

Numbers by station symbols refer to table on Plate 10.

## 1959-1960

A highlight this year was the first penetration of the Bellingshausen Sea, made by two U.S. icebreakers. They reached the coast of Antarctica bordering the Bellingshausen Sea on February 15, 1960. The expedition carried out coastal surveys and established the fact that the body of land then known as 'Thurston Peninsula' is really an island.

The main Soviet undertaking was a glaciological traverse from Mirnyy to the South Pole. On August 3, 1960, a fire broke out at Mirnyy; eight meteorologists perished and all records were lost. The Soviets formally handed over their Oazis Station to Poland on January 23, 1960. The Poles renamed the station Dobrowolski, but did not occupy the camp.

U.S. parties carried out major glaciological and geophysical traverses in Marie Byrd Land and Victoria Land. In addition, a four-man party, which had disembarked at Little America V, carried out studies of the Ross Ice Shelf along a traverse to McMurdo. Other parties, transported by air, obtained further data on the Ross Ice Shelf and on the ice sheet between the Sentinel and Horlick mountains.

An expanded U.S. topographic mapping program got under way this year in the Transantarctic Mountains. Aerial photographs were obtained by the use of a P2V Neptune aircraft. Ground parties obtained fixes on exposed features for control purposes.

The South Africans sent an expedition to Antarctica for the first time; they took over Norway Station and the Norwegians closed down their pro-

Ice conditions prevented Argentine ships from getting to Ellsworth and Belgrano stations with supplies, but fortunately sufficient food and supplies to continue the program were already avail-

During 1959 the Australians established two ice runways near Mawson; 350 hours of flying time were devoted to reconnaissance and mapping.

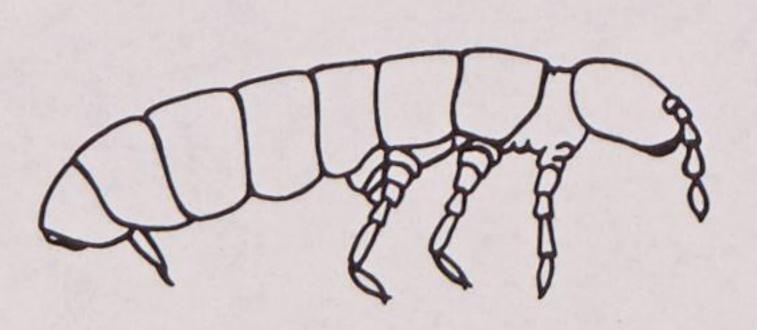
New low temperature records were set at the South Pole and Vostok; on September 13, 1959, -110°F was recorded at the Pole and on August 1, 1960 the thermometer reached -126.9°F at Vostok.

Representatives of the twelve nations active in Antarctica met in Washington to draft a treaty ensuring peaceful international cooperation in Ant-

## 1960-1961

To ensure full exploitation of the period of the IGY, emphasis had been placed primarily on synoptic geophysical observations. In the post-IGY period it became possible to emphasize research not requiring simultaneous observations: programs in biology, geodesy, and cartography.

Biologists discovered an order of primitive wingless insects, Collembola, or springtails, living as high as 1800 m under loose rocks. Partially decomposed but well-preserved remains of fish and benthic invertebrates were found on the Ross Ice Shelf on top of ice approximately 30 m thick. Carbon-14 dating



Springtail, Cryptopygus antarcticus, a common collembolan in the Antarctic Peninsula (from Folio 5, Antarctic Map Folio Series)

suggested that the fish were about 1100 years old.

Geologists working in the Horlick Mountains discovered coal beds from 1 m to 1½ m thick, along with fossil Glossopteris and fossil wood. Tillite, thought to be the first found in Antarctica, was discovered. Preliminary interpretation of glacial features indicated that the ice in the area had at one time been a few hundred feet thicker. Coal beds from a few millimeters to 2½ m thick were found approximately 1800 m high on the rim of the Victoria Land plateau. Some beds seemed to be good grade anthracite or semianthracite. Petrified logs and plant fossils also were found.

