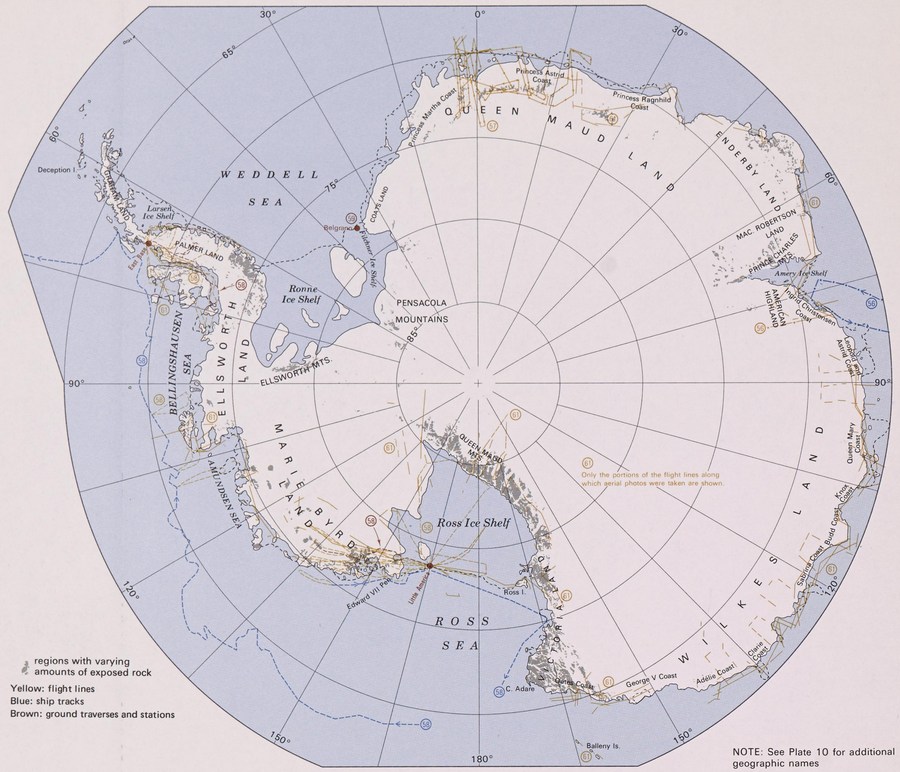
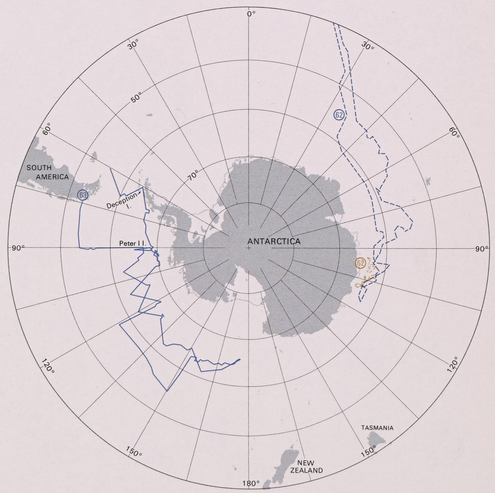


NOTE: See Plate 10 for additional geographic names



NOTES

Bibliographic numerals given with historical summaries refer to the text section headed, "Bibliographic Sources." Boldface numerals indicate sources of expedition data given on the maps.

Ice shelf limits on the maps are not necessarily in accord with conditions at the time of the expeditions shown.

1934–1937 Great Britain (British Graham Land Expedition)
Leader: John Rymill
Sponsor: Colonial Office, British Admiralty, and public, private, and commercial donors
Ship: *Penola*
Plane: De Haviland Fox Moth
Purpose: Scientific investigations and surveying
Bibliography: 78, **89**, 205, 206

This small British expedition spent its first winter among the Argentine Islands. Ice conditions limited sledging and air reconnaissance, but some biological and geological work was accomplished. In February 1936 the *Penola* moved southward into Marguerite Bay where the expedition set up base at the Debenham Islands for a second season of more intensive exploration. Aerial and ground surveys were made of much of the western coast of the Antarctic Peninsula, including George VI Sound, Alexander Island, Adelaide Island, and the Wordie Ice Shelf; one journey was also made across the Peninsula at 69°S. These surveys proved that there were no straits cutting the Antarctic Peninsula into islands, as Wilkins had thought.

