more uneven, but he nevertheless managed to reach 72°02'N, more than 160 miles from the mainland. Again there were signs of open water, but none of land. By 5 May, he had returned to the Kolyma, from where the coastal survey was extended east to the Gulf of Chaun and then along the Chaun River.

In late February 1823, Wrangell began his third attempt to search for land, this time making his way on 13 March first to Shalaurov Island to the east of Cape Shelaglskiy, from where he headed north over the sea ice. Some 90 miles out at 70°51'N, open water yet again forced him to turn back. It was clear that even if land existed farther north, he was not going to be able to discover it. However, this was only one of his expedition’s objectives, and he had now reached the region where the other major question posed to him was to be resolved. Burney had proposed that, between Cape Shelaglskiy and Cape Schmidt, Asia and America were linked by a narrow isthmus. Indeed, if such an isthmus existed, it could be at no other point because the coast farther west and east was known. Wrangell was able to prove conclusively that no such isthmus existed as he carefully worked his way east from Cape Shelaglskiy to reach Cape Schmidt on 10 April and Kolyuchin Bay on 16 April. Furthermore, he heard from local Chukchi that on clear days a mountainous land could be seen quite distinctly from Cape Yakan. Although Wrangell was not himself to see it, he did note many birds flying northward over the coast, presumably to their breeding grounds on this land. By 10 May, all members of the expedition were back at Nizhne-Kolymsk, where Wrangell was to remain until November to complete his work. Meanwhile, his men dispersed to other duties. In the summer of 1824 he returned to St. Petersburg.

What had his expedition achieved? His survey work resulted in greatly improved charts of the coast from the Indigirka to Cape Shelaglskiy, including the first proper charts for the coast between Cape Shelaglskiy and Kolyuchin Bay. Although he was not to discover the mysterious northern land, an island did exist where he had plotted its likely position, and when it was finally located, it was fittingly named for him (“Wrangell’s Land,” now Wrangell Island). Burney’s theory of a land bridge linking Asia and North America was conclusively refuted.

Wrangell went on to a distinguished career, circumnavigating the globe in 1825–1827. He was based afterward at New Archangel (Sitka) in Alaska as chief manager of the Russian-American Company between 1830 and 1835. Much of his later life was spent at St. Petersburg, where he was appointed to successively more senior naval posts, culminating in membership of the State Council (1857–1862) as minister of the naval department.

See also: Anjou, Peter; Bear Islands; Cook, James (1776–1780); Dezhnev, Semen; Hedenström, Mathias von; Indigenous Peoples; Russia; Wrangell Island

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Wrangell Island (Russia)

Located at 70°–71°N, 178°E–177°W, this island lies between the East Siberian and Chukchi Seas in the Russian Arctic. At 78 miles wide and with an area of 3,030 square miles, it is separated from the Chukotka Peninsula of mainland Russia by Long Strait. It is named for Ferdinand von Wrangell, who in 1824 investigated land reported north of the Chukotka Peninsula by the local Chukchi. Although unable to confirm these reports, he saw birds flying north, suggesting that land was to be found there.

The first sighting was possibly made by Henry Kellett in August 1849 when he discovered Herald Island. He reported seeing land farther west, which he named “Plover Island,” though the position given on his map is incorrect, suggesting that he may have seen a mirage. Eduard Dallmann claimed to have made the first landing on 17 August 1866. Since he reported seeing nonexistent “Plover Island” and the tracks of muskoxen, which are not found here, some have doubted his account, which was not published until fifteen years later, prompted by the landings by Calvin Hooper and Robert Berry (see below). The American whaler Thomas Long—after whom Long Strait is named—sailed along the south coast in 1867 and was responsible for giving the island its name. Calvin Hooper seems to have been unaware of this when he landed from the U.S. Revenue Marine Service steamer Thomas Corwin on 12 August 1881 to search for survivors from George De Long’s expedition, since he claimed it for the United States under the name “New Columbia.” On 26 August that same year, Robert Berry anchored USS Rodgers in Rodgers Bay on the south coast before spending nineteen days in a thorough search for De Long.

The first Russian landing occurred on 2 September 1911 from the icebreaker Vaygach during the Arctic Ocean Hydrographic Expedition (see Vil’kitskiy, Boris). Astronomical observations were taken at Cape Fomy on the southwest coast to establish its exact position, and the island was claimed for imperial Russia. Vaygach then completed the first circumnavigation, conducting the first accurate coastal survey on its way.
On 12 March 1914, seventeen survivors from the shipwrecked Karluk landed at Icy Spit on the north coast led by Bob Bartlett. Bartlett and an Inuk left soon afterward to seek help. Three of those remaining behind died—Bjarne Mamen and George Malloch at Rodgers Bay, and George Breddy, who was probably murdered. The twelve others were rescued on 7 September by Olaf Svenningsen in King and Winge.

Karluk's voyage was undertaken as part of Vilhjalmur Stefansson's Canadian Arctic Expedition (1913–1918), and the island's temporary occupation by Bartlett's party was viewed by him as constituting the basis for a territorial claim on behalf of the British Empire. To strengthen this claim, Stefansson arranged for a party of four white men and an Inuk girl (Ada Blackjack) to be landed on the island in 1921. When they were not resupplied the following year, scurvy broke out with one of the party, Lorne Knight, becoming seriously ill. Allan Rudyard Crawford, the leader, then set out across Long Strait with Milton Galle and Frederick Maurer in an attempt to summon help from Chukotka, but all perished along the way. Knight died on 23 June 1923, leaving Blackjack as the only survivor. She was rescued soon afterward by a relief expedition led by Harold Noice, which consisted of twelve Inuit led by the American trapper and prospector Charles Wells.

Despite all of Stefansson's efforts, Canada, Great Britain, and the United States were not prepared to make a formal claim. On 20 August 1924, the Soviet armed icebreaker Krasnyy Oktyabr' (Red October) landed at Rodgers Bay to raise the Red Flag and claim Wrangel Island for the Soviet Union. Wells and his Inuit were placed under arrest and subsequently expelled. Krasnyy Oktyabr' reached the island just ahead of the American whaler Herman, sent by the Alaskan trader Carl Lomen to resupply the colonists and establish an American claim. Two years later, sixty Eskimos were relocated from Chukotka to form a Soviet colony under the leadership of Georgiy Ushakov. Ushakov built a meteorological and radio station in Rodgers Bay, where he remained for the next three years.

In 1929, Ushakov was relieved as station head by Aref Ivanovich Mineyev (1929–1934), who in turn was succeeded by Konstantin Semenchuk. Semenchuk was convicted of exploiting the natives under his command and was shot following one of the first show trials of the Stalinist purges in 1936. His replacement, Gawril Gerasimovich Petrov, suffered the same fate, though through bad luck rather than crime. In 1937, he reported the discovery of a perfectly preserved mammoth. Great expense was incurred in bringing it to Moscow, where there was intense competition between prestigious institutes concerning where it was to be housed. Unfortunately, no one on Wrangel Station had any zoological training, and what eventually arrived turned out not to be a woolly mammoth but rather a whale. Petrov's work in assisting Ushakov in coordinating the rescue of the Chelyushkin survivors counted for nothing, and he was shot as a "wrecker." A second scientific station was opened at Cape Litke in 1940. The following year, Ivan I. Cherevichnyy's expedition to the Pole of Relative Inaccessibility was based at Ushakov's original station in Rodgers Bay. Now known as Ushakovsky, this station is one of very few remaining in operation in the Russian Arctic. Wrangel was designated a State Nature Reserve in 1976. Since then its formerly substantial population—up to 1,500 during the mid-1970s—has moved back to the mainland.

See also: Bartlett, Bob (1913–1914); Dallmann, Eduard (1866); De Long, George; Herald Island; Kellett, Henry (1848–1850); Stefansson, Vilhjalmur (1921–1923); Ushakov, Georgiy; Vil'kitskiy, Boris; Whaling and Arctic Exploration; Wrangel, Ferdinand von

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Zavodovski Island (South Sandwich Islands)
Located at 56°18'S, 27°34'W, this island is 3 miles in diameter and is the northernmost of the volcanic islands in the arc forming the South Sandwich Islands. One of the three Traversay Islands discovered by Fabian von Bellingshausen, it was first seen on 4 January 1820 and named for Lieutenant Commander Ivan Ivanovich Zavodovski, second-in-command of Vostok, who led a party that landed the next day. Zavodovski was independently rediscovered on 12 December 1830 by the American sealer James Brown (Pacific), who landed and named the island “Prince's Island.” Carl Anton Larsen landed to compile a rough survey in 1908, which he had to abandon hurriedly after he was almost asphyxiated by volcanic fumes. Further surveys from the sea were made by Frank Wild in Quest in 1922 and by RRS Discovery II in 1930. Subsequent landings have included those made in 1957–1958 from the Soviet whale-catcher Slava–15 and from the Argentine research vessel General San Martín, as well as from the British ships RRS Shackleton in 1961 and HMS Protector in 1962. An automated weather station was deployed on the island from SA Agulhas in January 1990. Since then regular visits have been made by South African vessels for servicing purposes. The most recent scientific visit was made in 1997 from HMS Endurance during a comprehensive geological and biological survey of the South Sandwich Islands.

See also: Argentina; Bellingshausen, Fabian von; Discovery Investigations; Great Britain; Larsen, Carl Anton; Russia; Sealing and Antarctic Exploration; South Sandwich Islands; Whaling and Antarctic Exploration; Wild, Frank (1922)

References and further reading:
Technical terms have been avoided whenever possible in this book. Some, however, cannot be omitted, and others may be essential to preserve the historical feel of a given narrative. The majority of the terms listed below concern types of vessels or different forms of ice. A few common abbreviations or acronyms are also included.

**Antarctic Convergence.** A circular belt within the Southern Ocean where the cold Antarctic surface water plunges beneath warmer water spreading south from more temperate regions. This significant oceanographic and biological boundary is generally regarded as defining the limits of the Antarctic.

**Astrolabe.** An ancient navigational instrument. Used to calculate the altitude of stars and other heavenly bodies.

**Aurora australis** and **aurora borealis.** Also known as the Southern and Northern Lights, this luminous atmospheric phenomenon visible in the dark sky over wide areas of the polar regions results from charged particles emanating from the Sun being channeled toward these regions by the earth’s magnetic field making gases fluorescent in the upper atmosphere.

**Back-staff.** A navigational instrument invented by John Davis around 1590. Its great advantage over the cross-staff was that it enabled the observer to calculate the Sun’s elevation without having to stare into it.

**Baidarka.** The kayak of the Aleut inhabitants of the Aleutian Islands in the North Pacific Ocean. Baidarkas were made of driftwood, lashed with baleen fiber from whales, and covered with seal skin or walrus hide.

**Barque.** A sailing vessel with three or more masts, square-rigged except for the fore- and aft-rigged aftermast.

**BAS.** British Antarctic Survey (see entry).

**Beset.** A term used for a vessel when caught up in and forced to drift with the ice.

**Biscuit.** Equivalent to “cookies” in American English; sometimes referred to as “hardtack.” Biscuits were generally baked according to special recipes for polar expeditions.

**Bomb vessel.** Strongly built vessels designed to carry heavy guns used for bombarding land positions.

**Brig.** Two-masted vessel, square-rigged on both.

**Caldera.** Deep cavity formed at the summit of volcanoes.

**Caravel.** Lateen-rigged Portuguese and Spanish vessel of the fifteenth and sixteenth centuries. Those used for exploration were generally much smaller than the large four-masted vessels engaged in trading voyages to the Far East and Americas, which were square-rigged apart from the lateen-rigged aftermast.

**Cathay.** A term commonly used in the sixteenth and seventeenth centuries to imply China, in particular, but also Japan and other regions of the Far East from which spices and luxury goods were imported.

**Corvette.** Armed vessel with guns limited to one deck only, ranking immediately below a frigate.

**Craton.** Stable area within continents not subject to mountain-building and associated geological activity for more than 1 billion years (e.g., the Canadian Shield).

**Crevasse.** A deep crack or fissure in land ice (glacier, ice sheet, or ice shelf). One of the main causes of injury and fatality in overland travel.

**Cross-staff.** An early navigational instrument used to measure altitudes.

**Crow’s nest.** A large barrel placed high on the forecastle from which captains of whaling and exploring vessels piloted their ships through pack ice in relative comfort. Its invention is credited to William Scoresby Sr.

**Cryoconite holes.** Deep depressions found in the marginal areas of ice caps and ice sheets, containing thin deposits of dust that have led to differential melting. Early explorers of the Greenland Ice Sheet thought this dust to have an extraterrestrial origin. It actually consists of wind-blown moraine sediments.

**Cutter.** A single-masted vessel. Compared to a sloop, it has a deeper draft and narrower beams to assist rapid sailing.

**Dead reckoning.** The calculation of position without recourse to instruments on the basis of courses steered and distances traveled. On the sea, this should also take into consideration estimated leeway, or the effects of current and wind.

**Depot.** Sometimes referred to as a cache. Basically a store of food, fuel, and sometimes equipment established along a trail for later use.

**DEW-Line.** The Distant Early Warning (DEW) Line consisted of sixty-three radar stations erected across Alaska, northeastern Canada, and Greenland to provide advance warning of long-range aircraft attack by the Soviet Union. Stations operated from 1957 through 1988.
**Dirigible.** An airship as opposed to a balloon; capable of being steered or directed.

**Drake Passage.** The 625-mile wide strait separating Tierra del Fuego at the southern tip of South America from the South Shetland Islands and the Antarctic Peninsula. Conditions can be notoriously rough for shipping.

**Eskimo.** The name generally used in the historic literature to refer to the inhabitants of Arctic North America. Although more probably derived from the Montagnais word for “snowshoe-netter,” its supposed derivation from the Amerindian pejorative term “eaters of raw flesh” has led to its being viewed as insulting, apart from in Alaska. (In Alaska, “Eskimo” is used for the Inuktitut-speaking—and therefore Inuit—Inupiat of northern Alaska, as well as the non-Inuktitut-speaking—and therefore non-Inuit, though certainly Eskimo—Yup’ik of southwestern Alaska.) On grounds of simplicity, Exploring Polar Frontiers uses the term “Inuit” throughout.

**Factor or chief factor.** Senior employee of the Hudson’s Bay Company.

**Falkland Islands.** An archipelago in the South Atlantic Ocean consisting of two larger islands and their offlifers. Many sealing and exploring expeditions visited these islands prior to sailing south for Antarctica.

**FIDS.** Falkland Islands Dependencies Survey. Between 1945 and 1962, this was the national Antarctic operating agency of Great Britain. Following the signing of the Antarctic Treaty and the division of the Falkland Islands Dependencies into the British Antarctic Territory and South Georgia and South Sandwich Islands, it was renamed the British Antarctic Survey (BAS; see entry). Members of BAS are still frequently referred to as FIDs.

**Floe.** A relatively discrete—or free-floating—piece of sea ice.

**Fore- and aft-rigged.** A method of rigging vessels developed from lateen-rigging by Dutch mariners in the sixteenth century. The sail is set from a vertical mast, as opposed to a horizontal yard as in square-rigging.

**Franz Josef Land.** A High Arctic archipelago north of Russia with Svalbard to its west and Novaya Zemlya to its east (see entry).

**Frigate.** Armed vessel intermediate in size between a corvette and a ship-of-the-line.

**Fumaroles.** Vents emitting steam and gases in volcanically active areas.

**Geographical Poles.** The northern and southern ends of Earth’s axis of rotation (see entries for North Pole and South Pole). Lines of longitude converge at these points. They are to be distinguished from three other types of “pole”: Geomagnetic Poles, Magnetic Poles, and Poles of Inaccessibility, all of which receive entries.

**Geomagnetic Poles.** Two points in the Northern and Southern Hemispheres at the ends of an imaginary magnetic axis through the center of the earth (see entry). These theoretically defined locations are to be distinguished from the Magnetic Poles, which are located at points where the earth’s magnetic field is aligned vertically (see entry).

**Glacier tongue or ice tongue.** Formed where a glacier extends beyond the coastline over the sea. Glacier tongues are generally afloat and may break off intermittently with the action of tides and currents.

**Gondwanaland.** The ancient supercontinent of which Antarctica once formed a part, along with South America, Africa, Madagascar, India, Australia, and New Zealand.

**Great Circle route.** The shortest distance between two points on the Earth’s surface. A “great circle” is one whose plane cuts through the center of the Earth. Except when following a meridian or the equator, following such a route involves constantly changing one’s compass course.

**Gyre.** A circular current (e.g., the Beaufort Gyre in the Arctic Ocean).

**HBC.** Hudson’s Bay Company (see entry).

**Hoosh.** Standard eating fare for Antarctic sledging parties of the Heroic Era. Basically, a hot soup/stew containing pemmican or other meat, thickened with biscuits or oatmeal.

**Hydrography.** The scientific description of the earth’s surface waters as found in seas, lakes, and rivers.

**Ice blink.** A brilliant white reflection cast by snow and ice on the sky when seen from a distance. Water, by contrast, casts a dark reflection (see water sky).

**Ice cap.** See ice sheet.

**Ice core.** Cylinders of ice of varying depths obtained from sea ice or, more usually, land ice. These are studied by scientists for what they tell of climatic changes, atmospheric composition, and physical processes at depth.

**Ice foot.** A generally narrow belt of ice attached to land throughout the year.

**Ice sheet.** The extensive areas of ice occupying most of interior Antarctica and Greenland are properly referred to as ice sheets rather than ice caps. Elsewhere, similar but smaller features are referred to as ice caps.

**Ice shelf.** Land ice extending beyond the coast often for considerable distances and partly afloat. The largest Antarctic examples—the Ross Ice Shelf and the Filchner-Ronne Ice Shelves—are equivalent in size to France.

**Iceberg.** Although found at sea or grounded offshore, icebergs in origin are land ice breaking off from glaciers or, if tabular, from ice shelves.
Icebreakers. Vessels equipped with specially strengthened hulls and other features enabling them to cut paths through pack ice too thick for unmodified ships to penetrate.

International Polar Year (IPY). To date, there have been two such International Polar Years (1882–1883 and 1932–1933). A third IPY is planned for 2007. See entry.