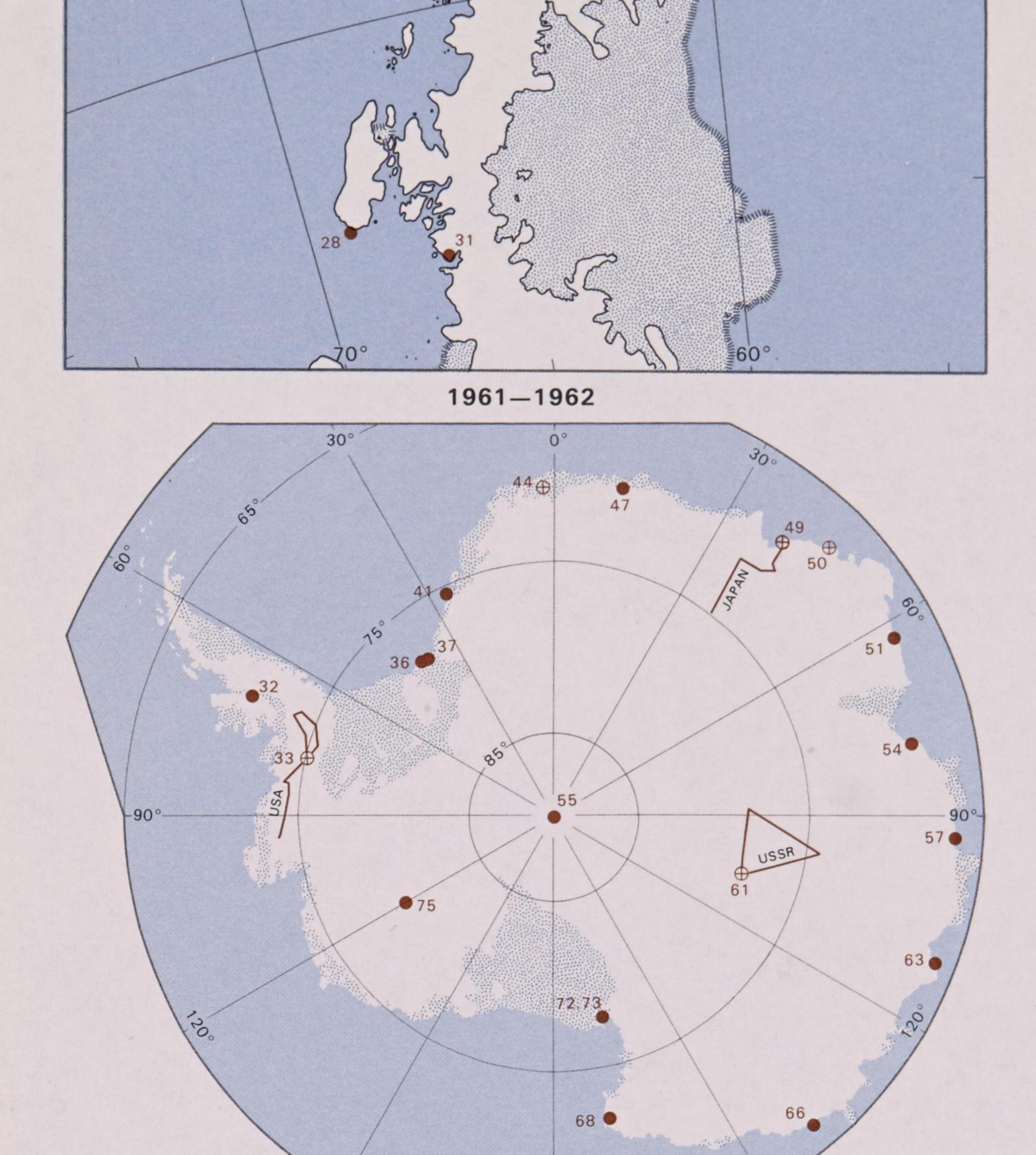
Several nations carried out oversnow traverses. The most extensive of these were a U.S. traverse from Byrd Station to Eights Coast, one from Byrd Station to the South Pole, and one from McMurdo to the South Pole.