The scientific research done by the staff included geological, glaciological, biological, and tidal observations. Regular meteorological observations were made for eleven months at the Argentine Islands and for twelve months at the Debenham Islands. Weather conditions were also recorded on all sledge journeys, on board the *Penola*, and during airplane flights; the data were frequently recorded simultaneously at the various locations, and therefore informative comparisons were possible.

The biological work of the expedition included a study of Antarctic seals. The Argentine Islands proved to be rich grounds for botanical research. Moss was abundant on several sheltered inshore island areas, and profuse lichen coverage was found in some localities. Land arthropods were collected.

1938–1939 United States
Leader: Lincoln Ellsworth
Sponsor: Lincoln Ellsworth
Ship: *Wyatt Earp*
Plane: Northrup monoplane and Aeronca two-seated scouting plane
Purpose: Aerial reconnaissance of Antarctica
Bibliography: **17**, 71, 174

Ellsworth planned to explore part of the Indian Ocean sector of the Antarctic continent by means of a transcontinental flight from Ingrid Christensen Coast to the Bay of Whales. The expedition left Cape Town in October 1938 but was delayed by heavier and more extensive pack ice than had been anticipated. The ship finally reached open water along the Ingrid Christensen Coast early in January, too late in the season to attempt the transcontinental flight. Several brief flights were made, however, in the region of Prydz Bay as well as over the Amery Ice Shelf. The major flight of the expedition was made on January 11, 1939 to 72°S along longitude 79°E. Ellsworth claimed the area along this flight for the United States and named the region the American Highland. In addition to the flights, boat landings were made among the Svenner Islands (69°02′S, 76°50′E) and the Rauer Islands (68°51′S, 77°50′E) to collect geologic specimens. After skirting the ice shelf to the east, the *Wyatt Earp* emerged with great difficulty from the pack ice on January 19, 1937.

1938–1939 Germany (German Antarctic Expedition)
Leader: Capt. Alfred Ritscher
Sponsor: German government and German Research Society of Berlin
Ship: *Schwabenland*
Planes: Two flying boats, used for reconnaissance
Purpose: To obtain aerial photographs for mapping and to claim a portion of the continent for Germany
Bibliography: 90, 172, 196, **228**

During late January and early February 1939, Capt. Ritscher and his party spent three weeks along the Princess Martha and Princess Astrid Coasts. Flights from the ship obtained aerial photographs of the mountains between approximately 04°W and 14°E, in the area now called New Schwabenland. To establish a basis for claim of this territory, spearlike markers were dropped and three landings were made on the ice shelf. Almost simultaneously, Norway officially proclaimed its sovereignty over all of Queen Maud Land. The maps resulting from the aerial photographs taken during the expedition proved of limited value since no ground controls were laid. Meteorological, hydrological, biological, and geophysical observations were also made.

1939–1941 United States (Antarctic Service Expedition)
Leader: Rear Adm. Richard E. Byrd, USN (Ret.)
Sponsor: United States government
Ships: *Bear* and *North Star*
Plane: Twin-motor Barkley Grow seaplane, two Curtiss-Wright Condor biplanes, and Beechcraft
Purpose: Scientific research and exploration
Bibliography: 17, 58, **72**, 173, 192, **199**, **220**

This expedition was the most extensive so far undertaken in Antarctica in terms of the quality and amount of its equipment and the magnitude of its organization and objectives. The activities of the expedition were divided between two bases, which were occupied for a full year: (1) East Base on Stonington Island off the Antarctic Peninsula and (2) West Base, or Little America III, on the Ross Ice Shelf.