Inuit. The name that most of the indigenous inhabitants of Arctic North America use to refer to themselves. Although generally called “Eskimo” in the historic literature, that term is viewed as insulting by many who believe it to be derived from the Amerindian “eater of raw meat.” “Inuit” may be translated as “the people” or “the real people.” It is closely related to “inuua,” the “inner man” or “soul.”

Inuk. The singular form of Inuit.

Inuktitut. The language of the Inuit. It is mutually intelligible across Arctic North America between Greenland and North Alaska.

Kabloona. The Inuit term for “white man.”

Katabatic winds. These can be cold or warm but in the polar regions are invariably cold. Katabatic winds are formed by cold, dense air flowing downhill. Such winds characteristically blow outward from the Antarctic and Greenland Ice Sheets and, to a lesser extent, from the smaller ice caps. Picking up speed as they descend under the force of gravity, they can be exceptionally strong near the coast, especially where local topography creates a funneling effect, as at Commonwealth Bay, George V Land.

Ketch. Two-masted sailing vessel with fore- and aft-rigging on both masts.

Knar. Norse cargo vessel. Broad, sturdy vessel contrasting with the longer, slender warships associated with the Norse in the popular imagination. The one found at Roskilde, Denmark, can be sailed by five or six men and can carry 24 tons. The North Atlantic crossings to Greenland and the explorations by Erik the Red and his son Leif Eriksson would have been made in such vessels.

Knots. The number of nautical miles traveled per hour.

Labrador. Now forming the mainland section of Newfoundland Province, Canada, the coast of Labrador extends south from Cape Chidley (60°30′N, 64°30′W) on Hudson Strait to the Strait of Belle Isle facing the Island of Newfoundland.

Landfall. The first sighting of land from the sea.

Lateen-rigged. A triangular sail set from a yard oblique to the mast. It is characteristic of Arab and Mediterranean shipping.

Lead. Channels formed where the sea ice cracks apart from the effects of tide, wind, or current. When open, these permit navigation. For those traveling across the ice, they can hold up progress until refrozen.

League. A measure of the average rate of travel in premodern times, this being estimated at 3 miles per hour on land and 4 knots with a favorable wind at sea. Thus, the land league was 3 miles and the sea league 4 miles.

Lee-shore. A shore toward which the wind generally blows. Such shores present a particular danger to sailing vessels.

Lodya. The shallow-draft sailing vessel of the Pomors of northern Russia. Also referred to as a koch. Light craft with flat bottoms and curving sides, they were designed to ride up over ice and were relatively easy to tow across ice and shoals.

Logistics. The organization of supplies and their transport.

Magnetic Poles. The poles toward which compasses point. At these locations in the Northern and Southern Hemispheres, the earth’s magnetic field lines point vertically downward to the planetary center (see entry). They are also known as Magnetic Dip Poles and are to be distinguished from the Geographical Poles and Geomagnetic Poles (see entries).

Meltwater. Water resulting from the melting of ice sheets, glaciers, and snow.

Métis. Canadian term for those of mixed European and Amerindian descent.

Miles. A confusing unit of measure since there are different types of mile and it is not always clear which is being used. The Ptolemaic mile = 5,000 feet (1,524 meters). The English mile was codified in 1592 as 5,280 feet (1,609 meters). The nautical mile of 6,080 feet (1,853 meters) was invented in the seventeenth century. Most references in the polar literature are to the English and nautical miles.

Multiyear ice. Sea ice at least two summers old.

New Siberian Islands. A High Arctic archipelago north of Russia with Severnaya Zemlya to its west and Wrangell Island to its east (see entry.)

Northern Sea Route. The Soviet/Russian term for the Northeast Passage, that is, the navigable waterway north of the Russian mainland. See the entry for Northeast Passage.

Novaya Zemlya (New Land). A High Arctic archipelago north of Russia with Franz Josef Land to its west and Severnaya Zemlya to its east (see entry.)

Nunatak. An isolated point of rock protruding through an ice sheet or ice cap.

Oceanography. The scientific study of the ocean, its physical features, form, and processes.

Open polar sea. The belief that open water would be found...
close to the geographical poles once through a belt of encircling pack ice (see entry).

**Pack ice.** Also “pack.” Large areas of dense (packed) floating ice, as in “polar pack.”

**Pemmican.** Strips of meat cut and dried in the sun. First developed by Amerindians, pemmican later proved ideal for sledging parties because it was light and highly concentrated. It was made according to various recipes, which generally involved dried meat mixed with substantial quantities of fat. Different recipes were used for human and dog pemmican.

**Peri-Antarctic islands.** Term coined by R. K. Headland to describe the islands of the Southern Ocean. In addition to the sub-Antarctic islands (see entry), this includes those closer to the continent—Balleny, Peter I, Scott, South Orkney, and South Shetland Islands—as well as those north of the Antarctic Convergence—Amsterdam and St. Paul, Gough, Antipodes, Bounty, and Snares.

**Photogrammetry.** Methods enabling topographical maps to be compiled from vertical air photographs.

**Physiography.** The study of the physical features, form, and processes of the landscape.

**Pinnace.** Small, two-masted sailing vessel, often employed as a tender to a larger vessel.

**Poles of Inaccessibility.** A term coined in 1920 by the explorer Vilhjalmur Stefansson to refer to those points in the Arctic and Antarctic that are most difficult to reach. In the Antarctic, it is the point farthest from the coast; in the Arctic, the point farthest from open water. They are also known as Poles of Relative Inaccessibility (see entry).

**Polyarnik.** The Soviet/Russian term for staff of a polar station, particularly used of those who chose to spend as much time as possible at polar stations, for example, Boris Aleksandrovich Kremer (1908–1976).

**Polynya.** Area of persistent open water in regions where elsewhere sea ice is found. The best-known polynyas—for example, North Water (Baffin Bay)—remain essentially free of ice throughout the year.

**Portage.** Land trails circumventing waterfalls and rapids obstructing water routes; also, across watersheds between river systems, for example, Portage la Loche between the Hudson Bay and Mackenzie River drainage basins.

**Pressure ridge.** Pack ice forced upward by the collision of floes.

**Q-boat.** Merchant vessels with disguised armament for use as decoys against German submarines during World War I.

**Quadrant.** An ancient navigational instrument used for measuring the altitude of stars and other heavenly bodies.

**Radiosonde.** Balloons bearing meteorological instruments to study the vertical profile of atmospheric variables—typically temperature, humidity, and pressure—from the surface to the stratosphere, and transmitting the data via radio to a ground receiving system.

**Relay.** When a load is too great for a sledging party to move in its entirety, relaying is employed to shift first one part and then the next. Where a load has to be divided in half, relaying involves traveling three times the distance progressed by the entire party: first with one part of the load, then back to pick up the remainder, and finally with the second part of the load.

**Roadstead or roads.** An open anchorage, possibly protected by shoals or reefs and offering less protection than a harbor.

**Rorqual whales.** The family of generally fast-swimming toothless whales with pleated throats. In descending order of size: blue, fin, humpback, and minke whales are all species of rorqual.

**Sastrugi.** Uniform snow ridges formed by winds blowing constantly from the same direction.

**Schooner.** Fore- and aft-rigged vessels with at least two masts.

**Seabees.** Service personnel of the U.S. Navy Construction Battalion (CBs). Seabees were responsible for most construction work on U.S. Antarctic bases until the end of Operation Deep Freeze in 1998.

**Severnaya Zemlya (North Land).** A High Arctic archipelago north of Russia with Novaya Zemlya to its west and the New Siberian Islands to its east (see entry.)

**Sextant.** A navigational instrument chiefly used for determining the altitude of stars and other heavenly bodies, as well as for calculating angles between landmarks for fixing positions in coastal survey.

**Shallop.** Small vessel powered by sail or oars.

**Ship prefixes.** Letters preceding vessel names may indicate either the type of vessel or the country and organization to which it belongs. Examples of the former include: MS—motor ship; MV—motor vessel; R/V—research vessel; and SS—steamship. Some examples of the latter are: HMAS—His (or Her) Majesty’s Australian Ship; HMCS—His (or Her) Majesty’s Canadian Ship; HMSNZ—His (or Her) Majesty’s New Zealand Ship; HMS—His (or Her) Majesty’s Ship; HMAS—His (or Her) Majesty’s South African Ship; RRS—Royal Research Ship; USCGC—United States Coast Guard Cutter; USNS—United States Naval Ship; USS—United States Ship.

**Ship.** In the eighteenth and nineteenth centuries, the term “ship” became a technical term used specifically to refer to a square-rigged, three-masted vessel. Both before and after this period, “ship” was used more loosely to refer to any relatively large vessel. The text of *Exploring Polar Frontiers* follows contemporary usage wherever possible.
Skerry. A low-lying rock offshore covered by the sea during storms and at high tide.

Skidoo. Single-person motor vehicles designed for use over snow with one or two skis at the front and tracks at the rear. Originally the trade name of the Bombardier Skidoo snowmobile manufactured by Joseph-Armand Bombardier but since widely used as a general term for snowmobiles and motor toboggans.

Sloop. One-masted sailing vessel with fore- and aft-rigging. Generally of broader beam and less draft than a cutter.

Smack. Small fishing schooner or sloop engaged in fishing.

Smith Sound. The channel linking Nares Strait to Baffin Bay and lying between Ellesmere Island and northwest Greenland. Several expeditions attempted to reach the North Pole via this route between 1853 and 1909. See the entry for Nares Strait.

Sno-Cat. Manufactured by Tucker Sno-Cat Corporation, these were originally designed for use as rescue vehicles in areas subject to heavy snowfall (e.g., winter sports resorts and the large national parks of the western United States). They have four ladder-tracked pontoons, each of which can function independently. This is a great advantage when traveling across uneven terrain. Their 180-horsepower Chrysler engines made them considerably more powerful than Weasels.

Snow. A two-masted, square-rigged vessel.

South Shetland Islands. An archipelago to the west and north of the Antarctic Peninsula. Many sealers visited it to kill fur seals in the years immediately following its discovery in 1819 (see entry).

Southern Ocean. That region of the world ocean lying south of the Antarctic Convergence, where the cold waters spreading north from Antarctica plunge beneath warmer waters extending south from the Tropics. The precise location of the Antarctic Convergence varies according to season but it is generally found forming an undulating line between the latitudes 45º and 60ºS.

Spitsbergen. The High Arctic archipelago north of Norway was known as Spitsbergen until 1925 (see entry); today it is named Svalbard. Since 1969, Spitsbergen has been used for the largest island (formerly West Spitsbergen).

Square-rigging. A sailing ship with rectangular sails set from horizontal yards. Square-rigging requires a larger crew than fore- and aft-rigging but is more efficient in fair winds.

Sun sight. Measuring the elevation of the Sun above the horizon using a navigational instrument to obtain readings for latitude.

Svalbard. A High Arctic archipelago north of Norway, with Greenland to its west and Franz Josef Land to its east (see entry). Before 1925 it was known as Spitsbergen.

Tabular iceberg. A flat-topped, often very large iceberg broken off from an ice shelf. While common in Antarctica, where many ice shelves reach the sea, in the Arctic they are much rarer, the main sources being the ice shelves of northern Ellesmere Island or certain glaciers of shallow incline in Franz Josef Land.

Term day. Special days during the International Polar Years (see entry) and International Geophysical Year (see entry), when by prior arrangement numerous observations were obtained simultaneously at all cooperating stations using identical instruments.

Terranullius. "No-man's land." Land unclaimed by any sovereign state.

Theodolite. Surveying instrument also used in navigation for measuring horizontal angles and altitudes.

Thick weather. Conditions of poor visibility because of fog or blizzard.

Tidal crack. Cracks running generally parallel to the coastline and some distance out where the sea ice—subject to the rise and fall of the tide—meets the shore or fast ice attached to land, which is not subject to the same movement.

Tierra del Fuego. The archipelago south of Magellan Strait forming the southernmost part of South America. Its southern point, Cape Horn, is separated from the South Shetland Islands and the Antarctic Peninsula farther south by Drake Passage.

Transit of Venus. The passage of the planet Venus across the disk of the Sun occurs at intervals of more than a century when two transits occur eight years apart. The most recent transits occurred in 1761 and 1769, then again in 1874 and 1882. The next pair will take place in 2004 and 2012. Transits of Venus provide an unrivalled opportunity for measuring the exact distance between the Earth and the Sun.

Trichinosis. A fatal disease generally resulting from eating raw or undercooked polar bear meat leading to the introduction of trichina parasites into the alimentary canal and the subsequent migration of their larvae into adjacent muscles.

Umiak. The “woman’s boat” of the Inuit. These are traditionally made of walrus hide and used when traveling long distances or hunting whales.

Voyageur. A French-Canadian term originally applied to independent fur traders traveling into the interior in canoes from Montreal to obtain furs from the Amerindians.

Warp. In whaling and polar exploration parlance, this refers to moving a vessel by attaching a hawser, or thick rope, to the ice and heaving it in using the capstan. The latter, also
used for hauling up anchors and other heavy work, is a rotating cylinder sited near the prow, which was revolved manually with the aid of bars against which the crew would push and pull.

**Water sky.** Whereas snow and ice cast a brilliant white reflection on the sky when seen from a distance (ice blink), water casts a dark reflection. This contrast is particularly helpful when navigating dense sea ice.

**Weasel.** Originally intended as small amphibious tanks, these were later adapted for traveling in snow. They were first tested in Greenland and Canada in 1943. Powered by a 56-horsepower Studebaker engine and weighing 2,177 kilograms, Weasels were found to be well suited for transporting small field parties as well as for undertaking reconnaissance journeys to mark out routes for heavier transport. They were too small, however, to haul the heavy loads required for tasks such as establishing stations. One of their greatest advantages was their cheapness, being available in large numbers from military surplus depots after World War II.

**White Sea.** A largely landlocked sea surrounded by Russia on all sides except the north, where it joins the Barents Sea through Gorlo Strait. The port of Archangel is located on its southern shore near the mouth of the Northern Dvina River.

**Whiteout.** These conditions occur when the light from the sky and the light reflected from ice and snow are of the same degree of brightness. Contours cannot be made out, and although visibility may remain quite good, it is impossible to get one's bearings. Whiteouts present particular problems for pilots, though sledding teams also may be forced to lay up until conditions improve.

**Wintering.** Spending the winter season in the polar regions.
### Polar Timeline: A Chronological Listing of Polar Expeditions by Region

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<td>Plaisted</td>
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<tr>
<td>1968–1969</td>
<td>Herbert</td>
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<tr>
<td>1979</td>
<td>Shparo</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1979–1982</td>
<td>Fiennes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1986</td>
<td>Fiennes</td>
<td>Shparo</td>
<td></td>
<td>Fiennes</td>
<td></td>
</tr>
<tr>
<td>1988</td>
<td>Fiennes</td>
<td>Shparo</td>
<td>Steger</td>
<td>Shparo</td>
<td></td>
</tr>
<tr>
<td>1989</td>
<td>Fiennes</td>
<td>Shparo</td>
<td></td>
<td>Shparo</td>
<td></td>
</tr>
<tr>
<td>1989–1990</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1990</td>
<td>Fiennes</td>
<td>Ousland</td>
<td></td>
<td>Fiennes</td>
<td></td>
</tr>
<tr>
<td>1992–1993</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1994</td>
<td>Ousland</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1995</td>
<td>Steger</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Operations:
- Operation Tabarin
- Operation Highjump
- Operation Windmill
- Operation Deep Freeze 1
- Operation Deep Freeze 2
- IGY
- Operation Hillary
- Operation Ronne
- Operation Steger
- Operation Fiennes
<table>
<thead>
<tr>
<th>Year</th>
<th>Arctic Ocean and Vicinity</th>
<th>Greenland</th>
<th>North America</th>
<th>Russian Arctic</th>
<th>Svalbard and Jan Mayen</th>
<th>Southern Ocean and Islands</th>
<th>Antarctica</th>
</tr>
</thead>
<tbody>
<tr>
<td>1996</td>
<td></td>
<td></td>
<td></td>
<td>Shparo</td>
<td>Shparo</td>
<td></td>
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</tr>
<tr>
<td>1996–1997</td>
<td></td>
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<td>Shparo</td>
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<td>Fiennes</td>
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<td>Ousland</td>
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<td>1997</td>
<td>Steger</td>
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<td>Shparo</td>
<td>Shparo</td>
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<tr>
<td>1998</td>
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<td></td>
<td>Shparo</td>
<td>Shparo</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2000</td>
<td>Fieness</td>
<td></td>
<td>Hempleman-Adams</td>
<td>Shparo</td>
<td>Shparo</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2001</td>
<td>Ousland</td>
<td></td>
<td></td>
<td>Shparo</td>
<td>Shparo</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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Index

Page numbers in boldface refer to main encyclopedia entries.

