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# THE POLAR TIMES



The New York Times (by Walter Sullivan)

This was the scene during the commissioning ceremony at Wilkes Station last Feb. 16. It was the first time that the American flag had flown over an outpost in Wilkes Land. In the rear is a plastic dome covering radar equipment.

# **National Oceanic and Atmospheric Administration**

## **The Polar Times**

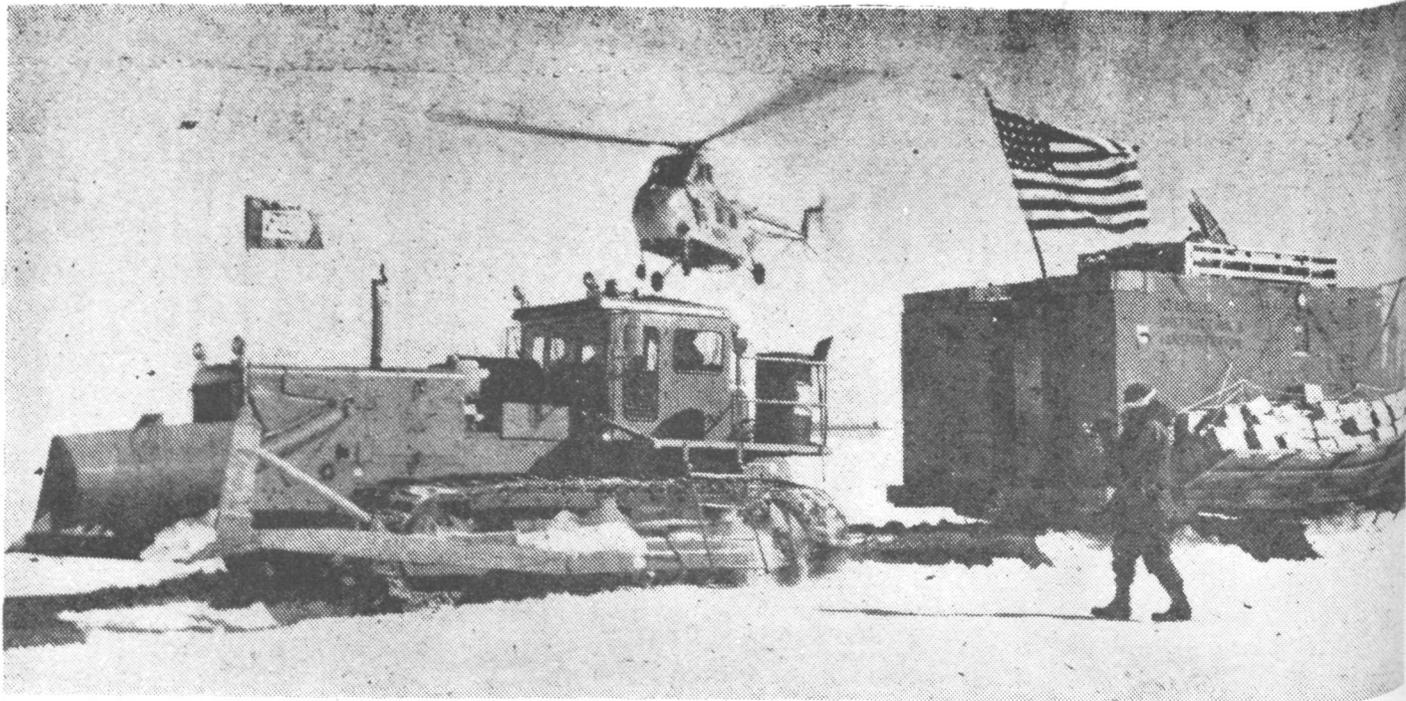
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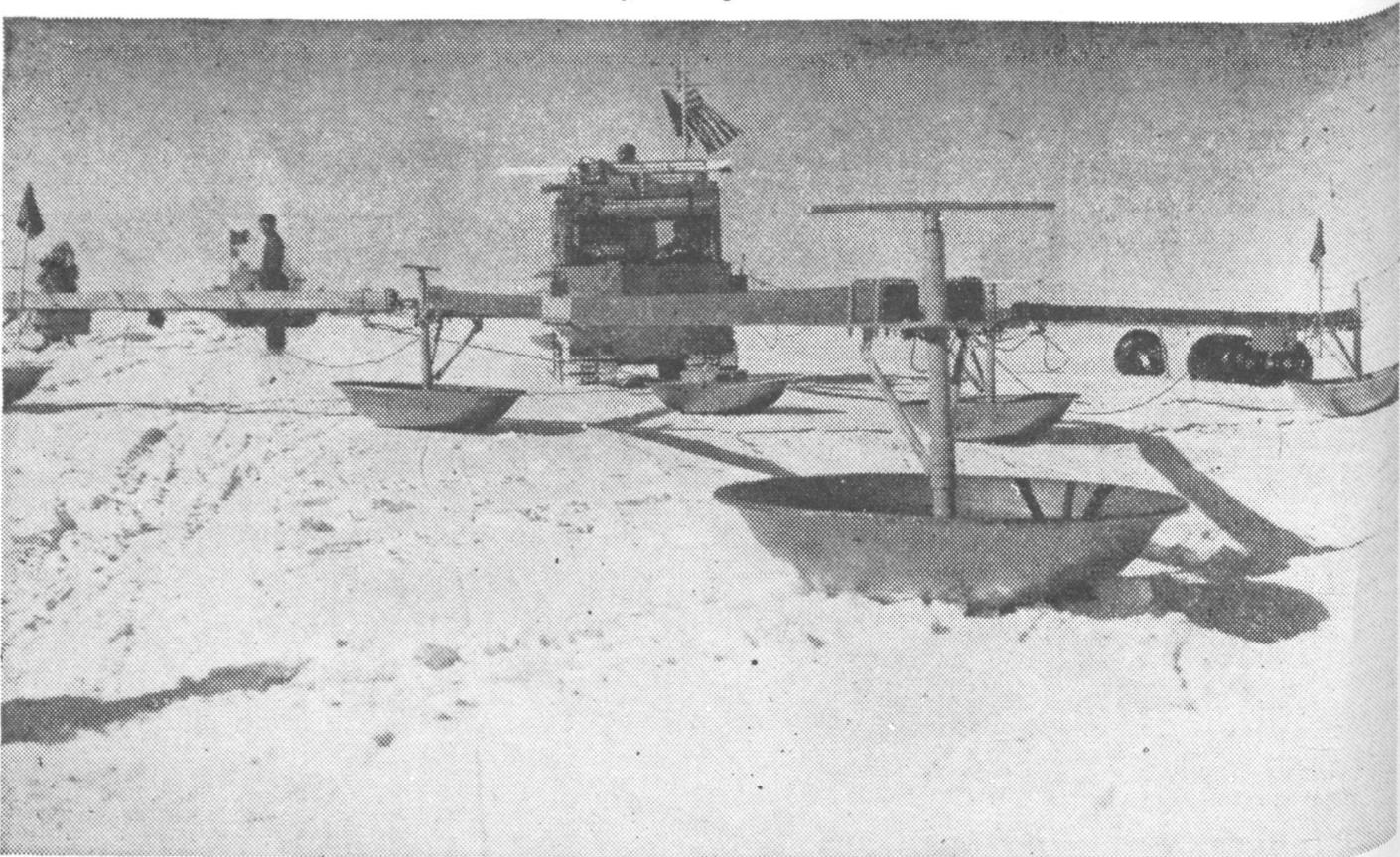
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Navy helicopter appears to be landing on cab of caterpillar pulling out of Little America with supplies for Marie Byrd Land, 600 miles away, in antarctic Operation Deep Freeze II which added five more American stations in the desolate polar region