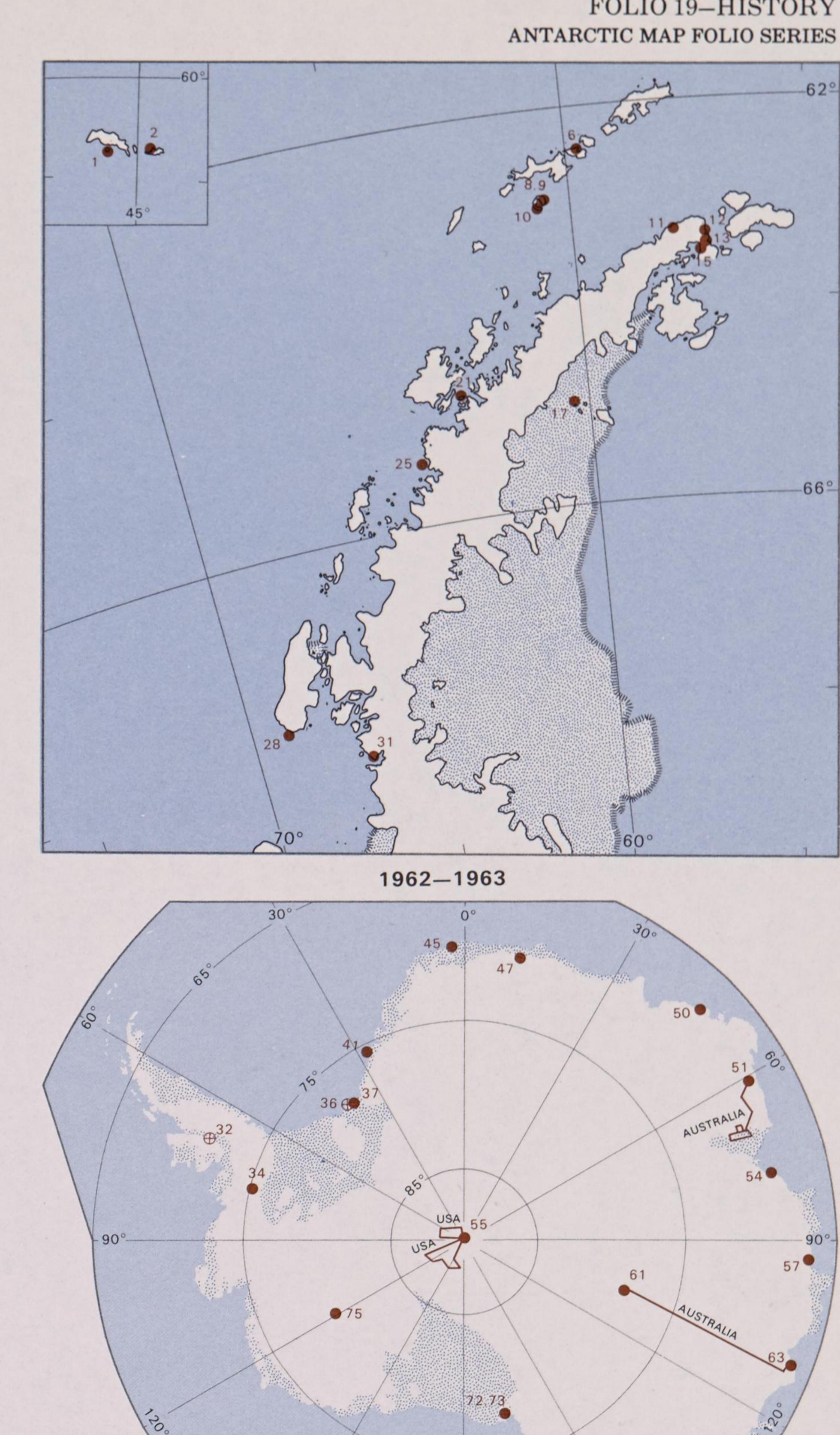
The Belgian station, Roi Baudouin, was closed at the end of the 1960-1961 summer. A new Argentine station, Teniente Matienzo, was established in March 1961. Byrd and Pole stations were completely resupplied by ski-equipped aircraft for the first time. Fire at McMurdo destroyed aviation electronic and parachute facilities, and an unexpected breakup of ice at McMurdo caused the loss of a hydrographic station and two small tankers.

The U.S. aerial photography and ground control program was continued this year in the Transantarctic Mountains.

New Zealand workers restored buildings on Ross Island that Shackleton and Scott had occupied during their expeditions in 1908-1909 and 1911-

The Antarctic Treaty, ratified by the United States Senate on August 10, 1960 and by the Soviet Union on October 22, came into force formally on June 23, 1961. The First Consultative Meeting was held in July in Canberra.





NOTE A year is taken to be a summer and the winter following; for example, 1954-1955 designates summer 1954-1955 and winter 1955.