Adelaide Island, 4, 89, 100, 137, 138, 574
Adélie Land, 4–5, 200, 235, 412, 414
Ainu, 318, 614
Hanamori, 602
Yamabe, 602
Airships, 5–6, 8–9, 19–20, 25–26, 72, 115, 171, 203–205, 457–459, 502, 692 (photo), 693–694
Alexander Island, 9, 89–91, 110, 138, 573–574
Alexandra Land, 9–10, 107, 328–329, 616
Alger Island, 10, 56, 223–224, 693
American explorers
Adams, Charles, 555
Allen, Jerome, 393–394
Ambler, James, 178
Anderson, Rudolph, 629–632
Anderson, William, 20–21
Aufderheide, Arthur, 524–525
Baker, Jefferson, 337
Baldwin, Evelyn, 10, 55–56, 222, 246, 268, 331, 426, 429, 512, 528, 568, 691–693, 700
Bancroft, Ann, 634, 717
Barrill, Edward, 155, 157
Bartlett, James, 180
Behrendt, John, 556–557
Bennett, Floyd, 115, 117
Bentley, Charles R., 211
Berkner, Lloyd, 319
Berlin, Leonard, 611
Berry, Robert, 296, 720
Black, Richard, 29, 89–91, 405, 554, 557
Blackburn, Quin, 128, 601
Blake, John, 336–337
Bockstoce, John, 81, 517
Bomhardier, Jean Luc, 525
Bond, Charles, 489
Bonsall, Amos, 336–337
Borup, George, 515
Boyd, Louise, 69, 98, 351, 353, 717
Bradford, William, 290
Brainard, David, 271
Bramhall, Ervin, 120
Brennan, Floyd, 115, 117
Bentley, Charles R., 211
Berkner, Lloyd, 319
Berlin, Leonard, 611
Cooper, Mercator, 57, 160–161, 676
Corbett, Albert, 693–694
Corey, Stevenson, 120
Cramer, Parker D., 711
Crockett, Frederick, 266
Crosson, Joe, 711
Cruzen, Richard, 122, 488
Danenhower, John, 178
Danenhower, Sloan, 712
Darlington, Henry, 90, 555
Darlington, Jenny, 405, 555–556, 717
Davidson, James, 512
Davis, John, 27, 98, 160–161, 176–177, 280, 386, 590
De Haven, Edwin, 41, 52, 186, 237, 243, 335, 690
De Long, George, 32, 59, 147, 178–181, 179 (illus), 181, 203, 258, 294, 296, 454, 485, 616
Dedrick, Thomas, 513
Demas, Pete, 120
Dodge, Henry, 289
Dodson, Robert, 555–556
Dufek, George, 122, 135, 485–488
Dunbar, William, 178
Dyer, J. Glenn, 90
Eielson, Carl, 709–711, 709 (photo)
Eights, James, 373, 518
Ellefsen, Albert, 120
Ekblaw, Walter, 210, 393–394
Eklund, Carl, 9, 90
Eld, Henry, 706
Ellsworth, Lincoln, 6–7, 8, 18–20, 90, 115, 121, 189, 201, 204, 211, 212–216, 214 (photo), 221, 457, 534, 568, 618, 712–713
Entrikin, Samuel, 512
Fanning, Edmund, 600, 621
Ferrante, Felix, 611
Fiala, Anthony, 10, 56–57, 222–224, 223 (photo), 246, 286, 308, 331, 472, 528, 566–569, 591
Fitzsimmons, Roy, 611
Fletcher, Joseph, 194
Folger, Edward, 491
Franke, Rudolph, 156, 515
769
**American explorers, cont.**

<table>
<thead>
<tr>
<th>Name</th>
<th>Page Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frazier, Paul</td>
<td>487</td>
</tr>
<tr>
<td>Frazier, Russell</td>
<td>611</td>
</tr>
<tr>
<td>Frederick, Julius</td>
<td>271</td>
</tr>
<tr>
<td>Galle, Milton</td>
<td>633, 721</td>
</tr>
<tr>
<td>Garlington, Ernest</td>
<td>271</td>
</tr>
<tr>
<td>Gibson, Langdon</td>
<td>516</td>
</tr>
<tr>
<td>Giles, Walter</td>
<td>611</td>
</tr>
<tr>
<td>Gilmour, Harold</td>
<td>611</td>
</tr>
<tr>
<td>Godfrey, William</td>
<td>210, 336–338</td>
</tr>
<tr>
<td>Goodale, Edward</td>
<td>266</td>
</tr>
<tr>
<td>Goodfellow, Henry</td>
<td>336</td>
</tr>
<tr>
<td>Goodsell, John</td>
<td>515</td>
</tr>
<tr>
<td>Gould, Laurence</td>
<td>69, 117–118, 120, 206, <strong>265–267</strong>, 558, 661</td>
</tr>
<tr>
<td>Gray, 611</td>
<td></td>
</tr>
<tr>
<td>Greely, Adolphus</td>
<td>151, 210, 221, <strong>269–272</strong>, 270 (illus), 277, 379, 449–450, 513, 509, 645</td>
</tr>
<tr>
<td>Green, FitzHugh</td>
<td>393–394</td>
</tr>
<tr>
<td>Griffith, Clyde</td>
<td>611</td>
</tr>
<tr>
<td>Haines, William</td>
<td>119</td>
</tr>
<tr>
<td>Hall, Charles Francis</td>
<td>52–53, 178, 210, 221, 237, 249, 269, 277, <strong>283–286</strong>, 283 (illus), 290, 322, 354, 449–450, 484, 520, 698</td>
</tr>
<tr>
<td>Hanson, Howard</td>
<td>265–266</td>
</tr>
<tr>
<td>Hanson, Julie</td>
<td>637</td>
</tr>
<tr>
<td>Harlan, Quirof</td>
<td>692</td>
</tr>
<tr>
<td>Hartstene, Henry</td>
<td>338</td>
</tr>
<tr>
<td>Hayes, Isaac</td>
<td>210, 269, 277, 283, 285, <strong>288–290</strong>, 322, 336–337, 449, 484</td>
</tr>
<tr>
<td>Healy, Joseph</td>
<td>90</td>
</tr>
<tr>
<td>Heard, John</td>
<td>290–291</td>
</tr>
<tr>
<td>Heilprin, Angelo</td>
<td>511</td>
</tr>
<tr>
<td>Henry, Charles</td>
<td>271</td>
</tr>
<tr>
<td>Henson, Matthew</td>
<td>511, 512, 513, 514</td>
</tr>
<tr>
<td>Hersey, H. B.</td>
<td>693</td>
</tr>
<tr>
<td>Hilton, Donald</td>
<td>90</td>
</tr>
<tr>
<td>Hofma, Edward</td>
<td>691–692</td>
</tr>
<tr>
<td>Hooper, Calvin</td>
<td>296, 720</td>
</tr>
<tr>
<td>Hovey, Edmund</td>
<td>394</td>
</tr>
<tr>
<td>Hudson, William</td>
<td>706</td>
</tr>
<tr>
<td>Hunt, Harrison</td>
<td>393–394</td>
</tr>
<tr>
<td>Israel, Edward</td>
<td>270–271</td>
</tr>
<tr>
<td>Jacobsen, Glen</td>
<td>485</td>
</tr>
<tr>
<td>Jancik, John</td>
<td>510</td>
</tr>
<tr>
<td>Johnson, Robert</td>
<td>28, 434–435, 590</td>
</tr>
<tr>
<td>Johnson, Robert E.</td>
<td>183</td>
</tr>
<tr>
<td>June, Harold I.</td>
<td>117, 119–120, 265, 406</td>
</tr>
<tr>
<td>Kane, Elisha Kent</td>
<td>191, 210, 237, 269, 277, 283, 288–290, 322, <strong>335–338</strong>, 420, 449, 484, 614, 664</td>
</tr>
<tr>
<td>Kearns, William</td>
<td>488</td>
</tr>
<tr>
<td>Ketchum, Gerald</td>
<td>486, 491–492</td>
</tr>
<tr>
<td>Kislingbury, Frederick</td>
<td>270–271</td>
</tr>
<tr>
<td>Knight, Lorne</td>
<td>633, 721</td>
</tr>
<tr>
<td>Knorr, George</td>
<td>289–290</td>
</tr>
<tr>
<td>Knowles, Paul</td>
<td>90</td>
</tr>
<tr>
<td>Lanphier, Thomas</td>
<td>709</td>
</tr>
<tr>
<td>Lassiter, James</td>
<td>555</td>
</tr>
<tr>
<td>Latady, William</td>
<td>555</td>
</tr>
<tr>
<td>Lathrop, Glen</td>
<td>486</td>
</tr>
<tr>
<td>Lee, Hugh</td>
<td>512</td>
</tr>
<tr>
<td>Leffingwell, Ernest</td>
<td>56, 72, 426–427, 629, 676</td>
</tr>
<tr>
<td>Lehrke, Lester</td>
<td>90</td>
</tr>
<tr>
<td>LeSchack, Leonard</td>
<td>194</td>
</tr>
<tr>
<td>Lockhart, Ernest</td>
<td>611</td>
</tr>
<tr>
<td>Lockwood, John</td>
<td>210, 221, 270–271, 277, 445, 514</td>
</tr>
<tr>
<td>Long, Francis</td>
<td>271</td>
</tr>
<tr>
<td>Long, Thomas</td>
<td>169, 290, 720</td>
</tr>
<tr>
<td>Loud, Louis</td>
<td>693</td>
</tr>
<tr>
<td>Lyon, Waldo</td>
<td>21, 639–640</td>
</tr>
<tr>
<td>MacDonald, Edwin</td>
<td>486–487, 491</td>
</tr>
<tr>
<td>MacDonald, John</td>
<td>289</td>
</tr>
<tr>
<td>Machmis, Joe</td>
<td>75</td>
</tr>
<tr>
<td>Mackiernan (seaman)</td>
<td>10</td>
</tr>
<tr>
<td>Mantell, Bob</td>
<td>634</td>
</tr>
<tr>
<td>Marciniak, Phyllis</td>
<td>717</td>
</tr>
<tr>
<td>Marvin, Ross</td>
<td>514, 515</td>
</tr>
<tr>
<td>Maurer, Fred</td>
<td>633, 721</td>
</tr>
<tr>
<td>McConnell, Burt</td>
<td>631</td>
</tr>
<tr>
<td>McCormick, S. J.</td>
<td>289</td>
</tr>
<tr>
<td>McCoy, James</td>
<td>611</td>
</tr>
<tr>
<td>McGary, James</td>
<td>337</td>
</tr>
<tr>
<td>McGregor, Clifford</td>
<td>278</td>
</tr>
<tr>
<td>McKinley, Ashley C.</td>
<td>117</td>
</tr>
<tr>
<td>McWhinnie, Alice</td>
<td>717</td>
</tr>
<tr>
<td>Melville, George</td>
<td>178–181</td>
</tr>
<tr>
<td>Miller, O. M.</td>
<td>98</td>
</tr>
<tr>
<td>Morgan, Charles</td>
<td>120</td>
</tr>
<tr>
<td>Morrell, Benjamin</td>
<td>28, 39, 96, 229, 299, <strong>433–435</strong>, 434 (illus), 624, 654, 687</td>
</tr>
<tr>
<td>Morton, William</td>
<td>285, 335, 337, 449, 484</td>
</tr>
<tr>
<td>Moulton, Richard</td>
<td>611</td>
</tr>
<tr>
<td>Musselman, Lytton</td>
<td>90</td>
</tr>
<tr>
<td>Newcomb, Raymond</td>
<td>178</td>
</tr>
<tr>
<td>Nichols, Robert</td>
<td>556</td>
</tr>
<tr>
<td>Nindemann, William</td>
<td>178, 180</td>
</tr>
<tr>
<td>Noice, Harold</td>
<td>633, 721</td>
</tr>
<tr>
<td>Noros, Louis</td>
<td>180</td>
</tr>
<tr>
<td>Noville, George O.</td>
<td>119</td>
</tr>
<tr>
<td>O’Brien, John</td>
<td>266</td>
</tr>
<tr>
<td>Ohlsen, Christian</td>
<td>338</td>
</tr>
<tr>
<td>Owen, Arthur</td>
<td>556</td>
</tr>
<tr>
<td>Paine, Stuart</td>
<td>120</td>
</tr>
<tr>
<td>Palmer, Nathaniel</td>
<td>27, 100, 104, 164, 184, 208, 279, 378, 384, <strong>499–501</strong>, 499 (photo), 517–518, 530, 589–591, 600, 622, 626, 661</td>
</tr>
<tr>
<td>Palmer, Robert</td>
<td>90</td>
</tr>
<tr>
<td>Passel, Charles</td>
<td>611</td>
</tr>
<tr>
<td>Patton, Richard</td>
<td>487</td>
</tr>
<tr>
<td>Pavy, Octave</td>
<td>270–271</td>
</tr>
<tr>
<td>Peary, Josephine</td>
<td>511, 512, 514, 716–717</td>
</tr>
<tr>
<td>Pederson, Walt</td>
<td>525</td>
</tr>
<tr>
<td>Pendleton, Benjamin</td>
<td>183, 280, 384, 499–500, <strong>517–518</strong>, 590</td>
</tr>
<tr>
<td>Pece, Earl B.</td>
<td>90, 121</td>
</tr>
<tr>
<td>Percy, Charles</td>
<td>514</td>
</tr>
<tr>
<td>Perkins, Jack</td>
<td>611</td>
</tr>
<tr>
<td>Peters, William</td>
<td>222</td>
</tr>
<tr>
<td>Peterson, Harris-Clinchy</td>
<td>555</td>
</tr>
<tr>
<td>Petras, Theodor</td>
<td>611</td>
</tr>
<tr>
<td>Pirritt, John</td>
<td>406–407</td>
</tr>
<tr>
<td>Pitzl, Gerald</td>
<td>525</td>
</tr>
<tr>
<td>Plaisted, Ralph</td>
<td>299, 470, 524–526</td>
</tr>
<tr>
<td>Porter, Russell Williams</td>
<td>10, 56, 222, 246, 308</td>
</tr>
<tr>
<td>Potaka, Louis</td>
<td>119</td>
</tr>
<tr>
<td>Poulter, Thomas C.</td>
<td>119–120, 558, 610</td>
</tr>
<tr>
<td>Powell, Don</td>
<td>525</td>
</tr>
<tr>
<td>Putnam, George</td>
<td>54, 69, 233, 265</td>
</tr>
<tr>
<td>Radcliffe, Henry</td>
<td>289</td>
</tr>
<tr>
<td>Reynolds, Jeremiah</td>
<td>208, 517–518, 705</td>
</tr>
<tr>
<td>Reynolds, William</td>
<td>706</td>
</tr>
<tr>
<td>Rice, George</td>
<td>270–271</td>
</tr>
<tr>
<td>Richardson, Harrison</td>
<td>611</td>
</tr>
<tr>
<td>Riesenber, Felix</td>
<td>693</td>
</tr>
<tr>
<td>Riley, George</td>
<td>337</td>
</tr>
</tbody>
</table>
Rilliet, Charles E., 10, 222
Ringgold, Cadwalader, 200, 706
Rodgers, John, 296
Rogers, Erasmus, 291
Ronne, Edith, 405
Ronne, Finn, 9, 29, 90–91, 120, 135, 230, 405, 492, 554–557
Roys, Thomas, 72, 147, 698
Russell, Richard, 120
Schlossbach, Isaac, 555
Schubert, Pierre, 337
Schurke, Paul, 606, 634–635, 635 (photo)
Schwatka, Frederick, 354
Seitz, Charles, 222
Sheffield, James, 459, 600, 663
Shinn, Conrad, 487, 623
Shirley, Charles, 611
Small, Jonathan, 393–394
Smith, Dean C., 117, 265–266
Smith, James, 194
Smith, Walter, 514
Snow, Ashley, 90–91, 121
Spicer, John, 232
Stanciff, Olin, 120
Steiger, Will, 5, 226, 277, 606, 634–637, 635 (photo)
Stein, Robert, 210
Stokes, Frank Wilbert, 465, 512
Swain, Walter, 512
Swenson, Olaf, 69, 296, 721
Tanquary, Maurice, 393
Thorner, George, 266
Tuck, John Jr, 487
Tyson, George, 53, 285
Vaniman, Melvin, 693–694
Vaughan, Norman, 266
Vedoe, Anton, 222
Verhoeff, John, 516
Vincent, Edwin, 512
Wade, Alton, 120, 611
Wald, Bud, 120
Warner, Lawrence, 611
Wellman, Arthur, 693
Wellman, Walter, 2, 8, 10, 56, 59, 171, 221, 246, 268, 286, 290, 471, 568, 593, 691–694, 692 (photo), 700
Wells, Charles, 721
Wells, Loren, 611
Wiener, Murray, 611
Williams, Dick, 485
Wilson, William, 313
Wolf, Louis, 514
Woolsey, Blair, 525
Amerindians, 47, 291–293
Akaitcho, 47, 238–240
Conne-e-queue, 292
English Chief, 390
Greenstockings, 47
Matonabbee, 291–293, 318, 716
Terohauté, Michel, 239–240
See also Guides and interpreters; Indigenous peoples
Anvers Island, 31–32, 31 (photo), 89, 169
Arctic Ocean, 32–33, 192–196, 639–640, 668–669, 712–713
basins, 33, 195, 576
crossings, 19–21, 32 (table), 49–51, 225–226, 297–299, 444–446, 493, 606, 637, 710
currents, 32, 178, 180, 195, 297, 444, 605
soundings, 21, 32, 50, 72, 445, 576, 632
submarine ridges, 7, 21, 33, 195, 668
See also Open Polar Sea
Argentina, 33–34, 34–35, 324
territorial claims, 34–35, 184, 378, 405, 623, 700
Argentine Antarctic Territory, 34–35
Argentine explorers
Acuña, Hugo, 33, 104, 378
Fliess (lieutenant), 324
Irizar, Julian, 33, 136, 323–324, 467
Leal, Jorge Edgard, 34
Rozo (cook), 137
Sobral, José Maria, 33, 323, 466
Szmula, Edgar, 33, 104, 378
Valette, Lucien, 33, 104, 378
Yalour, Jorge, 324, 467
Argentine Islands, 33, 35, 573
Aries flights, 7
Auckland Islands, 39–40, 94, 152, 217, 288, 455, 561
Australia, 42–44
stations, 43, 255–256, 291, 319, 389, 397, 534, 539, 708
territorial claims, 43–44, 216, 412–414
Australian Antarctic Territory, 44, 146, 216, 412–414, 491, 534, 704, 707
Australian explorers
Ainsworth, G. F., 397, 410
Bage, Robert, 399, 411
Bernacchi, Louis, 35, 93–94, 584, 586
Bickerton, Francis H., 4, 411
Blake, L. R., 397
Borchgrevink, Carsten, 40, 43, 57, 93–95, 94 (photo), 110–111, 127, 150, 160, 191, 222, 257, 318, 408, 557, 568, 584, 614, 676
Campbell, Stuart, 57, 389, 413
Clifton, Alison, 717
Correll, Percy, 411
David, Edgeworth, 3–4, 171–173, 172 (photo), 595, 601, 677