At Little America III studies were carried out in biology, geology, meteorology, cosmic rays, glaciology, and human physiology. In addition, numerous sledging journeys were made for surveying and exploration. Eleven hundred kilometers of Antarctic coastline were added to maps as a result of aerial reconnaissance flights from Little America III, and a 1900-km sledge trip was made to the Flood Range to establish ground control. A sledge journey for biological and geological studies was made from Little America III past Sulzberger Bay to the Fosdick Mountains; geological expeditions into the Rockefeller Mountains and the Ford Ranges continued the studies initiated on Byrd's second Antarctic expedition. Other studies included observations of the characteristics of the Ross Ice Shelf, and auroral observations. A seismic station was set up on the eastern slope of Mt. Franklin in the Rockefeller Mountains. Regular sea-level meteorological data were recorded and periodic upper-air observations were made with pilot balloons and radiosondes. Physiological studies of human reactions to the Antarctic climate included observations of the extent to which wind intensifies human discomfort in cold weather.

The men at East Base were primarily concerned with geographical exploration, and therefore they conducted numerous sledge journeys and reconnaissance flights into the surrounding regions. The geographic insularity of Alexander Island was finally established by a sledge journey through George VI Sound. Aerial photographs were obtained of the east and west coasts of the Peninsula to approximately 74°S. Scientific observations at East Base were concerned principally with meteorology and biology. Daily meteorological observations were carried on for almost a year at the base, and for two months at 1700 m above sea level on the interior upland of the Peninsula. On all of the major sledge journeys lichens and mosses were collected and seals and penguins were studied. Marine life was collected from water pulled up in buckets lowered through holes in the ice.

1942–1955 Argentina
Leaders: Capt. A. J. Oddera, Capt. Silvano Harriague, Capts. García, Hermelo, Panzarini, Díaz, Ogara, and others
Sponsor: Argentine government
Ships: *Primero de Mayo,* and numerous naval transport vessels, tankers, merchantmen, whale catchers, and ocean-going tugs
Planes: A number of small planes, used for reconnaissance
Purpose: Territorial claim, hydrographic survey, meteorologic and other scientific investigations
Bibliography: 51, **178**, **179**, **183**, **184**

In January 1942 Capt. Oddera and his party came on the *Primero de Mayo* to Deception Island in the South Shetland Islands to make hydrographic surveys and to claim for Argentina the wedge-shaped sector between 25°W and 68°34′W, extending to the South Pole from 60°S. Biological and geological specimens were collected. In February the ship sailed southward to the Melchior Islands. Soundings were taken, a lighthouse was erected, and a navigation beacon was set up.

The following year Capt. Harriague took command of the *Primero de Mayo.* This expedition completed charting of the Melchior Islands in February 1943 and reclaimed for Argentina the sector previously claimed by Capt. Oddera. At Deception Island, British emblems were removed and the Argentine flag replanted. The party sailed southward into Marguerite Bay where it spent two days at the former East Base of the United States Antarctic Service Expedition of 1939–1941.

After a lapse of four years, Argentina resumed her activities in the Antarctic in 1947. During the period from 1947 to 1955 an expedition was sent to the Antarctic each austral summer. Each year, hydrographic surveys were made and navigational beacons

Ski-equipped Beechcraft used during the U.S. Antarctic Service Expedition. Photo No. 126-USAS-5758 in the National Archives.

and lights were installed or serviced. Land stations were established and resupplied and their personnel were relieved. The first Argentine station in the Antarctic was Orcadas at Laurie Island, taken over from the Scots in February 1904 (see summary of Scottish National Antarctic Expedition, 1902–1904). Then in 1947 a permanent meteorological station was set up in the Melchior Islands and a year later an Argentine base was established at Deception Island. Between 1949 and 1955 five more bases were added. These were Almirante Brown at Paradise Harbor on the Danco Coast (December 1950); General San Martin at Barry Island in Marguerite Bay (March 1951); Teniente Camara at Half Moon Island (1952–1953); Esperanza at Hope Bay (March 1952); and General Belgrano on the Filchner Ice Shelf (January 1955). In addition, a total of twelve refuge huts was built. Many of these were occupied for varying periods during the summer for scientific work and for activities connected with flights by naval air units. Though the scientific work at the occupied stations was limited mainly to meteorology, scientists accompanying each expedition sometimes spent several weeks collecting biological and geological specimens. One party arrived with instructions to prospect for minerals. Some local surveying was carried out and aerial photographs were obtained of portions of the northern Antarctic Peninsula. Aircraft were also used for ice reconnaissance. In June 1953 the Argentine government authorized the construction of an icebreaker. The *General San Martin,* launched at Bremerhaven June 1954, was first used in the Antarctic during the austral summer of 1954–1955.