## 1961-1962

Major construction projects were completed in the summer of 1961-1962. The new United States Byrd Station, built in snow tunnels about 8 km from the old Byrd Station, was dedicated in February 1962. Antarctica's only nuclear power plant was put into operation at McMurdo Station in March. An atmospheric physics station, named Sky-Hi, was set up in Ellsworth Land by the United States for the summer. The Soviet Union established a summer station in Enderby Land, which was named Molodezhnaya.

Scientific traverses were carried out on the inland ice sheet (see map). Other notable journeys included (1) a magnetic and gravity survey by the British along the east coast of Graham Land, (2) a glaciological traverse by the Argentines from Ellsworth Station to Belgrano Station, (3) a winter trip by an Argentinean military party from Esperanza Station to General San Martin Station, (4) a British crossing, the first successful one, of the heavily crevassed area between Halley Bay and the mountains to the south, (5) a French glaciological traverse in the vicinity of Dumont d'Urville, and (6) an Australian geological and glaciological expedition from Mawson to the southern Prince Charles Mountains.

A major first for the Soviets was the flight of two aircraft from Moscow to Mirnyy in December 1961. The planes stopped at McMurdo en route to Mirnyy, but flew nonstop to Christchurch on the return trip.

Innovations in the United States scientific program included the installation of an isotope-powered automatic weather station on the Ross Ice Shelf. A meteorological-rocket program was begun. Highaltitude balloon flights were made simultaneously in the Arctic and the Antarctic.

The U.S. aerial photography program completed

the coverage of the Transantarctic Mountains. Surveyors were flown in helicopters from mountain top to mountain top to establish ground control.

Extensive biological studies continued at Mc-Murdo. In late 1961 marine fauna were collected for the first time from the sea floor beneath the ice shelf. In one of the nearby 'dry valleys' of Victoria Land, scientists discovered a shallow pond believed never to freeze; laboratory tests showed that water from the pond is eleven times as salty as sea water. A meteorite of an uncommon type weighing about 32 kg was found in the Thiel Mountains.

International cooperation in scientific programs continued. The United States assisted in setting up a geomagnetic observatory at the Chilean station Presidente Gonzáles Videla, and supplied personnel to instruct the Chilean observers in the use of the new equipment. Long-period seismographs were also installed at the Chilean station. The joint New Zealand-United States program at Hallett Station continued, and Ellsworth Station was operated jointly by Argentina and the United States.

A new South African Antarctic ship, the RSA, was launched in September 1961. The ship was intended primarily for transporting personnel and equipment to the Antarctic. She made her maiden voyage in January 1962, carrying workmen and material for the erection of the new SANAE station, which was essentially completed in February.

Japan's station, Showa, was closed at the end of the 1961-1962 summer.

Two "shakedown" cruises of the United States Antarctic research ship USNS Eltanin took place between February and April 1962 in the Atlantic Ocean. The Eltanin's third cruise took the ship to Valparaíso, Chile which would be its base of operations for forthcoming Antarctic cruises. The research vessel is a former Arctic supply ship, whose

cargo holds were turned into laboratories; a launching deck was added for helicopters and weather

## 1962-1963

Activities at many stations focused on preparations for the International Year of the Quiet Sun (IQSY). The United States built a new station in Ellsworth Land, very close to the temporary Sky-Hi Station set up the previous year; the new base was named Eights Station in honor of the nineteenth-century American scientist, James Eights. The Soviet station, Vostok, which had been closed for the 1962 winter, was reopened for IQSY studies. Molodezhnaya, which had operated during the summer of 1961-1962 was reopened and expanded. The French started rebuilding their base, Dumont

The Australians sponsored a traverse from Wilkes to Vostok, and a United States party made two traverses originating at the South Pole. The Australians carried out glaciological studies on the Amery Ice Shelf, starting out from Mawson.

The United States carried out its most extensive geologic investigations to date. South African scientists journeyed to the mountains south of SANAE for geological reconnaissance. They also made observations of the earth's gravity and magnetic fields.

Argentina closed its Ellsworth Station, and moved much of the scientific equipment to Belgrano Station.

The Soviet Union and the United States exchanged oceanographers on their research ships. Argentina and the United States carried out joint research aboard an Argentine ship. As a result of an unusually early breakup of sea ice, the British were able to carry out extensive hydrographic surveys in Marguerite Bay.