Index
Australian explorers, cont.
  Davis, John King, 410, 412–413, 638, 701, 707
  Debenham, Frank, 38, 128, 173, 263, 404, 573, 587, 651–652
  Douglas, E., 389, 413
  Dovers, George, 701–702
  Fletcher, Harold, 413
  Hamilton, H., 397
  Harrisson, Charles, 701–702
  Harvey, Samuel, 42–43, 396, 561, 567–568
  Hasselburg, Frederick, 126, 287–288, 396
  Hoadley, C.A., 701–702
  Hodgeman, A.J., 411
  Howard, A., 413
  Hunter, John, 411
  Hurley, Frank, 399, 411, 413, 597, 702–703
  Ingram, W.W., 413
  Johnston, T. Harvey, 413
  Jones, Sydney, 701–702, 704
  Kennedy, Alexander L., 413, 701–702
  Laseron, Charles, 411
  Law, Phillip, 43
  Madigan, Cecil, 411
  McKinnon, Graeme, 218, 389
  McLean, Archibald, 411
  Moyes, Morton, 413, 702
  Murphy, Herbert, 411
  Oom, K., 413
  Richards, Richard, 391–393
  Robin, Gordon, 261 (photo), 262
  Russell, Joan, 717
  Rymill, John, 4, 9, 28, 90, 189, 192, 263, 269, 323, 404, 420, 490, 572–574, 573 (photo), 614, 681–684, 699–700
  Sandell, C.A., 397
  Sawyer, A.J., 397
  Stephenson, P.J., 251
  Thomson, Robert, 708
  Tunzelman, Alexander, 111

Watson, Andrew, 702
Webb, Eric, 399, 411
Whetter, L.A., 411
Wilkins, George Hubert, 7, 20–21, 29, 72, 90, 121, 135, 161–162, 170, 183, 189, 201, 212, 216, 222, 526, 572, 574, 631–632, 639, 641, 696, 699, 703–704, 708–713, 709 (photo)
Williams, A.J., 413
Austria, 44–45, 321
Austro-Hungarian explorers
König, Felix, 44–45, 228–229
Palffy, Josef, 333
Tollner, Hanns, 44, 333
Wohlgemuth, Emil von, 44, 333
Austro-Hungary stations, 44, 320
Axel Heiberg Island, 45–46, 115, 395, 645–647

Back River, 47–48, 242
Baffin Bay, 51–52, 51 (illus), 55, 563–565, 698
Cumberland Sound, 52–53, 174, 176, 518–520, 564
Frobisher Bay, 52–53, 176, 247–249, 284
mislocated in Greenland, 133, 207, 247, 249, 272–273, 352, 549
Pond Inlet, 53–54, 87, 113
Balleny Islands, 57, 111
Balloons, 5, 23–26, 24 (photo), 56, 58–60, 59 (photo), 171, 197, 198, 294–296, 567, 584
Banks Island, 60, 404, 417–418, 504, 631–633
Barents Island, 60–61
Barents Sea, 61–62
Barrow Strait, 67
Batheurst Island, 70, 503
Bay of Whales. See Ross Ice Shelf
Bear Island, 22, 64, 70–71, 438, 450
Bear Islands, 71, 719
Beaufort Sea, 71–72, 301, 417, 426–427, 631–633
Beechey Island, 13, 41, 73–75, 74 (illus), 75–77, 186, 242, 341, 415, 519–520, 647, 691
Belgian explorers
Danco, Émile, 99, 170, 256, 257
Gerlache, Gaston de, 77, 535
Lecoine, George, 77, 256–257
Wiencke, Auguste, 256, 699
Belgium, 77 stations, 77, 319, 535
See also Belgian explorers
Bellingshausen Island, 80
Bellingshausen Sea, 77, 80, 89, 257
Bellot Strait, 80–81, 81 (illus), 344, 377, 415, 566, 620
Biscoe Islands, 87–88
Books and reading. See Libraries
Booth Island, 33, 91, 137–138
Boothia Peninsula, 91–93, 92 (illus), 182, 377, 398 (illus), 415–416, 541–543, 566
Borden Island, 95, 632
Brabant Island, 98–99, 232, 257
Brazil, 100 stations, 100, 209, 354
Bristol Island, 100
British Antarctic Territory, 101–102
British explorers (includes English, Irish, Scots, and Welsh)
Abbott, George, 127
Adams, Jameson, 3–4, 559, 595–596
Adams, William, 53, 113
Aldrich, Pelham, 210, 448, 515
Aldrich, Robert, 41–42, 70
Allan, David, 37
Anderson, Sandy, 68, 296
Archer, W.W., 38, 128
Armitage, Albert, 9, 35–37, 94, 150, 222, 327–330, 528, 557, 584–586, 651, 677
Armytage, Bertram, 595–596
Arnold, Keith, 609
Atkinson, Edward, 37–39, 128, 587, 716
Avery, George, 88, 430
Bagshawe, Thomas, 161–163, 170
Baily, William, 158
Barnard, John, 433, 563
Barne, Michael, 584–586, 661
Beaumont, Lewis, 277, 448
Beechey, Frederick, 60, 66, 72–73, 75, 82, 108, 147, 186, 240–241, 243, 503, 505
Belcher, Edward, 53, 70, 73, 75–77, 76 (illus), 163, 186, 236, 244, 334–335, 340, 341, 344, 400, 423, 691
Bennet, Stephen, 70, 438
Bennett, Peter, 402
Bertram, Colin, 572–574
Bidgood, Thomas, 340
Bingham, Edward, 323, 572, 614, 681–683
Binney, George, 263, 265, 468
Bird, Edward, 243, 562, 563
Blackborow, Perce, 597, 702–703
Blaiklock, Kenneth, 250–251
Blake, Patrick, 99
Bone, Thomas, 99
Bonner, Charles, 584
Borough, Stephen, 61, 95–96, 125, 317, 365, 438, 452, 479, 521, 672, 714
Borough, William, 131, 521
Bradford, Abraham, 113, 422
Braine, William, 73
Brannan, William, 201
Branstfield, Edward, 27, 79, 99–100, 102, 148, 183, 208, 279, 353, 384, 452, 499, 554, 617–618, 626, 661, 687
Bray, Reynold, 402–403
Brisbane, Matthew, 607, 685–686
Bristow, Abraham, 39, 217, 288
Brocklehurst, Philip, 3–4, 595–596
Brooke, Dick, 607–609
Brown, Robert Neal Rudmose, 103–104
Browne, William, 42, 517, 532, 563
Browning, Frank, 127–128, 651
Bruce, Wilfred, 586
Bruce, William Speirs, 33, 60, 102–105, 103 (photo), 110, 126, 149, 200, 228, 300, 329, 378, 466, 530, 551, 596, 623, 625, 628, 687, 695
Bruton, William, 173
Buchan, David, 47, 66, 72, 108–110, 109 (illus), 238, 367, 484, 563
Bull, Colin, 608–609
Burd, Dick, 309
Burgess, S., 327, 329
Burley, Malcolm, 148, 209, 622
Burton, Charles, 224–226, 665
Butson, Richard, 555–556
Button, Thomas, 111–113, 112 (illus), 114, 232–233, 310, 314, 332, 356, 436
Cabot, John, 123–124, 165, 247, 268, 272
Cabot, Sebastian, 124–126, 125 (illus), 247, 309, 314, 438, 714
Cadd, George, 608
Carse, V. Duncan, 572, 622
Cartwright, John, 694–695
Cator, John, 41
Cavendish, Thomas, 176, 475
Chancellor, Richard, 61, 95, 125, 134–135, 438, 472, 521, 569, 714
Chapman, Frederick Spencer, 681–684
Cheetham, Alfred, 597, 702–703
Cheyne, John Powles, 59
Child, J. B., 413
Child, Josiah, 327, 329
Choyce, M. A., 29
Clark, Robert, 597, 702–703
Clarke, Charles, 585
Clere, Charles, 159–160
Cobrith, William, 313
Colbeck, W. R., 413
Colbeck, William, 93–94, 150–152, 151 (photo), 409, 557, 568, 583
Collinson, Richard, 72, 75, 152–153, 243, 340–341, 417, 419, 433, 532, 630, 676
Conway, Martin, 529 (photo), 628, 642 (photo)
Cope, John, 6, 30, 161–163, 170, 183, 309, 391–392, 696, 708
Court, Stephen, 417
Courtauld, Augustine, 264, 358, 572, 681–683
Cowper, David, 81
Cozens, H. Iliffe, 681
Crean, Tom, 37, 584, 587–588, 597–599, 621
Cresswell, Samuel, 417
Croft, Andrew, 263–265, 383, 469, 666
Crozier, Francis, 241–242, 560, 562
Cunningham, John, 133, 167–168, 177, 185, 279, 287, 357, 382, 549
Cutberson, William, 103
D’Aeth, N. H., 681–682
Davidson, James, 201
Davidson, Robert, 200
Davies, ‘Taft’, 490
Willoughby, Hugh, 61, 95, 125, 134, 312, 365, 479, 521, 713–714
Wilson, Edward, 30–31, 38, 227, 229, 303, 397, 558–559, 584–588, 661, 714–716, 715 (photo)
Wilton, David, 103, 329
Wood, John, 484, 718–719
Wordie, James, 54, 263, 333, 351, 597, 681, 684, 702–703
Wright, John, 530
Wright, John W., 211, 263–265
Wyllie, Peter, 608
Wynniat, Robert, 479
Young, Adam, 99
Young, Allen, 43, 74, 178, 415–416, 420, 517, 532, 620
Brock Island, 102, 632
Bulgaria, 110
stations, 110, 384
Byam Martin Island, 113, 503
Bylot Island, 113
Caird Coast, 126, 597
Campbell Island, 58, 89, 110, 126–127, 288, 455, 561
Canada, 129–130
stations, 45, 70, 129, 164, 209, 211, 314, 320, 321, 533
Canadian explorers
Anderson, James, 48, 244, 316, 543
Austad, Jack, 525
Baird, Patrick, 54, 113, 402, 403
Barker, Charles, 296
Beals, John, 542
Berley, John, 356
Blackadar, R. G., 211
Body, Brent, 634
Boffa, Ernie, 60, 676
Borden, L. E., 386
Brady, John, 296
Breddy, George, 69, 721
Burwash, Lachlan, 54, 355
Buxton, Max, 606
Caldwell, George, 386
Chafe, Ernest, 68
Chartrand, Albert, 377
Christopher, William, 291, 310, 315, 698
Coats, William, 310, 315
Crawford, Allan, 633, 721
Dease, Peter, 92, 181–183, 240, 242, 316, 322, 354, 476, 541, 630, 675
Dexter, Laurie, 606
Faribault, 54
Gall, E. J., 80
Gibson, William, 354–355
Green, Charles, 60, 703–704
Hadley, John, 68–69
Halkett, Andrew, 386
Hamilton, R.W., 13, 45, 163
Hignell, Martin, 637
Holloway, Christopher, 606
Hunt, Patrick, 377
Jenness, Diamond, 403, 631
Jenness, John, 60, 676
Joy, A. H., 13, 45, 170, 190, 209, 349, 369, 384, 423
Kelly, Rob, 113
Kelsey, Henry, 315, 356
Kennedy, William, 42, 80, 237, 244–245, 342–344, 343 (illus), 415, 517, 532–533, 542, 620
King, Archie, 296
King, C. F., 386
Koeiner, Roy, 297–299, 298 (photo)
Larsen, Henry, 70, 74, 80, 92, 129, 302, 355, 375–378, 376 (photo), 419, 423, 477, 532–533, 676
Lavoie, J. T. E., 53, 87
Linklater, Peter, 542
Low, Albert, 74, 85–86, 129, 210, 310, 385–386, 385 (photo), 620, 698
Lyall, Ernie, 80
Lymburner, J. H., 214–216
Mackenzie, Alexander, 238, 315, 317–318, 389–390, 564
Macpherson, Andrew, 404
Malloch, George, 69, 721
Manning, Ella, 54, 401–403, 717
Manning, Thomas, 54, 60, 129, 233, 263, 401–404, 402 (photo)
McLean, N. B., 314
McConnell, Jack, 226
Mitchell, Thomas, 310, 315
Moodie, John, 386
Morin, Octave, 60, 87
Morris, Stanley, 68
Munro, John, 68–69
Napper, James, 315
Norton, Moses, 291–292, 315
Peters, Bill, 377
Pond, Peter, 315, 389–390
Porsild, Alf Erling, 60, 676
Ranford, Barry, 245
Roots, Frederick, 261 (photo), 262
Rowley, Graham, 402–403
Scroggs, John, 356, 425
Simpson, Thomas, 92, 182–183, 316, 322, 354, 415, 541, 630, 675, 716
Smith, Francis, 431–432, 716
Somers, Geoff, 636
Soper, Joseph Dewey, 54, 403
Stallworthy, Harry, 45, 210–211, 421
Stewart, James Green, 48, 244, 316, 543
Stuart, William, 356
Taylor, Andrew, 490–491
Thomson, Karl, 632
Thorsteinsson, Ray, 13, 421,
Tickell, Lance, 164
Tredgold (constable), 54
Tremblay, Alfred, 54
Vaughan, David, 356
Wakeham, William, 53, 129, 314
Washburn, Lincoln, 60, 676
Washburn, Tahoe, 676
Weber, Richard, 606, 634
Wentzel, Willard-Ferdinand, 238–240
Williams, Hugh, 68
Williamson, Robert, 69
Wright, Charles, 38, 587, 651–652
Candlemas Island, 130, 625
Cannibalism, 239–240, 253, 271–272, 543
Carbon monoxide poisoning, 17, 64, 94, 119–120, 296, 421–422, 714
Cartography, 455–456
Antarctic, 652–654
Arctic, 130–134, 479
See also Surveying and mapping;
Cartography, cont.