1943–1955 Great Britain (Operation Tabarin and Falkland Islands Dependencies Survey)
Leader: Lt. Cdr. J. W. S. Marr and others
Sponsor: British Admiralty and British Colonial Office
Ships: *William Scoresby, Fitzroy, Eagle, Trepassey,* and *John Biscoe*
Purpose: Long-range scientific and surveying program; territorial claim
Bibliography: **18**, **80**, **180**, **182**, **183**, **240**

Between 1943 and 1945 British Antarctic expeditions were sponsored and carried out by the Admiralty, as Operation Tabarin. From 1945 to 1955 the program was administered by the Colonial Office, as the Falkland Islands Dependencies Survey. During these years, bases were established at Port Lockroy, Deception Island, Hope Bay, Stonington Island, the Argentine Islands, Admiralty Bay, Laurie Island, and Signy Island. Operations were oriented chiefly toward systematic meteorological observations and completion of the mapping begun by Rymill. The British hoped that political claims in the Dependencies would be substantiated by the duration and intensity of this activity.

At Port Lockroy activities—in addition to meteorological observations—included ice observations and biological studies; the party made a botanical collection consisting principally of lichens, and undertook an ecological study which yielded a small zoological collection. Though evacuated twice, this base was later continually occupied, primarily for meteorological and ionospheric observations.

The Deception Island base was headquarters for territorial administration. During the first years of the survey, frequent balloon ascents were made to determine upper-air movements, and daily observations were made on the movement of sea ice in Bransfield Strait. A geological survey was made of this volcanic island, and its physiography and glaciology were studied. By the end of August 1951 routine ionospheric observations became part of the program.

The initial activities at the Hope Bay base involved biological and geological work, as well as sledging surveys around James Ross Island. In 1946 and 1947 a party sledged around Trinity Peninsula and the northwest coast of Prince Gustav Channel and obtained data for revising the map of the region. Fossils and other geologic specimens were collected and nearby penguin rookeries were investigated on this and other trips. In 1948 the Hope Bay staff continued operating the weather station and conducting topographic and geologic surveys. Though the Hope Bay base was destroyed by fire in 1948, it was reestablished in 1952 and the surveying program and penguin studies were continued.

The Stonington Island station was primarily a sledging base. In 1946–1947 a depot was established on the inland plateau of the Antarctic Peninsula and exploratory sledging journeys were carried out. During 1947–1948 sledging trips were carried out in collaboration with a United States party at Stonington Island, under Finn Ronne. Between 1948 and 1950 surveying journeys included a trip northward to Adelaide Island, during which lichens, mosses, and rock specimens were collected. Biological work concentrated on the investigation of the emperor penguin at the newly discovered rookery on the Dion Islands. The Stonington Island station was closed down on February 11, 1950.

The party at the Argentine Islands base was responsible for supplying seal meat to the other bases and breeding and training sledge dogs. In addition, the staff intermittently operated a weather station and made several short survey journeys.

At Admiralty Bay, King George Island, continuous meteorological studies were conducted, some surveying was accomplished around the island, and observations were made of the elephant seal. Considerable glaciological work was done near the base; data included temperature fluctuations and ice movement observations.

A base established on Signy Island replaced one which had been in operation briefly on Laurie Island; here meteorological studies, observations of ice and tide conditions, and topographic surveys were continued, but the work at the base was predominantly zoological. During the 1949–1953 seasons, several studies were made of elephant seals. The Adélie and chinstrap penguins were studied and limited programs of bird-banding and seal-counting were carried out. In 1952 a study was made of the life and reproductive cycle of the Weddell seal. Some work was also done in bacteriology.