### 'DISHPANS' DETECT HIDDEN CREVASSES IN ANTARCTIC ICE

A Navy Weasel equipped with dishpan-like devices warns of hidden crevasses as a trail party blazes a 600-mile route through an uncharted ice and snow field from Little America V to Marie Byrd Land, site for the American International Geophysical

Year Base in Antarctica. The "dishpans" skidding over the snow send down an electric impulse. An abrupt drop in current sounds a buzzer inside the Weasel announcing a cleft in the ice sheet.—Official Navy Photo.

# The Polar Times

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No. 44.

JUNE 1957.

## Geophysical Year Starts

By WALTER SULLIVAN

WASHINGTON, June 30—As it to start the International Geophysical Year with a bang, the sun showered the earth with electron particles today, causing severe disturbances in this planet's upper air and magnetic field.

Radio communications on many long-range circuits were at a standstill.

The "year," which will last eighteen months, began at 8 P. M. Eastern Daylight Time, which was midnight Greenwich Mean Time.

President Eisenhower called it today "one of the great scientific adventures of our time."

Scientists the world over—in sixty-four nations in the East and West—turned on or checked recording instruments in the eleven sciences on which the effort is focused. These are the fields of study concerned with the earth as a whole.

In anticipation of this day Americans had been placed in the remote corners of the earth

—in specially constructed camps at the South Pole and on drifting ice in the Arctic Ocean.

The I. G. Y. was timed to coincide with a period of intense sunspot activity, but there has been evidence that the peak of the eleven-year spot cycle has already been reached.

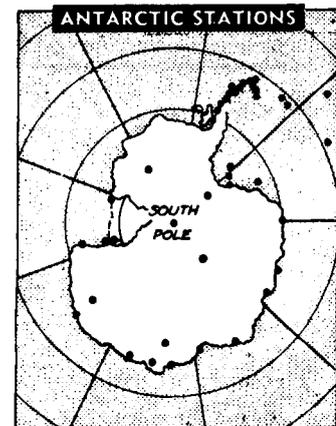
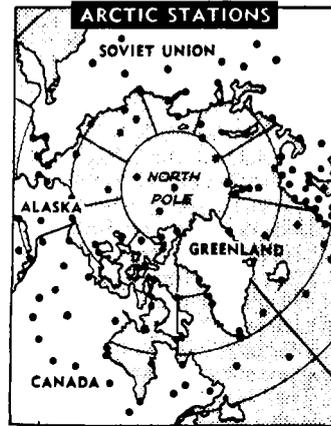
Today's storm may prove to be the most severe of the I. G. Y. The eighteen-month length of the "year" was designed to carry it well beyond the peak of the cycle, to provide contrasting information from a period when the sun is quiet.