Theorists and scholars
Charcot Island, 135, 139, 141, 711
Chile, 141–142
stations, 4, 135, 141, 170–171, 184, 280, 319, 354, 454, 662
territorial claims, 141–142, 184
Chilean Antarctic Territory, 142
Chilean explorers
Pardo, Luis Alberto, 141
Toró, Federico Guesalaga, 141
China, 142
stations, 142, 354, 534
Chinese explorers
Qin Dahe, 636
See also Guides and interpreters; Indigenous peoples
Chukchi Sea, 21, 147, 340
Clarence Island, 99, 148
Coats Island, 112
Coats Land, 104, 149–150, 229
Commercial enterprises
Adventure Network International (ANI), 212
A/S Oceana, 169, 373
Bergen Greenland Company, 206–207
British Southern Whale Fishery Company, 39, 217
Compagnie des Indes, 96, 407
Company of Cathay, 521
Danes Island, 24–25, 171, 693
Danish explorers
Amstrup, Georg, 10–12, 274, 308, 349–351, 426, 465
Astrup, Eivind, 110, 511–512
Baek, Kurt, 358
Bangsted, Helge, 546–547
Bering, Vitus, 26, 81, 82–85, 83 (illus), 147, 186, 188, 318, 370, 536, 671
Bertelsen, Alfred, 439
Bethelsen, Aage, 440
Birket-Smith, Kaj, 546–547
Bistrup, Henning, 440
Byrne, Åge, 45, 421
Bøgvad, R., 548
Christophersen, Gottfried, 512
Dalager, Lars, 207, 275, 289
Dannell, David, 185, 206
Drastrup, Einar, 353
Eberlin, Peter, 306–307
Ege, Hans, 133, 185, 206–207, 267, 273, 279, 352, 478
Ellitsgaard-Rasmussen, Knud, 360
Freuchen, Peter, 54, 440, 544–547
Früh, Achtion, 440
Friis, Børge, 359
Gabel-Jørgensen, Carl, 548
Garde, Thomas, 306–307
Gelting, Paul, 358
Haagensen, Berge, 360
Hansen, Godred, 13, 210, 544, 676
Hansen, Leo, 547
Hansen, Poul, 548
Hartz, Nikolaj, 12, 351
Høeg-Hagen, Niels, 352, 358, 427, 440–441
Høm, Kjeld, 359
Holstved, Erik, 548
Hovgaard, Andreas, 339, 443, 463
Iversen, Iver, 427, 428–429
Jacobsen, Aage, 359
Jakobsen, A., 11
Jarl, Jens, 675
Jensen, Hans, 608–610
Jensen, Peter, 289–290
Johnsen, Palle, 359
Jørgensen, C., 247–428
Knuth, Eigel, 351, 353, 358–360, 359 (photo), 510, 607, 673
Knutsen, Hans, 306–307
Koch, Johan Peter, 11, 276, 352–353, 360, 440–441, 510, 528–529, 608, 688
Koch, Lauge, 7, 186, 278, 350–351, 353, 360–363, 361 (photo), 510, 529, 545–546, 674
Kruuse, Knud, 11
Laub, Vilhelm, 427–428
Lindenburg, Godse, 167–168, 177, 185, 279, 287, 381–382, 549
Madsen, Christian, 359
Maigaard, Christian, 511
Mathiassen, Therken, 54, 546–548
Mikkelsen, Enar, 11–12, 56, 72, 186, 301, 349–351, 352, 426–429, 427 (photo), 441, 510, 544, 608, 629, 709
Molke, Harald, 439
Munk, Ebbe, 358–359
Munk, Jens, 61, 185, 310, 356, 365, 435–437, 474
<table>
<thead>
<tr>
<th>Page</th>
<th>Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>203</td>
<td>East Siberian Sea</td>
</tr>
<tr>
<td>205</td>
<td>Ecuador stations, 205, 280, 354</td>
</tr>
<tr>
<td>206</td>
<td>Edge Island, 205, 453, 681</td>
</tr>
<tr>
<td>211-212</td>
<td>Eglinton Island, 207-208, 340</td>
</tr>
<tr>
<td>208-209</td>
<td>Eirik Raude Land, 185-186, 305, 478</td>
</tr>
<tr>
<td>209</td>
<td>See also Greenland, East, territorial dispute</td>
</tr>
<tr>
<td>208-209</td>
<td>Elephant Island, 99-100, 141, 208-209, 208 (photo), 518, 530, 598, 702-704</td>
</tr>
<tr>
<td>209</td>
<td>Ellef Ringnes Island, 209, 398, 646-647</td>
</tr>
<tr>
<td>211-212</td>
<td>Ellsmere Island, 115, 209-211, 269-272, 289-290, 448, 512-514, 645-647</td>
</tr>
<tr>
<td>215</td>
<td>Ellsworth Land, 121, 205, 211-212, 215-216</td>
</tr>
<tr>
<td>211</td>
<td>Ellsworth Mountains, 141, 211, 215</td>
</tr>
<tr>
<td>216-217</td>
<td>Emerald Island, 216-217, 340</td>
</tr>
<tr>
<td>218</td>
<td>Enderby Land, 88, 217, 218, 412-413, 549-551</td>
</tr>
<tr>
<td>395</td>
<td>Eskimo. See Inuit and Greenlanders Etah, 115, 155, 277-278, 393, 395, 396</td>
</tr>
<tr>
<td>215</td>
<td>Eternity Range, 90-91, 215</td>
</tr>
<tr>
<td>176</td>
<td>Falkland Islands, 22, 89, 103-104, 176, 324, 434, 466, 499, 562, 600, 685</td>
</tr>
<tr>
<td>184</td>
<td>Falkland Islands and Dependencies Aerial Survey (FIDASE), 88, 171, 184</td>
</tr>
<tr>
<td>49-51</td>
<td>Farthest North, 1-3, 18-19, 49-51, 140, 221, 270, 311, 448, 460-461, 506-507, 514-515, 524, 581-582</td>
</tr>
<tr>
<td>582</td>
<td>Farthest South, 94, 159, 221-222, 557, 561-562, 584-585, 596, 685 (illus), 686</td>
</tr>
<tr>
<td>319</td>
<td>Filchner Ice Shelf, 227, 229, 230, 319, 556-557</td>
</tr>
<tr>
<td>230-231</td>
<td>Finland stations, 230-231, 320-321, 535</td>
</tr>
<tr>
<td>383</td>
<td>Fire, 94, 309, 383, 405</td>
</tr>
<tr>
<td>174</td>
<td>First contacts between Europeans and Inuit communities, 14, 149, 174, 247-248, 278 (illus), 306-307, 307 (photo), 564, 566, 629-631</td>
</tr>
<tr>
<td>272</td>
<td>Fishing, 176, 234, 268, 272</td>
</tr>
<tr>
<td>239</td>
<td>Foxe Basin, 69, 232-233, 234, 395, 402-404, 504</td>
</tr>
<tr>
<td>319-321</td>
<td>France, 234-235 stations, 5, 166, 235, 319-321,</td>
</tr>
<tr>
<td>235</td>
<td>See also Danish explorers Telge, Ulrik, 637</td>
</tr>
<tr>
<td>349</td>
<td>Walloe, Peder, 267, 274, 352, 716</td>
</tr>
<tr>
<td>174</td>
<td>Davis Strait, 173-176, 177-178, 698</td>
</tr>
<tr>
<td>176</td>
<td>De Long Islands, 180, 181, 294, 605-606, 656-657, 679</td>
</tr>
<tr>
<td>141</td>
<td>Deception Island, 99, 138, 141, 162, 183-185, 184 (photo), 213, 231 (illus), 232, 499-500, 517-518, 573, 597, 695, 703, 711</td>
</tr>
<tr>
<td>510</td>
<td>Denmark, 185-186 stations, 186, 278, 320-321, 349, 351-353 territorial claims, 268, 307, 349, 351, 510</td>
</tr>
</tbody>
</table>
France, cont.
346–347, 351, 629, 674, 708
territorial claims, 4, 166, 235, 407, 412
See also French explorers
territorial dispute, 10, 44, 246, 305, 478–479, 602
French explorers
Alesno, François, 347
Aubert de la Rue, Andrée, 291, 346, 717
Aubert de la Rue, Edgar, 291, 346
Bellot, Joseph-René, 75, 80, 343–344, 620, 691
Bénard, Charles, 235, 480
Beuchat, Henri, 68
Bienaimé, A. P. L., 333
Blosseville, Jules de, 10, 234, 349
Boisguene, 234, 344
Boisguene, 234, 347–348, 484
Borrel, Joseph, 235
Boisguehenneuc, 344
Bongrain, Maurice, 137–138
Bougainville, Louis-Antoine de, 234, 407
Bouvet de Lozier, Jean, 96, 144, 158, 234, 347, 407
Clemeur, Ambroise-Bernard-Marie le Jar du, 407–408
Crozet, Jules Marie, 166, 407
Dayné, Pierre, 136
Duclos (captain), 96
Étienne, Jean-Louis, 226, 235, 277, 492, 635–637
Filhol, Henri, 126
Gaimard, Paul, 12, 71, 234, 628
Gain, Louis, 137
Gessain, Robert, 673
Godfroy, René E., 137–139
Gonneville, Binot Paulmyer de, 96, 234, 347, 407, 652
Gourdon, Ernest, 136–139
Gramont, G. Saint-Lanne, 346
Guillaud, René, 20
Guillard, Robert, 674–675
Jacquinet, Charles, 199
Jost, Alain, 675
Kerguelen-Trémarec, Yves, 158–159, 234, 344, 347–348, 484
Liotard, André-Franck, 5
Liouville, Jacques, 137
Loranchet, Jean, 346
Malaurie, Jean, 235, 278
Marion Dufresne, Marc-Joseph, 166, 234, 407–408, 455, 484, 531
Matha, André, 135
Matter, Fred, 673
Mayaud, Pierre-Noël, 399
Micard, Gaston, 353
Monaco, Albert I Prince of, 1, 71, 102, 105, 309, 644
Paumelle, Robert, 136
Peau, Etienne, 346
Pléneau, Paul, 135, 137
Rallier du Baty, Henri, 346
Rallier du Baty, Raymond, 136, 346
Rey, Joseph-J., 135
Rossnevzt, Charles de Saulx de, 344, 347
Rouch, Jules, 137–138
Rouillon, Gaston, 675
Orléans, Louis-Philippe-Robert duc d’, 1, 61, 235, 257, 352
Prud’hon, Bernard, 636
Senoque, A., 137
Turquet, J., 136
Victor, Paul-Émile, 5, 235, 276, 349, 358, 608, 673–675
Funds-raising, 118, 155, 228, 256, 284, 409, 510, 572, 578, 636, 712
Fur trade, 82, 105, 187, 190–191, 315–316, 389, 657
Geomagnetic Poles, 255, 539, 708
George Land, 255, 329, 575–576, 616
George V Land, 255–256, 410–412
George VI Sound, 9, 90–91, 574
Gerlache Strait, 170, 256–257, 258, 466
German explorers
Aschenbrenner, 204
Barkow, Erich, 228
Baschin, Otto, 196
Bauendahl, Oscar, 171
Benitz, Albert, 622
Bessels, Emile, 285–286, 309
Bidlingmaier, Friedrich, 197
Boas, Franz, 53–54
Borgen, Karl, 363–364
Brennecke, Wilhelm, 228–229
Buchholz, Reinhold, 363, 365
Chun, Carl, 97, 147–148, 259, 346, 447
Clauss, O., 577
Copeland, R., 363
Dege, Wilhelm, 469
Detmers, Erwin, 578–581
Eberhard, Wilhelm, 578, 580–581
Eckener, Hugo, 8, 203–205, 212, 246, 308, 593
Enzensperger, Joseph, 197, 346
Ernsting, Arnold, 689
Fülchern, Wilhelm, 29, 44, 126, 150, 162, 228–230, 259, 300, 556, 578, 597, 621, 625, 680, 687–688, 696
Forster, George, 158
Forster, John, 158
Fuchs, Arved, 226
Gazert, Hans, 197
Georgi, Johannes, 321, 688–690
Giese, W., 259
Giesecke, Karl, 279
Hantzsch, Bernhard, 54, 402–403
Hegemann, Friedrich, 192, 363–365
Heim, Fritz, 228–229
Holzapfel, Rupert, 689
Jülg, Hugo, 689
Kling, Alfred, 228–229
Kohl-Larsen, Ludvig, 204, 622
Kohl-Larsen, Margit, 622
Kopp, Walther, 689
Kottas, Alfred, 552
Krech, Adalbert, 147–148
Krüger, Hans, 13, 45, 163, 211, 421
Kükenthal, Willy, 61, 205
Laube, Gustav, 363
Lerner, Theodor, 71, 348, 451, 468, 581, 593, 644
Loewe, Fritz, 688–690
Lorenzen, Wilhelm, 229
Mayr, Max, 578
Mestermaker, Gert, 258, 273
Meyer, Frederick, 286
Miertsching, Johann, 152–153, 417
Mooser, Walter, 578–581
Mosthaff, E., 577
Pansch, Georg, 363
Peters, Hermann, 689
Philippi, Emil, 197
Pryzyblyok, Erich, 228–229
Puskepleit, Monika, 717
Rave, Christopher, 578, 580–581
Rüdiger, Herman, 578, 580–581
Ruser, Hans, 197
Sandleben, August, 578
Schirmacher, Richardheinrich, 552
Schmidt, Richard, 578
Schrader, Karl, 259, 577–578
Schröder-Stranz, Herbert, 259, 263, 468, 552, 578–581, 579 (photo), 628
Seelheim, Heinrich, 228
Slossarczyk, Walter, 228
Sonntag, August, 289, 336, 337
Sorge, Ernst, 688–690
Stade, Herman, 196
Steinen, Karl von den, 577
Vahsel, Richard, 228–229
Vanhöffen, Ernst, 148, 196–197
Vogel, P., 577
Wahr, Richard, 552
Walter, Alfred, 61, 205
Wegener, Alfred, 259, 276, 351, 383, 440, 529, 673–675, 688–690, 689 (photo)
Wegener, Kurt, 259, 580, 628
Weiken, Karl, 689
Werth, Emil, 197
Weyprecht, Karl, 44, 245, 286, 320, 507–509, 615
Will, H., 577
Wölcken, Kurt, 689

---

Index

---

Indigenous peoples, cont.
Guides and interpreters; Inuit and Greenlanders; Nentsy; Pomors; Saami
Ingrid Christensen Coast, 146, 318–319
International Polar Years (IPY), 44, 319, 320–321, 509
Interpreters. See Guides and interpreters
Inuit and Greenlanders, 11–22, 14–15, 53 (illus), 149, 190–191, 274, 307 (photo), 322 (illus), 544–548
Individuals
Ahpellah, 156
Ajako, 45, 421
Albert One-Eye, 542
Alexey, 179
Aniguin, 179
Arnaq, 456
Arnánguaq, 546–547, 717
Arnánguaq, 546
Arqioq, 546
Asatsiaq, 631
Augustus, 240
Blackjack, Ada, 633, 717, 721
Brønlund, Jørgen, 352, 358, 427, 428, 439, 440, 441
Christian, 415
Christiansen, Thorlip contributions to polar exploration, 190, 191, 277, 279, 283–285, 321–323, 393, 504, 511, 613, 629, 710, 716
Ebierbing, 283–286, 283 (illus)
Edward, Jens, 270, 271
Eenoolooapik, 518–519
Egingwah, 515
Etukishook, 156, 394
Filemønsen, Karl, 359
Gabrielsen, Tobias, 383, 440, 441, 688
Geisler, Jens, 360
Iggiánguaq, 546
Illigluik, 504
Inuksitoq, 544–546
Ipichkout, 402–403
Katuktovick, 68
Kiruk, 68
Kristiansen, Eli, 190, 191, 277, 279, 283–285, 321–323, 393, 504, 511, 613, 629, 710, 716
Ebierbing, 283–286, 283 (illus)
Edward, Jens, 270, 271
Eenoolooapik, 518–519
Egingwah, 515
Etukishook, 156, 394
Filemønsen, Karl, 359
Gabrielsen, Tobias, 383, 440, 441, 688
Geisler, Jens, 360
Iggiánguaq, 546
Illigluik, 504
Inuksitoq, 544–546
Ipichkout, 402–403
Katuktovick, 68
Kiruk, 68
Kristiansen, Eli, 358
Kuraluk, 68–69
Mathiesen, J. M., 267–268
Nasaitordluarsuk, 545–546
Natkusiak, 630–632
Nookeeplexungwak, 187
Olsen, Hendrik, 545–546
Ooqueh, 515
Ootah, 515
Ouligbuck, 541
Pannigabluk, 630
Paulyurak, 631
Peewahtoq, 394
Peter, 289
Petersen, Hendrik, 306
Petersen, Johan, 306–307
Qavigíssuaq, 546–547
Rossbach, Ove, 358
Sackheuse, Joseph, 564
Samuelsen, Tobias, 360
Sandgreen, Zakæus, 358
Sandy, 402–403
Seegloo, 515
Tannamirkeq, 630
Tookoolito, 283–286, 283 (illus)
Uvdloriaq, 544
Villumsen, Rasmus, 689 (photo), 690
See also First contacts between explorers and Inuit communities; Guides and interpreters; Indigenous peoples
IPY. See International Polar Years
Italian explorers
Alessandrini, Renato, 457–458
Arduino, Ettore, 457–458
Biagi, Giuseppe, 457–459
Bové, Giacomo, 524, 463
Coen, Natale, 457–459
Caratti, Attilio, 457–458
Cat, Giovanni, 324
Dallin, Achille Cavalli, 2
Molinelli, Guido, 325
Nobile, Umberto, 8, 9, 19–20, 203–204, 211, 246, 255, 324, 457–459, 502, 549, 575, 648
Ollier, Felice, 2, 471
Pedretti, Aldo, 457–458
Petigax, Guiseppe, 2
Pomella, Vincenza, 457–458
Querini, Francisco, 4, 471
Segré, Alde, 324
Tomaselli, 457–458
Trophio, Felice, 457, 459
Vespucchi, Amerigo, 621
Viglieri, Alfredo, 457, 459
Zappi, Filippo, 457–459
Italy, 324–325 stations, 324–325, 354, 629, 678, 708
See also Italian explorers
Japanese explorers
Funatsu, Keizo, 636–637
Miisho, 601
Murayama, Masayoshi, 334, 624
Nagata, Takesi, 333
Nomura (Captain), 601
Jackson Island, 330–331, 330 (illus), 445
James Ross Island, 168, 331, 467
Jan Mayen, 44, 48, 139, 311, 332–333, 451, 453, 468, 582, 615
Italy, 324–325 stations, 324–325, 354, 629, 678, 708
See also Italian explorers
Jackson Island, 330–331, 330 (illus), 445
James Ross Island, 168, 331, 467
Jan Mayen, 44, 48, 139, 311, 332–333, 451, 453, 468, 582, 615
Japanese explorers
Funatsu, Keizo, 636–637
Miisho, 601
Murayama, Masayoshi, 334, 624
Nagata, Takesi, 333
Nomura (Captain), 601

See also
784

New Zealand explorers, cont.
Gawn, Ted, 303
Hatherton, Trevor, 302
Hillary, Edmund, 250, 252, 302–304,
303 (photo), 419, 455, 559, 623,
678
Marsh, George, 303
McKerrow, Bob, 634
Miller, J. H., 250, 302
Mulgrew, Peter, 303
Paton, James, 421
Simmers, R. G., 413
Worsley, Frank, 61, 472, 597, 621,
675, 703–704
Wright, Derek, 304
Nonexistent lands and islands
Albert Edward Island, 204
Andreyev Land, 71, 203, 294, 570,
679, 719
Aurora Islands, 88, 434, 499, 600,
685
Bradley Land, 156, 157, 710
Buss Island, 249
The Chimneys, 145, 217
Crocker Land, 45, 393–394, 515, 710
Dougherty’s Island, 144–145
Emerald Island, 110, 111, 414
Fata Morgana Islands, 362
Frisland, 174, 247–248, 272
Gillis Land, 9, 61, 329–331, 348, 363,
445, 450, 458, 460, 575, 668, 698
Gonneville Land, 96, 234, 347, 407
Harmsworth Island, 204
Juan de Gama Land, 85
Keenan Land, 72, 192, 426–427,
709–710
King Oscar Land, 2, 108, 246, 328,
445, 508
New South Greenland, 28, 229,
433–435
Nimrod Islands, 89, 145
Pagoda Rock, 145, 432, 704
Petermann Land, 2, 108, 246, 328,
445, 508
Royal Company Island, 111, 414
Sannikov Land, 26–27, 181, 294,
372, 454, 570, 654–657, 679, 719
Swain’s Island, 518
Thompson Island, 97, 145, 217
Truls Island, 145
Willoughby’s Land, 61, 312, 521
See also Terra Australis Incognita;
Zeno map

Index

Norse Arctic Exploration, 61, 177,
218–220, 467–468, 643
Erik the Red, 218–219, 267, 272,
279, 467, 478
Eriksson, Leif, 52, 219–220, 467
Herjolfsson, Bjarni, 219, 467
Ohthere, 61, 467–468, 483
Ulfsson, Gunnbjörn, 218, 272–273,
467
Norse colonies in Greenland, 167–168,
185, 218–219, 258, 272–274,
381–382, 456
Eastern Settlement, 207, 219,
267–268, 272–273, 275, 279, 306,
352, 464, 548–549
Western Settlement, 207, 219, 272,
279
North East Land, 263–265, 458, 462,
468–469, 578, 581, 615, 659–660
North Korea, 366
North Pole, 1–3, 18–20, 23–26, 67,
108–110, 115–116, 155–157,
178–181, 222–227, 246, 284–286,
294–299, 310–311, 327–330,
444–446, 458, 469–471, 469
(photo), 470 (table), 471 (table),
492, 501–502, 505–506, 515–516,
522–526, 591–592, 605–606,
634–635, 637, 663, 691–694,
712–713
Northbrook Island, 2, 9, 25, 35, 56,
107–108, 223–224, 308, 328–329,
445, 471–472, 592, 615–616, 692
Northeast Passage, 17–18, 62–65,
84–85, 95–96, 105–106, 125,
134–135, 140–141, 169–170, 185,
188, 268, 311–312, 338–339, 372,
436, 438, 452–453, 462–464,
472–474, 473 (table), 474 (table),
507, 521–522, 569–572, 578, 591,
602–604, 656–658, 672–673,
678–680, 713–714, 718–719
Northwest Passage, 13–15, 55, 66–67,
81, 86–87, 111–115, 123–125,
159–160, 165–166, 173–178,
181–183, 185, 225, 233–234,
237–243, 247–250, 268–269,
291–293, 310, 313–315, 331–332,
355–356, 358, 366–367, 369,
375–378, 416–419, 425–426,
430–432, 435–439, 474–477,
502–505, 541, 547, 563–567,
671–672, 694–695