1946–1947 United States (Operation Highjump)
Leader: Rear Adm. Richard E. Byrd, USN (Ret.) and Rear Adm. Richard H. Cruzen, USN
Sponsor: United States Navy
Ships: Thirteen ships of Task Force 68; included were two icebreakers, *Northwind* and *Burton Island,* an aircraft carrier, two seaplane tenders, and a submarine
Planes: Six Navy R4D planes, four helicopters, and three light aircraft
Purpose: To test equipment and to train men under polar conditions; also aerial photography and reconnaissance
Bibliography: 17, 39, 170, **228**

Operation Highjump was the largest expedition to that date to visit the Antarctic; more than 4000 men participated. Activities were divided among three groups for the purpose of photographing the Antarctic coast by air. The first group, consisting of three ships, one a seaplane tender, met near Peter I Island in December 1946. From seaplanes which flew southward from the ships, photographs were taken of the Antarctic coast from 96°W to 127°W. The ships then returned eastward and photographed Charcot and Alexander Islands. Finally, they cruised around the tip of the Antarctic Peninsula and north of the Weddell Sea for a short flight over the Princess Martha Coast in the region of the Greenwich Meridian. The three ships of the second group, including a seaplane tender, met north of the Balleny Islands and cruised westward as seaplanes photographed the coastal areas from Oates Coast (164°E) all the way to Princess Astrid Coast (15°E). The third, and largest, group established an air base at Little America IV. From here flights were made over the Ross Ice Shelf, western Marie Byrd Land, and to the South Pole. The aerial photographs obtained during Operation Highjump covered 3,900,000 km², much of which was previously unknown territory.

The scientific studies of the expedition concentrated on meteorology. Synoptic weather maps of the Antarctic were constructed twice a day; these studies were primarily intended to produce more accurate predictions of flying conditions, but they also provided valuable data on the movements and characteristics of air masses and frontal systems.

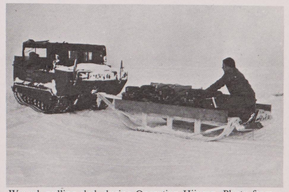
1946–1947 Great Britain
Leaders: Capt. Reider Pedersen and John Grierson
Sponsor: United Whalers Ltd. (Rupert Trouton)
Ship: *Balaena*
Planes: Two Vickers Walruses (*Boojum* and *Snark*)
Purpose: Whaling, whale reconnaissance, and scientific studies
Bibliography: 97, 121, 176

After World War II there was a worldwide famine of fats, and a large supply of whale oil was needed to overcome it. It was hoped that air reconnaissance for whales, in which this expedition pioneered, would result in a larger catch for the floating factory. The *Balaena* operated between approximately 95°E and 115°E from January to March 1947. A unit under John Grierson performed the whale spotting and also did ice reconnaissance. Land was sighted from the ship between 109°E and 111°E, and peaks were reported at about 66°S, 110°E during a flight on February 12.

The *Balaena* was fitted with laboratories and extensive cold storage facilities for the use of the scientists accompanying the expedition. The major scientific program aboard was centered on biochemical and physiological studies whose objective was to learn more about whale meat in order to increase its utilization for human consumption. This research, sponsored by Great Britain's Department of Scientific and Industrial Research helped the scientists to understand some of the variations in the quality of whale meat. Other studies included meteorological investigations sponsored by the Air Ministry and the collection of data and specimens for the Discovery Committee.

1947–1948 Norway
Leader: Capt. Nils Larsen
Sponsor: Federation of Norwegian Whaling Companies
Ship: *Brategg*
Purpose: Oceanographic research
Bibliography: 123, **149**, 177

Larsen's expedition carried out an oceanographic program planned by the Norwegian Geographical Society's Committee for Oceanographic Investigation. Oceanographic stations were taken from about 90°W to 174°31′W along a zigzag course between the edge of the pack ice and 55°S. Finally the ship returned for a landing on Peter I Island to leave a copy of the Norwegian occupation statute of 1929. Geological and zoological work was carried out on and around the island until ice forced the party away from the area. The *Brategg* then sailed for Deception Island where ornithological work was done.



Weasel, pulling sled, during Operation Hijump. Photo from National Archives, Record Group No. 401 (4).