Norway, 477–479
stations, 71, 97, 305, 309, 319–321,
333, 350, 352–353, 478–479, 535
territorial claims, 97, 129, 143–146,
218, 261, 274, 305, 318, 333, 353,
373, 412–413, 468, 478–479, 522,
531–532, 534–535, 540, 549–551,
644, 675, 697
Norwegian explorers
Amundsen, Anton, 445
Amundsen, Roald, 5–6, 8, 13–20, 14
(photo), 31, 72, 74, 92, 99,
115–116, 127, 139, 153, 155,
191–192, 203, 210, 212, 221–222,
242, 256, 266–267, 297, 299, 302,
323, 354, 376–377, 398, 401, 446,
457–459, 470, 477–478, 517, 528,
544, 549, 558, 567–568, 575,
586–588, 614, 620, 623, 633, 661,
665, 709–710
Anderssen, Ant. A., 144
Andreasen, Hemming, 644
Andreasen, Ole, 631–632
Arnesen, Liv, 717
Balchen, Bernt, 116–118, 212–214,
265, 618
Baumann, Victor, 210, 645–647
Bay, Edvard, 187, 645, 647
Bengtssen, Karl, 263–264
Bentsen, Bernt, 445, 692, 700
Berg, Agnar, 492
Birkeland, Kristian, 644
Bjaaland, Olav, 15–17
Bjørvik, Paul, 692–693, 700
Blessing, Henrik, 445
Blomkvist, Karl, 328–329
Borge, Hans, 164
Bottolfsen, Johan, 691
Braskerud, Ove, 645
Bull, Henrik, 40, 43, 57, 93, 102,
110–111, 126, 161, 166, 169–170,
346, 397, 465, 676, 695
Carlsen, Elling, 348, 453, 478, 481,
507, 530, 644, 672
Christensen, Ingrid, 146, 531, 717
Christensen, Lars, 97, 143–147, 144
(photo), 246, 305, 412, 478–479,
522, 531, 535, 540, 549–552, 695,
696–697, 704
Dahl, Odd, 6
Devold, Hallvard, 551
Dietrichson, Leif, 18–19
Dietrichson, Oluf, 443


Ellefsen, Emil, 692
Ellefsen, Olaf, 93–94, 692
Eriksen, Erik, 348, 644
Evensen, Carl Julius, 2, 4, 9, 373
Feucht, Karl, 18
Fosheim, Ivar, 210, 645–647
Fougner, Anton, 93
Giever, John, 260–263, 261 (photo), 479, 535, 554, 661
Gran, Trygve, 587, 651
Günnestad, Alf, 146
Hallgren, Stig, 262
Halvorsen, H., 534
Hanson, Nicolai, 93–95
Hansen, Helmer, 13–18, 323
Hassel, Sverre, 12, 15–16, 163, 209, 349, 645–646
Hendriksen, Peder, 445, 645–646
Hoel, Adolf, 7, 71, 205, 304–305, 305 (photo), 351, 352, 468, 530, 628, 644
Holtdahl, Olaf, 628
Horn, Gunnar, 9–10, 246, 255, 305, 472, 478, 676
Horntvedt, Harald, 97, 144
Ingstad, Helge, 305
Isachsen, Gunnar, 12, 145, 163, 187, 209–210, 304, 349, 551, 628, 644–647
Jacobsen, Theodor, 445
Jelbart, John, 262
Jensen, Bernhard, 93–94
Jensen, Ingvar, 580
Jensen, Jørgen, 580
Jensen, Julius, 580
Johannessen, Daniel, 692
Johannesen, Edvard Holm, 338, 478, 481
Johannsen, Daniel, 191
Johansen, Hjalmar, 15–16, 329–331, 445–446
Johnsen, Nils, 348
Johnson, Knud, 693
Juell, Adolf, 445
Kagge, Erling, 226–227, 478, 492, 624
Keilhau, Balthasar, 71, 205, 478, 643–644
Kjeldsen, Johan, 185, 464, 498
Kjellbotten, Olav, 551
Kløvstad, Herulf, 93–94
Knudsen, Paul, 17
Knutson, Paul, 456
Kraemer, Søren, 171
Kristensen, Leonard, 110–111
Kristiansen, Kristian, 443–444
Larsen, Nils, 20, 97, 145–146, 522, 535, 549–551
Lindström, Adolf, 13, 16
Lorenzen, Bjarne, 262
Lund, Anton, 13
Lund, E., 205, 644
Lützow-Holm, Finn, 413, 549–551
Mamen, Bjarne, 68–69, 721
Melleby, Peter, 262
Mikkelsen, Karoline, 146, 318, 717
Mikkelsen, Karius, 146, 318, 534, 661
Mogstad, Ivar, 445
Nilsen, Johannes, 644, 676
Nilsen, Thorvald, 15
Nordahl, Bernhard, 445
Olstad, Ola, 145, 522
Omdahl, Oskar, 18–19
Orvin, Anders, 7, 305
Ousland, Børge, 5, 226–227, 478, 492–493, 665
Pedersen, Morten, 373
Pedtersen, Lars, 445
Prestrud, Kristian, 16, 205
Raanes, Olef, 210, 645–647
Randby, Geir, 492
Ristvedt, Peder, 13–15
Roe, Nils, 262
Rogstad, Egil, 262
Rønbeck, Nils, 9, 245–246, 255, 305, 478, 628, 644
Ronne, Edith, 555, 717
Ronne, Martin, 554
Rotvold, Einar, 580–581
Røvig, Sverre, 304
Schei, Per, 645–647
Schumacher, Nils, 262
Scott-Hansen, Sigurd, 445
Seibullsen, Ludvig, 644, 676
Snarby, John, 262
Sørle, Petter, 164, 607, 696
Staib, Bjørn, 5, 525
Stave, Knut, 580–581
Staxrud, Arve, 263, 304, 579 (photo), 581, 628
Stenersen, August, 579–581
Støkken, Henrik A., 2, 471
Stolz, Rudolf, 645
Storkerson, Storker, 72, 102, 192, 426–427, 631–633, 676
Stubberud, Jørgen, 15–16
Swendsen, Johan, 645
Sverdrup, Harald, 17–18, 261–262, 712
Tessam, Peter, 17
Tobieson, Sivert, 309
Tollefsen, Ivar, 534–535
Tønnesen, E., 18
Wiik, Gustav, 13–14
Wildervø, Viggo, 146, 531
Wisting, Oscar, 9, 15–18
Novaya Zemlya, 6, 62, 64–65, 95, 204, 311, 479–481, 480 (illus), 497–498, 507, 509, 521, 527, 592, 616, 714, 718–719
Oates Land, 483
See also Polynyas
Operation Deep Freeze, 8, 89, 91, 122, 302, 319, 485–487, 486 (photo), 611, 623, 664, 713
Operation Highjump, 8, 122, 206, 485, 487–489, 491–492, 607, 612, 623, 639, 641, 661, 664, 678
Eastern Group, 9, 20, 135, 406,
Index

Operation Highjump, cont. 488–489
  Western Group, 57, 218, 256, 342, 389, 483, 489, 534, 539, 704, 707
Operation Nanook, 129, 164, 211, 423
Operation Tabarin, 30, 101, 141, 164, 184, 189, 309, 331, 419, 489–491, 700
Operation Windmill, 20, 485, 491–492, 522, 539, 704, 707
Pakistan, 498–499
  stations, 535
Palmer Archipelago, 499
Parry Islands, 503, 506
  Paulet Island, 374 (photo), 375, 466, 506–507, 597–598
Peel Sound, 13–14, 242, 244, 344, 415, 516–517, 563
Pensacola Mountains, 211–212, 485–486, 661
Peru, 520–521
  stations, 354, 521
  Peter I Island, 79, 139, 141, 144N>145, 478, 492, 522, 696
Petermann Island, 137–138, 522
Photography, 201, 204, 381, 491, 554, 585, 641
Poland, 526
  stations, 71, 320–321, 354, 384, 539, 628
  See also Polish explorers
Polar bears, 17, 25, 64, 264, 364, 436, 445, 524, 660
  See also Trichinosis
Poles of inaccessibility, 526–527
  Northern, 297, 606, 721
  Southern, 319, 342, 539
Polish explorers
  Arctowski, Henryk, 77, 99, 256–257, 526
  Centikiwicz, Czeslaw, 71, 526
  Dobrowolski, Antoni, 256
  Kaminski, Marek, 493
  Rakusa-Suszczewski, Stanislaw, 526
  Polunyas, 26, 51, 178
  See also Open Polar Sea
Ponies, 36, 327, 362, 528–529
Portugal, 164–165, 272, 474
Portuguese explorers
  Barcelos, Pedro Maria de, 165
  Corte-Real, Gaspar, 165, 177, 309, 314
  Corte-Real, João Vaz, 165, 185
  Corte-Real, Miguel, 165–166
  Corte-Real, Vasco Ates, 166
  Fernandes, João, 165
Prince Charles Foreland, 105, 450, 530–531
Prince Charles Island, 233, 404
Prince Charles Mountains, 389
Prince Edward Islands, 159, 166, 234, 407, 446, 531, 620
Prince Harald Coast, 146, 531
Prince of Wales Island, 42, 344, 398, 404, 416, 532, 563
Prince of Wales Strait, 81, 152, 341, 376–378, 417, 532
Prince Olav Coast, 532, 550
Prince Patrick Island, 340, 532–533, 632
Princess Astrid Coast, 79, 534
Princess Elizabeth Land, 216, 414, 534–535
Princess Martha Coast, 30, 79, 224, 260–263, 535, 551
Princess Ragnhild Coast, 77, 145, 535–536, 535
Pytheas, 483, 536–537
Queen Elizabeth Islands, 539
  Queen Louise Land, 535, 607–610
  Queen Mary Land, 539, 701–702
  Queen Maud Land, 145–146, 434, 478, 540, 549–554
  Queen Maud Mountains, 16, 117, 120, 555
  (photo)
  See also Franklin Search Expeditions
Robert Island, 530, 554
Romanian explorers
  Racovita, Emin, 256
Ronne Ice Shelf, 230, 319, 556
Ross Dependency, 302, 478, 557
Ross Island, 3–4, 303–304, 558–560, 559 (photo), 714–716
Rudolf Island, 2, 56, 222–224, 501, 508 (illus), 568–569
Russia, 569–572
  See also Soviet Union
Russian explorers
  Al’banov, Valerian, 9, 106–108, 255, 472, 592
  Alekseyev, Fedor, 188
  Amosov, Fedor, 71
  Andreyev, K. P., 481
  Andreyev, Stepan, 71, 294, 719
  Anjou, Peter, 26–27, 178, 372, 387, 454, 484, 655, 719
  Ankudinov, Gerasim, 188
  Anufriyev, I. P., 255, 472
  Avino, Aleksandr, 671–672
  Babayev, Vasily, 140
  Baer, Karl von, 423, 498
  Begichev, Nikifor, 647, 657, 679–680
  Berezchnykh, Il’ya, 26, 366
  Boyarsky, Viktor, 636
  Branth, Theodor, 423–424
  Breitfuss, Leonid, 62
  Brusilov, Georgiy, 9, 32, 106–108, 246, 255, 472, 570, 592, 647
  Bunge, Aleksandr, 387, 454, 655
  Buturlin, Sergey, 366
Saami, cont.
Ravna, Ole, 318, 443
Rossa, Anders, 318, 464
Savio, Persen, 93–94, 318
Tuorda, Pava, 318, 464
See also Guides and interpreters;
Indigenous peoples
Samoyeds. See Nentsy
Saunders Island, 576–577
Scientific organizations
Arctic and Antarctic Institute, St.
Petersburg, 181, 571
Arctic Institute, Leningrad, 7, 246,
308, 485, 571, 575–576, 602, 667
Arctic Institute of North America,
187, 404
Australian National Antarctic
Research Expeditions (ANARE),
43, 342, 389, 704
British Antarctic Survey (BAS), 4,
100–101, 126, 130, 252, 323, 331,
334, 419, 489, 622, 625, 643, 700
Carnegie Institution, 395
Chief Administration of the
Northern Sea Route, 7, 474,
501–502, 526, 571, 576, 603–604,
668–669
Commission for Geological and
Geographical Investigations in
Greenland, 10, 185, 306
Commission for Scientific Research
in Greenland, 185
Commission scientifique d’Islande
et de Groënland (later
Commission scientifique de
Nord), 234
Danish Polar Center, 186, 351, 353
Expéditions Polaires Françaises
(EPF), 5, 235, 673–675
Falkland Islands Dependencies
Survey (FIDS), 4, 9, 101, 135,
170–171, 183–184, 192, 250, 252,
297, 309, 323, 331, 334, 378–379,
405–406, 491, 507, 555–556, 574,
622, 623, 700
Geographical Branch, Canadian
Department of Mines and
Technical Surveys, 54, 129
Geological Survey of Canada (GSC),
13, 45, 54, 70, 129, 163–164, 209,
349, 384–385, 629, 631
German Polar Commission, 577
Naval Arctic Research Laboratory
(NARL), 72, 195
Norwegian Polar Institute, 333, 348,
479, 620, 628, 644
Norwegian Svalbard Expeditions,
61, 71, 304–306, 349, 530–531,
644
Office of Naval Research, 72, 555
Office of Polar Programs, 91, 665
Philadelpia Academy of Natural
Sciences, 511
Philosophical Institute of
Canterbury, 40, 127
Polar Continental Shelf Project
(PCSP), 129, 164
St. Petersburg Academy of Sciences,
140, 423–424, 655–657
Scott Polar Research Institute, 263,
404, 535, 643, 708
U.S. Antarctic Program, 85, 122,
485–487, 583, 612, 664, 708, 717
U.S. Geological Survey, 212, 661
See also Museums; Societies;
Sponsors
Scientific research, 3, 40, 126–127,
136–137, 146, 166–167, 197–198,
258, 262, 270, 290, 319–321,
423–424, 461, 509, 577–578, 582
archaeology, 358, 360, 403, 545, 547
astronomy, 120, 186
botany, 39, 98, 104, 111, 126,
345–346
ethnography, 11–12, 14, 17–18,
153–154, 306–307, 349, 463,
544–548, 673
geology, 22, 98, 104, 118, 120, 148,
257, 262, 265–267, 279, 361–362,
373, 450, 518, 651–652, 661
glaciology, 196, 251, 262, 264,
275–276, 651–652
magnetism, 11, 13–14, 16, 94, 104,
120, 345, 432–433, 530, 560–562
meteorites, 4, 334
meteorology, 11, 16, 49–50, 59–60,
104, 120, 162, 196, 262, 264, 276,
502, 530
oceanography, 16, 18, 21, 49–50,
104–105, 147–148, 162, 178, 189,
445–447, 502, 530, 668–669
pendulum and gravity studies,
148–149, 183, 231–232, 641
seismic surveys, 120, 252, 262, 276,
334, 334–355, 609–610, 623–624,
688–690
upper atmospheric studies, 35, 126,
264
zoology, 94, 95, 104, 147–148, 162,
189, 714–716
See also International Geophysical
Year; International Polar Years;
Scientific organizations; Transit of
Venus
Scoresby Sound, 139, 185, 235,
349–351, 362, 429, 583
Scott Island, 150, 583
Scurvy, 55, 107, 140, 155, 205, 234, 242,
252, 257, 271, 313, 332–333,
336–338, 345, 357, 370, 392–393,
418, 425, 428, 431, 436–437,
447–449, 462, 494, 497–498, 536,
563, 567, 585, 592, 633, 671–672
Sealers, 27–28, 166, 169, 447, 589–591,
644
Sealing and Antarctic Exploration,
57–58, 88–89, 126, 160–161,
176–177, 183, 217, 280, 287–288,
342, 433–435, 499–501, 517–518,
529–530, 589–591, 590 (illus),
600, 621–626, 639
Seven Islands, 25, 298, 299, 461–462,
505–506, 524, 592–593, 660, 691
Severnaya Zemlya, 17, 69, 133, 204,
593–594, 603, 605, 667–668,
678–679
Seymour Island, 28, 324, 373, 466, 594
Shackleton Ice Shelf, 539, 701–702, 706
Shackleton Range, 34, 126, 150, 230,
250–251, 661
Ships. See Vessels
Shipwrecks, 32, 39, 51, 68, 74, 75, 135,
147, 166, 179–180, 223, 242, 249,
271, 345, 353, 355–358, 364–365,
375, 396, 427–428, 505, 583, 597,
603–604, 616, 626, 658, 687, 691,
718
Signy Island, 607
Sledges and sleds, 322–323, 388 (illus),
444, 612–614, 613 (illus)
Smith Island, 79, 616–617
Smith Sound, 55, 271, 285, 289, 393,
449, 564, 645, 648
See also Nares Strait
Snow Hill Island, 22, 23 (photo), 162,
213, 324, 466–467, 618
Snow Island, 618–619
Societies
Aero Club of Norway, 19
South African explorers
South Africa, 22, 78, 159, 189, 222, 395, 516, 525, 631
Royal Geographical Society of Australasia, 43
Royal Society, 149–150, 232, 409, 523, 530, 653
Royal Society of Victoria, 43
Society d’océanographique du golfe de Gascoyne, 235
Wernerian Society of Edinburgh, 582
Somerset Island, 344, 416, 504, 563, 566, 619–620, 619 (illus)
South Africa, 620–621
stations, 531, 535
territorial claims, 531
South African explorers
Adie, Ray, 29, 252
Bakker, Eduard van Zinderen, 531
Crawford, Allan, 531
La Grange, J. J., 250, 251, 620
South Korea, 366, 354, 629
South Orkney Islands, 103–104, 199, 500, 529–530, 622–623, 685–686
South Sandwich Islands, 78–79, 88, 159, 228, 434–435, 624–625
South Shetland Islands, 33, 79, 89, 99–100, 169, 260, 499–500, 589, 617–618, 625–626, 696
Southampton Island, 48–49, 114, 387, 388, 402, 504
Soviet explorers
Babushkin, Mikhail, 603, 668
Badigin, Konstantin, 49–51, 526
Balabin, E., 569
Baydukov, Georgiy, 142–143
Belyakov, Aleksandr, 142–143
Belyayev, Alexandr, 606
Buyntsikiy, V. K., 50
Cherevichnyy, Ivan, 7, 470, 502, 526, 721
Chkalov, Valeriy, 7, 142–143, 502
Chukhnowskiy, Boris, 7, 459, 575
Chukov, Vladimir, 226, 665
Davydov, Vakim, 606
Doronin, Ivan, 604
Dralkin, Aleksandr, 624
Fedorov, Yevgeney, 501
Fedyakov, Anatoly, 606
Golovin, Pyotr, 501
Gordiyenko, Pavel, 470
Gromov, Mikhail, 143
Kamanin, Nikolay, 604
Khemlevskiy, Yuri, 606
Khodov, Vasiliy, 667–668
Klenova, Marie, 717
Knipovich, Nikolay, 62
Konyukov, Fyodor, 606
Kremer, Boris, 339
Krenkel’, Ernst, 204, 290, 501–502
Kuznetsov, Aleksandr, 7
Ledeney, Vladimir, 606
Levanovskiy, Sigismund, 72, 143, 246, 372, 569, 604, 713
Liapidevskiy, Aleksandr, 604
Ledenev, Vladimir, 606
Nagórski, Jan, 6, 10, 481
Nikolayev, N. M., 668
Papanin, Ivan, 193, 308, 501–502, 604
Petrow, Gavrili, 721
Rakhmanov, Vladimir, 606
Rjabceva-Demne, Nina, 717
Semenchuk, Konstantin, 669, 721
Shirshov, Peter, 501
Shishkarev, Vasily, 606
Shparo, Dmitriy, 5, 82, 181, 226, 527, 604–607, 605 (photo)
Slepnev, Mavriki, 604
Snegirev, Vladimir, 605
Urvantsyev, Nikolay, 667–668
Ushakov, Georgiy, 133, 204, 339, 373, 576, 593, 602–604, 667–669, 721
Vize, Vladimir, 339, 480, 501, 592, 602
Vlasov, G. P., 502, 668
Vodop’yanov, Mikhail, 501, 569, 604
Voronin, Vladimir, 602–603
Zhuravlev, Sergey, 668
Zubov, Nikolay, 246, 668, 676
See also Russian explorers
Soviet Union, 193–194, 571
stations. See Russia
territorial claims, 246, 255, 571, 575–576, 633, 721
See also Russia; Russian explorers;
Soviet explorers
Spain, 627
stations, 185, 384
Spitsbergen, 1, 64, 115–116, 149, 168, 263, 265, 311, 450, 458, 578–581, 627–629
Sponsors
Alexander I, tsar of Russia, 78, 569–570, 671
Arctic Council, 243
Banks, Joseph, 65–66, 157–158, 582–583
Barrow, John, 51, 55, 65–67, 65
Barrow, John Jr, 243, 520
Bennett, James Gordon, 178, 181, 664
Booth, Felix, 91, 566–567
Bradley, John R., 156, 515
Campbell, Robert, 288
Canadian Defence Research Board, 129, 404
Carlsberg Foundation, 10, 362, 440
Catherine the Great, tsarina of Russia, 140
Charles I, king of England, 233, 331
Sponsors, cont.

Christensen, Christen, 144, 373
Christian IV, king of Denmark, 167, 168, 185, 272, 287, 381–382, 436–437, 548–549, 643
Coats, Andrew and James, 61, 102–103, 366
Danish Expedition Foundation, 359
Dickson, Oscar, 450, 461–462, 464, 648
Dundas, Henry (2nd Viscount Melville), 65, 583
Edward VI, king of England, 125, 438, 713–714
Eisenhower, Dwight D., 21
Elizabeth I, queen of England, 247–249
Ellsworth, James, 18–19, 212
Enderby, Charles, 39, 88–89, 217, 342, 639
Ford, Edsel, 115
Foyn, Svend, 43, 110, 141, 169, 373–374, 695
Frederik II, king of Denmark, 167, 185, 272
Gamél, Augustin, 358, 443
Göring, Hermann, 552
Grinnell, Henry, 186, 237, 283–285, 289, 335, 664
Harmsworth, Alfred (Viscount Northcliffe), 35, 327, 329, 427, 513
Hearst, William Randolph, 711
Henry VII, king of England, 123–124
Howgate, Henry, 53, 210, 269
Jesup, Morris, 513, 664
Johnstrup, Johannes, 185
Kinnes, Robert, 169, 200–201
Klokov, P., 497
Knoop, Ludwig, 170
Lancaster, James, 287, 369
Lok, Michael, 247–249
Manoel I, king of Portugal, 165–166
Markham, Clements, 35, 37, 102, 150–151, 269, 401, 408–410, 409 (photo), 447, 449, 466, 506, 583, 615
Melville, Lord. See Dundas, Henry
Moucheron, Balthasar de, 62, 106, 452
Müller, Henrik, 185, 206
Mussolini, Benito, 457, 459
Newnes, George, 93
Norcross, Arthur D., 69
Peter I, tsar of Russia, 82, 84, 437, 473, 569
Plenisner, Fedor, 71
Raleigh, Walter, 173
Robertson, MacPherson, 389
Rockefeller, John D., 212
Rowett, John Quiller, 599, 704
Rumyantsev, Nikolai, 293, 366–367
Sanderson, William, 173–176
Sachsen-Altenburg, Ernst von, 578
Sibiryakov, Aleksandr, 170, 463
Sidorov, Mikhail, 339, 462, 473
Smith, Thomas, 287, 313, 694
Sverdrup Islands, 86, 129, 644
Sweden, 320–321, 535, 628, 648
Swedish explorers
Ahlmann, Hans, 260–262, 469, 472, 554, 648
Ahrenberg, Albin, 648, 682–683
Akerblom, Filip, 451
Åkerlund, Gustaf, 324, 466–467
Almqvist, Ernst, 463
Andersson, C. F. Gunnar, 450
Andersson, Gunnar, 22–23, 23 (photo), 71, 170, 258, 308, 324, 374–375, 450, 465, 467, 621, 648, 673
Andersson, Karl, 465
Arvidsson, Ivar, 451
Berggren, Sven, 460–461
Björling, Alfred, 151, 648
Blomstrand, C. Vilhelm, 660
Bodman, Gösta, 324, 465–467
Brusewitz, Eric, 463
Chydenius, J. Karl, 660
Dunér, Nils, 450, 452, 460, 659–660
Duse, Samuel, 22–23, 23 (photo), 308, 465, 476, 673
Dusén, Per, 451
Ekelöf, Eric, 465–466
Ekholm, Nils, 24–25, 648
Ekström, Bertil, 262
Frænkel, Knut, 25, 698–699
Fries, Theodor, 460
Geer, Gerard de, 628
Goës, Axel, 660
Grunden, Toralf, 22–23, 23 (photo), 308, 467, 673
Gyllén, Olof, 308, 648
Hamborg, Axel, 450
Hammar, Josef, 451
Hesselman, O.A. Henrik, 450
Holmgren, August, 460
Jonassen, Ole, 191, 466–467, 673
Kallstenius, Evald, 648
Kjellman, Frans, 461, 463
Kjellström, C. I. Otto, 450
Kolthoff, Gustaf, 450
Lemström, Karl, 460
Levin, Ernst, 450
Liljequist, Gösta, 116, 262, 320, 469, 648
Lovén, Sven, 628, 643, 648, 658–659
Lundborg, Einar, 459, 648
Malmgren, Anders, 460, 659
Malmgren, Finn, 19, 457–459

See also
Commercial enterprises; Museums; Scientific organizations; Societies
See also Scurvy
Stations. See Drifting ice stations; Individual countries
Sub-Antarctic Islands, 638–639
Submarines, 20–21, 147, 193, 639–641, 712–713
Surveying and mapping, 641–643, 642 (photo)
Sverdrup Islands, 86, 129, 644
Sweden, 320–321, 535, 628, 648
Sibiryakov, Aleksandr, 170, 463
Sidrov, Mikhail, 339, 462, 473
Simpson, George, 182, 315–316, 541
Smith, Thomas, 287, 313, 694
Walsingham, Francis, 173, 175
Wilczek, Johann von, 44, 507
Wolstenholme, John, 233, 313
Ziegler, William, 56, 222, 224, 664
See also Commercial enterprises; Museums; Scientific organizations; Societies
See also Scurvy
Stations. See Drifting ice stations; Individual countries
Sub-Antarctic Islands, 638–639
Submarines, 20–21, 147, 193, 639–641, 712–713
Surveying and mapping, 641–643, 642 (photo)
Sverdrup Islands, 86, 129, 644
Sweden, 320–321, 535, 628, 648
Sibiryakov, Aleksandr, 170, 463
Sidrov, Mikhail, 339, 462, 473
Simpson, George, 182, 315–316, 541
Smith, Thomas, 287, 313, 694
Walsingham, Francis, 173, 175
Wilczek, Johann von, 44, 507
Wolstenholme, John, 233, 313
Ziegler, William, 56, 222, 224, 664
See also Commercial enterprises; Museums; Scientific organizations; Societies
See also Scurvy
Stations. See Drifting ice stations; Individual countries
Switzerland, 648–649
Swiss explorers 450–452, 464, 628, 643–644, 699
Nauckhoff, E. Gustaf, 460
Nordenskjöld, Gustaf, 464, 628
Nordström, C. F. Theodor, 461
Öberg, Per, 461
Ohlin, Axel, 450, 465
Otter, Fredrik Wilhelm von, 460
Palander, A. A. Louis, 460, 462–463
Quennerstedt, August, 659
Schyt, Valter, 262
Skog, H., 451
Skottsborg, Carl, 465
Smitt, Fredrik, 460, 660
Strindberg, Nils, 24–25, 698–699
Stuxberg, Anton, 463
Torell, Otto, 12, 363, 450, 460, 462, 468, 593, 628, 643, 658–660, 659 (illus)
Wennberg, Amanda, 717
Wennergaard, Ole, 22, 375, 507
Wijkander, A. G. August, 462
Wilson, Ove, 262
Wuelf, Thorild, 360, 362, 545–546
Swiss explorers 464, 676–678, 681
Fränkl, J., 510
Jenni, Hanspeter, 649
Mertz, Xavier, 65, 255, 411–412, 649
Mittelholzer, Walter, 649
Müller, Fritz, 510
Perez, Michel, 349, 673
Quervain, Alfred de, 276, 349, 648
Switzerland, 648–649
stations, 320
See also Swiss explorers
*Terra Australis Incognita, 157–159, 484, 652–654, 653 (map)
See also Nonexistent lands and islands
Theorists and scholars (incl. cartographers)
Agassiz, Louis, 275
Barrington, Daines, 108, 484, 522–523
Barrow, John Sr. See Sponsors
Behaim, Martin, 130, 457
Bent, Silas, 178, 485
Bowman, Isaiah, 98
Briggs, Henry, 233
Brosses, Charles de, 653
Burney, James, 719–720
Carpenter, William, 446
Clavus, Claudio, 130, 272
Dalrymple, Alexander, 157–158, 292, 653
Darwin, Charles, 39, 346
Dee, John, 131, 173, 456
Engel, Samuel, 484, 522–523
Finæus, Orontius, 652
Frisius, Gemma, 309
Gauss, Karl Friedrich, 197, 399, 560
Gilbert, Humphrey, 173, 247
Gmelin, Johann, 84
Hakluyt, Richard, 123, 456
Harris, Rollin, 426
Hayes, J. Gordon, 299
Headland, R. K., 31
Hobbs, William, 69, 265, 276
Lomonosov, Mikhail, 139–140, 484, 528
Markham, Clements. See Sponsors
Masa, Isaac, 479
Maury, Matthew, 43, 291, 320
Mercator, Gerard, 130–131, 132 (map), 309, 397–398, 455–457, 472, 484
Mill, Hugh Robert, 299, 408
Mohn, Henrik, 32, 333
Mueller, F. von, 59
Müller, Gerhard Friedrich, 84, 188
Murray, John, 148, 299, 300 (map)
Neumayer, Georg von, 13, 43, 169, 196, 258, 321, 577
Ortelius, Abraham, 131–132, 309, 652, 653 (map)
Petermann, August, 178, 258, 363, 485, 507
Plancius, Peter, 62, 64, 309, 311, 313, 479, 484, 507, 521
Ptolemy, Claudius, 130–131, 652
Purchas, Samuel, 54–55, 436, 479
Reinell, Pedro, 131
Thorne, Robert, 310–311, 484
Waldseemüller, Martin, 131
Wright, George Fredrick, 155
Theron Mountains, 34, 126, 150, 250, 661
Thiel Mountains, 661
Thule Island, 620, 625, 654
Tierra del Fuego, 22, 256, 324, 465, 562, 686, 705
Transantarctic Mountains, 16, 117–118, 172, 265, 266–267, 266 (photo), 611, 661–662, 676
Transit of Venus, 39–40, 43, 126, 166, 258, 346, 577
Treaties
Antarctic (1959), 34, 43, 77, 498, 664
Spitsbergen (1920), 71, 304, 468, 478, 628, 643, 644
Tordesillas (1494), 34, 123, 142, 165–166, 247, 272, 473–474, 627
Trichinos, 10, 25, 112, 357, 436–437
Trinity Island, 661
Trinity Peninsula, 99, 661
Ukraine, 663
stations, 35
United States, 194–195, 663–665, 664 (illus)
territorial claims, 121, 181, 211, 215–216, 406, 491, 534, 556, 664
See also American explorers
Universities
Cambridge, 263, 351, 402, 628, 681
Copenhagen, 156, 186, 362
McGill, 45
Michigan, 69, 265
Unsupported expeditions, 226–228, 492–493, 665–667
Vaygach Island, 95, 327, 452, 521, 527, 672–673
Vega Island, 22, 23, 673
Vessels

Fifteenth-century
Matthew, 123

Sixteenth-century
Ayde, 248, 521
Blide Bootschap, 260
Bona Confidentia, 96, 134, 714
Bona Esperanza, 134, 714
Dennys, 249
Edward Bonaventure, 95–96, 134–135, 714
Elizabeth, 176
Ellen, 176
Emanuel, 249
Gabriel, 247–248
George, 521
Mercurius [I] and [II], 62
Mermayde, 175
Michael, 247–248
Moonshine, 173–175
Northstarre, 175
Philip and Mary, 134–135
Serchethrift, 95–96
Sunsshine, 173–176
Swane, 62
Vliegende Draeck, 106
William, 521

Seventeenth-century
Albany, 355–356
Charles, 233
Churchill, 291, 315
Discovery, 55, 111, 114, 313–314, 694–695
Enhörmningen, 436
Gilliflower, 382, 549
Godspeed, 313, 694–695
Greenland Bark, 549
Halve Maen, 312
Heart's Ease, 287
Henrietta Maria, 331
Hopewell, 309, 311, 357
Katten, 167
Lamprenen, 436–437
Maerseveen, 531

Nonsuch, 310
Ørnen, 382
Patience, 287
Prosperous, 718–719
Resolution, 111, 252
Rode Lawen, 167, 382
Speedwell, 718
Thomassine, 55, 628
Trost, 167, 382, 549

Eighteenth-century
Adventure, 158–159, 252
Aigle, 96
Anna Christine, 206
California, 431–432
Carcass, 523–524, 523 (illus)
Churchill, 356
Discovery, 159–160, 425
Dobbs Galley, 431–432
Egte Sophia, 207
Ekspedition, 399, 437
Fortune, 347
Furnace, 425
Gros V entre, 344, 347–348
Haabet, 206
Irkutsk, 370
Marie, 96
Marquis de Castres, 407–408
Mascarin, 407–408
Ob', 399, 437
Ob'-Pochtal'on, 430, 494
Oiseau, 344, 347
Racehorse, 718
Resolution, 158–159
Roland, 347–348
St. Gabriel, 83, 280
St. Peter, 85
Tobol', 494
Whalebone, 356
Yakutsk, 371, 536

Nineteenth-century
Active, 200
Advance, 289, 335–338
Advice, 519
Aeolus, 659–660
Alert, 210, 447–450
Alexander, 502, 564
Annawan, 518
Assistance, 40–42, 75–77, 379, 381, 408, 691

Astrolabe, 198–200, 199 (illus)
Axel Thorsden, 460
Babayev, 140
Balaena, 200
Bateauy, 685–686, 685 (illus)
Belgica, 56, 155, 235, 256–257, 379
Berentine, 205
Blagonamerennyy, 671
Blossom, 72, 75, 505
Bon Accord, 518–519
Breadalbane, 74–75
Brisk, 217
Bulldog, 416
Capella, 2, 10, 471, 693
Caster, 182, 373–374
Cecilia, 177
Chanticleer, 183, 232
Challenger, 147–148, 166, 259, 291, 346, 447–450
Chichagov, 140
Cover, 51
Diana, 61, 200, 393, 615
Dijymphna, 339
Discovery, 210, 269, 447–450
Dolphin, 240
Dorothea, 108–109
Dove, 529–530
Dragon, 590–591
Eira, 328, 471, 615–616
Eliza, 529–530
Eliza Scott, 57–58, 217
Elizabeth, 51, 210, 698
Emma, 89, 599
Enterprise, 72, 152–153, 341, 417, 562–563
Esk, 582–583
Espiritu Santo, 33, 384, 499, 600, 618, 626
Falcon, 512
Felix, 567
Flying Fish, 396, 705–707
Fox, 237, 415
Free Gift, 517
Frithjof, 56, 223, 472, 691–692
Fury, 47, 504–505, 533 (illus), 565–566, 619
George Henry, 283–284
Germania, 363–363
<table>
<thead>
<tr>
<th>Index</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Gladan, 461–462</td>
<td></td>
</tr>
<tr>
<td>Griper, 149, 387–388, 422 (illus), 502–504</td>
<td></td>
</tr>
<tr>
<td>Grønnland, 169, 363</td>
<td></td>
</tr>
<tr>
<td>Hansa, 363–365, 364 (illus)</td>
<td></td>
</tr>
<tr>
<td>Hecla, 72, 422 (illus), 502–506</td>
<td></td>
</tr>
<tr>
<td>Herald, 339–404, 433</td>
<td></td>
</tr>
<tr>
<td>Herman, 296, 721</td>
<td></td>
</tr>
<tr>
<td>Hero, 499–500, 517, 589</td>
<td></td>
</tr>
<tr>
<td>Héroine, 166</td>
<td></td>
</tr>
<tr>
<td>Hersilia, 384, 499, 517, 600, 618, 626</td>
<td></td>
</tr>
<tr>
<td>Hope, 616</td>
<td></td>
</tr>
<tr>
<td>Hopefull, 217</td>
<td></td>
</tr>
<tr>
<td>Huntress, 176–177</td>
<td></td>
</tr>
<tr>
<td>Huron, 176–177</td>
<td></td>
</tr>
<tr>
<td>Intrepid, 40–42, 75, 77, 340–341, 341 (illus)</td>
<td></td>
</tr>
<tr>
<td>Investigator, 60, 72, 77, 87, 152, 340, 404, 417–418, 418 (illus), 532, 562–563</td>
<td></td>
</tr>
<tr>
<td>Isabella, 113, 369, 502, 564, 565 (illus), 567</td>
<td></td>
</tr>
<tr>
<td>Isbjørn, 507</td>
<td></td>
</tr>
<tr>
<td>James Monroe, 500</td>
<td></td>
</tr>
<tr>
<td>Jane, 684–686, 685 (illus)</td>
<td></td>
</tr>
<tr>
<td>Jason, 2, 373–374, 444</td>
<td></td>
</tr>
<tr>
<td>Jeannette, 178–180, 179 (illus), 444</td>
<td></td>
</tr>
<tr>
<td>Kara, 616</td>
<td></td>
</tr>
<tr>
<td>Kazakov, 498</td>
<td></td>
</tr>
<tr>
<td>Kite, 511</td>
<td></td>
</tr>
<tr>
<td>Krotov, 498</td>
<td></td>
</tr>
<tr>
<td>Lady Franklin, 519–520</td>
<td></td>
</tr>
<tr>
<td>Lady Greely, 271</td>
<td></td>
</tr>
<tr>
<td>Larkins, 51, 210, 698</td>
<td></td>
</tr>
<tr>
<td>Lena, 461 (illus), 463</td>
<td></td>
</tr>
<tr>
<td>Levant, 160–161</td>
<td></td>
</tr>
<tr>
<td>La Lilloise, 234</td>
<td></td>
</tr>
<tr>
<td>Lion, 240</td>
<td></td>
</tr>
<tr>
<td>Lively, 88–89, 423</td>
<td></td>
</tr>
<tr>
<td>Magdalena, 659–660</td>
<td></td>
</tr>
<tr>
<td>Magnet, 342</td>
<td></td>
</tr>
<tr>
<td>Marie, 578</td>
<td></td>
</tr>
<tr>
<td>Mary, 74–75</td>
<td></td>
</tr>
<tr>
<td>McClellan, 283</td>
<td></td>
</tr>
<tr>
<td>Miranda, 155</td>
<td></td>
</tr>
<tr>
<td>Mirmny, 78, 500</td>
<td></td>
</tr>
<tr>
<td>Moltke, 577</td>
<td></td>
</tr>
<tr>
<td>Monticello, 284–285</td>
<td></td>
</tr>
<tr>
<td>Nancy Dawson, 72</td>
<td></td>
</tr>
<tr>
<td>North Star, 74–75, 77, 113, 691</td>
<td></td>
</tr>
<tr>
<td>Novaya Zemlya, 497</td>
<td></td>
</tr>
<tr>
<td>Ocean, 39</td>
<td></td>
</tr>
<tr>
<td>Onkel Adam, 461–462</td>
<td></td>
</tr>
<tr>
<td>Otkrytite, 671</td>
<td></td>
</tr>
<tr>
<td>Pagoda, 432–433</td>
<td></td>
</tr>
<tr>
<td>Pandora, 178</td>
<td></td>
</tr>
<tr>
<td>Panov, 140</td>
<td></td>
</tr>
<tr>
<td>Panther, 290</td>
<td></td>
</tr>
<tr>
<td>Peacock, 396, 705–707</td>
<td></td>
</tr>
<tr>
<td>Perseverance, 126, 288</td>
<td></td>
</tr>
<tr>
<td>Phoenix, 74, 77, 344</td>
<td></td>
</tr>
<tr>
<td>Pioneer, 40–42, 75–77, 691</td>
<td></td>
</tr>
<tr>
<td>Plover, 72, 339–340, 417, 433</td>
<td></td>
</tr>
<tr>
<td>Polar Star, 200</td>
<td></td>
</tr>
<tr>
<td>Polaris, 178, 285, 450, Polhem, 461–462</td>
<td></td>
</tr>
<tr>
<td>Polliax, 182</td>
<td></td>
</tr>
<tr>
<td>Porpoise, 200, 705–707</td>
<td></td>
</tr>
<tr>
<td>Prince Albert, 113, 343–344, 343 (illus)</td>
<td></td>
</tr>
<tr>
<td>Prince of Wales, 334</td>
<td></td>
</tr>
<tr>
<td>Proteus, 270–271, 450</td>
<td></td>
</tr>
<tr>
<td>Prøven, 463</td>
<td></td>
</tr>
<tr>
<td>Ragnvald Jarl, 593, 691</td>
<td></td>
</tr>
<tr>
<td>Recherche, 234</td>
<td></td>
</tr>
<tr>
<td>Reliance, 240</td>
<td></td>
</tr>
<tr>
<td>Rescue, 335</td>
<td></td>
</tr>
<tr>
<td>Resolute, 40–42, 75, 77, 340–341, 341 (illus), 418, 446</td>
<td></td>
</tr>
<tr>
<td>Rose, 89, 217</td>
<td></td>
</tr>
<tr>
<td>Ryurik, 367</td>
<td></td>
</tr>
<tr>
<td>Sabrina, 57–58</td>
<td></td>
</tr>
<tr>
<td>Samson, 615</td>
<td></td>
</tr>
<tr>
<td>San Juan Nepomuceno, 33, 626</td>
<td></td>
</tr>
<tr>
<td>Sarah, 39</td>
<td></td>
</tr>
<tr>
<td>Sea Gull, 183, 705</td>
<td></td>
</tr>
<tr>
<td>Seraph, 518</td>
<td></td>
</tr>
<tr>
<td>Sofia, 460–461, 464</td>
<td></td>
</tr>
<tr>
<td>Sophia, 344, 519–520</td>
<td></td>
</tr>
<tr>
<td>Southern Cross, 93–94, 557</td>
<td></td>
</tr>
<tr>
<td>Spitsbergen, 498</td>
<td></td>
</tr>
<tr>
<td>Sprightly, 28, 309</td>
<td></td>
</tr>
<tr>
<td>Stella Polare 1–3, 1 (photo), 568</td>
<td></td>
</tr>
<tr>
<td>Talbot, 74, 76</td>
<td></td>
</tr>
<tr>
<td>Tegetthoff, 379, 507–508</td>
<td></td>
</tr>
<tr>
<td>Thomas Corwin, 296, 720</td>
<td></td>
</tr>
<tr>
<td>Tigress, 178, 285</td>
<td></td>
</tr>
<tr>
<td>Trent, 72, 108–109, 109 (illus), 238</td>
<td></td>
</tr>
<tr>
<td>Tula, 88–89, 384</td>
<td></td>
</tr>
<tr>
<td>Union, 240</td>
<td></td>
</tr>
<tr>
<td>United States, 289–290</td>
<td></td>
</tr>
<tr>
<td>Valdivia, 147, 197, 259</td>
<td></td>
</tr>
<tr>
<td>Varuna, 339, 453, 672</td>
<td></td>
</tr>
<tr>
<td>Vega, 460, 461 (illus), 463</td>
<td></td>
</tr>
<tr>
<td>Victory, 560, 565–567</td>
<td></td>
</tr>
<tr>
<td>Vincennes, 296, 705–707</td>
<td></td>
</tr>
<tr>
<td>Vire, 126</td>
<td></td>
</tr>
<tr>
<td>Vostok, 78, 500</td>
<td></td>
</tr>
<tr>
<td>W. C. Talbot, 169</td>
<td></td>
</tr>
<tr>
<td>Wasp, 434–435</td>
<td></td>
</tr>
<tr>
<td>Willem Barents, 12, 62, 453, 616</td>
<td></td>
</tr>
<tr>
<td>Williams, 99–100, 617–618</td>
<td></td>
</tr>
<tr>
<td>Yantic, 271</td>
<td></td>
</tr>
<tr>
<td>Yenisey, 497–498</td>
<td></td>
</tr>
<tr>
<td>Ymer, 463</td>
<td></td>
</tr>
<tr>
<td>Zarya, 656–657</td>
<td></td>
</tr>
<tr>
<td>Zeleè, 198–200</td>
<td></td>
</tr>
<tr>
<td>Twentieth-century</td>
<td></td>
</tr>
<tr>
<td>Agga II, 12</td>
<td></td>
</tr>
<tr>
<td>Aklavik, 80, 477</td>
<td></td>
</tr>
<tr>
<td>Alabama, 427–428</td>
<td></td>
</tr>
<tr>
<td>Alaska, 631</td>
<td></td>
</tr>
<tr>
<td>America, 10, 56, 222, 223 (photo), 569</td>
<td></td>
</tr>
<tr>
<td>Antarès, 166</td>
<td></td>
</tr>
<tr>
<td>Arctic, 83–87, 129</td>
<td></td>
</tr>
<tr>
<td>Arneb, 485</td>
<td></td>
</tr>
<tr>
<td>Arktika, 221</td>
<td></td>
</tr>
<tr>
<td>Atka, 485–486</td>
<td></td>
</tr>
<tr>
<td>Aurora, 40, 391, 397, 410–412, 455, 568, 597, 637–638, 701–702</td>
<td></td>
</tr>
<tr>
<td>Austrál, 33</td>
<td></td>
</tr>
<tr>
<td>Barão de Téfê, 100</td>
<td></td>
</tr>
<tr>
<td>Bear, 9, 20, 69, 90–91, 121, 135, 405–406, 610, 612</td>
<td></td>
</tr>
<tr>
<td>Bear of Oakland, 119, 406</td>
<td></td>
</tr>
<tr>
<td>Bele, 546</td>
<td></td>
</tr>
<tr>
<td>Benjamin Bowring, 224–226</td>
<td></td>
</tr>
<tr>
<td>Beothic, 87, 129</td>
<td></td>
</tr>
<tr>
<td>Bougainville, 166</td>
<td></td>
</tr>
<tr>
<td>Bowdoin, 263, 395–396</td>
<td></td>
</tr>
<tr>
<td>Bransfield, 189, 490</td>
<td></td>
</tr>
<tr>
<td>Brategg, 522</td>
<td></td>
</tr>
<tr>
<td>Bratvaag, 9, 10, 23, 246, 472, 478, 676, 699</td>
<td></td>
</tr>
<tr>
<td>Brownson, 488</td>
<td></td>
</tr>
<tr>
<td>Burton Island, 33, 488, 491–492, 556</td>
<td></td>
</tr>
<tr>
<td>C. A. Larsen, 117</td>
<td></td>
</tr>
<tr>
<td>Cacapon, 489</td>
<td></td>
</tr>
</tbody>
</table>
**Vessels, cont.**

Calanus, 310  
Canissteo, 488  
Chelyuskin, 147, 203, 501, 603–604, 668, 721  
Città di Milano, 457–459  
City of New York, 116–117, 583  
Commandant Charcot, 5, 57  
Curteuse, 346  
Currituck, 489  
Danmark, 440, 688  
Deutschland, 44, 228–230, 687–688  
Discovery II, 57, 80, 100, 119, 129, 157, 189, 216–217, 353, 379, 430, 572, 577, 625, 680, 688, 700, 723  
Duchess of Bedford, 426–427, 629  
Eagle, 490–491  
Eastwind, 450, 485, 583  
Eclipse, 647, 679  
Edista, 164, 423, 450, 485, 491–492, 522, 556  
Effie M. Morrissey, 69–70, 232, 263  
Eleanor Bolling, 117  
Endeavour, 302  
Endurance, 144, 258, 595 (photo), 596–599, 687 (photo), 688  
Endurance (HMS), 80, 100, 130, 157, 298–299, 379, 430, 577, 625, 654, 680, 721  
Erik, 155, 393, 514–515  
Firern, 146, 704  
Fitzroy, 490  
Force, 674  
Français, 33, 135–137, 257–258  
Gamma, 358–359  
Gauss, 85, 197–198, 259, 379, 381  
General San Martín, 721  
George B. Cluett, 395  
Gerkules, 339  
Gertrud Rask, 358, 383, 684  
Gjøa, 13–15, 153, 426  
Glacier, 80, 485–487  
Globus V, 551  
Godthåb, 11, 359–360  
Greenville Victory, 485  
Grenland, 429  
Hans Egede, 156, 545  
Heimland, 265  
Henderson, 489  
Hercules, 680  
Hertha, 108, 246, 255, 373–374, 472  
Hinemoa, 40, 127  
Hobby, 9, 98, 255, 472, 549, 676  
Hope, 513  
Instituto de Pesca, 599  
Island, 472, 675  
J. B. Charcot, 346  
Jacob Ruppert, 119, 406  
James Caird, 208 (photo), 209, 598–599, 702  
John Bisoe, 171, 405, 492  
John R. Bradley, 156  
Kainan-maru, 206, 600–602  
Karluk, 32, 67–69, 147, 296, 302, 629, 631, 679, 721  
Kehdingen, 9  
King and Winge, 69, 721  
Knipovich, 246  
Koonya, 594–595  
Krasin, 203, 246, 255, 372, 459, 571, 575–576, 647  
Krasnyy Oktyabr’, 721  
Labrador, 80, 532, 620  
Lenin, 372  
Lüte, 50, 372, 603, 668  
Magenta Dan, 251  
Malygin, 49–50, 204, 308, 372, 501, 569, 575–576  
Manhattan, 419, 477, 532  
Mary Sachs, 60, 631–633  
Maud, 17–18, 71, 147, 181  
Merrick, 488  
Morning, 37, 40, 150–152, 409, 585–586, 594  
Mount Olympus, 488  
Muran, 502  
Nascopie, 80, 87, 129, 402, 477, 533  
Nauja, 233, 404  
Neptune, 69, 129, 271, 386, 395  
Nespol, 485  
Nimrod, 172–173, 594–596  
Nordstjernen, 548  
Norsel, 261 (photo), 262  
North Star, 90–91, 121, 610, 612  
Northanger, 617  
Northwind, 419, 486, 488, 677  
Norwegian, 20, 97, 144–145, 413, 522, 549–551, 696–697  
Ocean Eagle, 233  
Odd I, 144, 522, 696  
Penola, 572–573  
Persey, 246  
Philippine Sea, 488  
Pine Island, 488  
Pinguin, 346, 489  
Polar, 263–264  
Polar Bear, 532, 632–633, 676  
Polarstern, 130, 654, 680  
Polecat, 402–403  
Port of Beaumont, 405, 492, 555–556  
Pourquoi-pas?, 135, 137–139, 184 (photo), 235, 263, 379, 673  
Primero de Mayo, 35, 184, 405, 490, 700  
Protector, 80, 100, 130, 157, 379, 384, 430, 577, 625, 654, 680, 721  
Queen of Bermuda, 490  
Quest, 472, 599, 625, 681–682, 701 (photo), 703–704, 723  
Rig Mate, 324  
Roosevelt, 67, 381, 449–450, 514–516  
Rose-Marine, 135  
Rusanov, 501, 569, 593, 668  
St. Anna, 9, 32, 106–108, 472, 592  
St. Foka, 108, 308, 472, 591–592, 647  
St. Roch, 80, 87, 129, 375–378, 532  
Sarandi, 680  
Schwabenland, 552–554  
Scotia, 103–105, 378, 687  
Sedov, 9, 32, 49–51, 221, 246, 255, 308, 339, 372, 502, 569, 575–576, 593, 602, 668, 676  
Shackleton, 99, 130, 379, 625, 680, 721  
Sibiryakov, 203, 593, 602–603, 668  
Silver Wave, 633  
Sir James Clark Ross, 117  
Sjøblimsten, 429  
Sokkongen, 546  
Southern Sky, 599  
Stalin, 50, 308  
Staten Island, 57, 486  
Syowa, 333  
Taymyr, 71, 181, 339, 454, 502, 647, 678–680  
Terra Nova, 15, 37–38, 40,
Thala Dan, 100, 218
Theron, 250, 302, 688
Th. Stauning, 548
Thorshammer, 145, 550
Thorshavn, 145–146, 318, 551
Thorshøvdi, 261
Tottan, 608
Undine, 375
Ungava, 87, 129
Uruguay, 33, 104, 137, 323–324, 375, 378, 507
Vaygach, 71, 106, 181, 339, 454, 647, 678–680, 720
Veslekari, 9, 98, 490
William Scoresby, 164, 183, 189, 342, 490, 577, 711
Wyandot, 485–486
Wyatt Earp, 57, 212–216, 256
Yancey, 488
Yelcho, 141, 209, 599
Yelding, 246
Yermak, 50, 246, 372, 471, 502, 570 (photo), 656
Zarnica, 246

See also Icebreakers; Shipwrecks; Submarines
Victoria Island (Canada), 152, 153, 182, 240–241, 376, 417, 542, 629–631, **675–676**
Victoria Island (Russia), 305, **676**
Vindication Island, 129, **680**
Visokoi Island, 78, **680**
Vize Island, 339
Wellington Channel, 67, 75–77, 244, 335, **690–691**
Whaling and Arctic Exploration, 51, 52, 61, 72, 147, 221, 273, 283, 301, 518–520, 581–583, 643, 663–664, **697–698**
Whaling stations 12, 52, 86, 87, 621, 639, 695–696, 698
White Island, 23, 25, 61, 450–452, **698–699**
White Sea, 95, 134, 483
Wiencke Island, 137, 490, 699–700, 699 (photo), 711
Wilczek Land, 56, 692, 700
Wilhelm II Land, 197, **704**
Wilkes Land, **707–708**
Women explorers, 98, 107, 146, 317–318, 401–403, 405, 512, 536, 555, 622, 634, 637, 676, **716–718**
Wordie Ice Shelf, 90
Wrangell Island, 68–69, 169, 179, 340, 612, 633, 667, **720–721**
Yamal Peninsula, 338–339, 399, 437
Yenisey River, 338, 424, 430, 463, 493–494,
Yukon River, 225, 390
Zavodovski Island, 78–79, 620, **723**
Zeno map, 130, 133 (map), 174, 247, 250, 272
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