President Eisenhower pointed to the international cooperation that has made possible this scientific enterprise, regarded by many as the greatest in history.

He said that, in his view, "the most important result of the International Geophysical Year is the demonstration of the ability of peoples of all nations to work together harmoniously for the common good."

"I hope," he said, "this can become common practice in other fields of human endeavor."

A basic precept of the I. G. Y. is that all information be exchanged. For this purpose three



groups of World Data Centers have been established to collect and duplicate the mountains of information collected in the various sciences. The centers are in the United States, the Soviet Union and in Western Europe, with subcenters in Australia and Japan.

Man exists on the thin crust of a spinning globe and, for all his investigations, has not been able in thousands of years to learn much about what goes on more than a few miles up and a few miles down. Man's known environment, as Lloyd V. Berkner has said, "is a veneer sandwiched on the upper side by the

insulating atmosphere and the space beyond, and on the lower side by the unplumbed depths of the earth's interior. Yet the environment within this veneer is controlled almost completely by circumstances arising outside of it."

In an attempt to learn more about these circumstances scientists the world over will begin their greatest team effort at midnight tonight Greenwich Mean Time (3 P. M. EDT).

From mountaintops and submarine depths and from observatories that dot the map of the world they will observe and measure and record, as never before, the phenomena that shape the world. Fleets of ships, large expeditions and lonely outposts will be involved in the effort. Rockets will be pushed high into the upper air, and the first man-made moon will circle the earth in search of information.

This vast effort, known as the International Geophysical Year, or I. G. Y., will continue until the end of 1958. The eleven-year sunspot cycle is about at its maximum. Scientists want an eighteen-month "year" to embrace this time of violent magnetic storms, as well as a more normal period for comparison.

The I. G. Y. is not the first attempt at such studies. The first international compilation of weather reports was made at the start of the nineteenth century by Chevalier de Lamarck. In the Eighteen Thirties Alexander von Humboldt organized a chain of magnetic observatories across Europe and Asia.

The technique was expanded in the Polar Years of 1882-1883 and 1932-1933. The most recent featured extensive radio probing of ionized layers in the upper atmosphere, leading to a major step forward in radio communications. The Polar Years con-

## President On Geophysical Year

WASHINGTON, June 30—Following are President Eisenhower's broadcast remarks at the opening of the International Geophysical Year.

July 1 marks the beginning of one of the great scientific adventures of our time—the International Geophysical Year.

During this period, which will actually be eighteen months long, the scientists of the United States will join their efforts with those of the scientists of some sixty other nations to make the most intensive study ever undertaken of our planet.

All over the world elaborate preparations for this event have been under way for the last five years. You have been reading in the daily press of the expeditions to the Antarctic which have been paving the way for a concentrated study by some twelve nations of the last unknown continent. Two years ago it was announced that the United States would launch an earth-circling satellite during the Interna-

tional Geophysical Year in order to obtain information about the sun and the earth's environment from outside the barrier of the earth's atmosphere.

During the years of preparation meteorological and other observing stations all over the globe have been readied. Hundreds of new stations have been established in order that many types of geophysical phenomena might be viewed and measured from every possible vantage point.

The scientists tell us that they cannot possibly anticipate all of the valuable scientific knowledge that will result from their efforts. They believe that many of the facts thus acquired will give us new understanding and new power over the forces of nature.

As I see it, however, the most important result of the International Geophysical Year is the demonstration of the ability of peoples of all nations to work together harmoniously for the common good. I hope this can become common practice in other

fields of human endeavor.

The United States is proud to have a part in this great scientific undertaking.

I should like to congratulate all who have helped to make our program possible and particularly the National Academy of Sciences. Through its National Committee for the International Geophysical Year the academy has worked tirelessly to plan and coordinate the program, in cooperation with other nations.

I extend congratulations also to the international body whose vision and imagination have not only made the project possible, but have woven all the multiple strands together. That body is the International Council of Scientific Unions, representing the major scientific bodies of the world. Through its special committee for the International Geophysical Year, the council has provided brilliant leadership for this enterprise.

We wish the scientists of all nations Godspeed and good luck as the International Geophysical Year begins.

centrated on the region surrounding the North Pole. They were meager efforts compared to the current program.

The I. G. Y. was born in 1950 in the mind of Mr. Berkner, an American scientist who heads the International Council of Scientific Unions. The Council binds together international groupings of scientists in various fields.

Mr. Berkner's suggestion was made at the right moment, both in terms of scientific and political history. The earth sciences had reached a point where such an effort was clearly needed. And the death of Stalin in 1953, when I. G. Y. plans were still embryonic, led to a clearing of the air that made East-West scientific cooperation possible. It also introduced the era of "peaceful competition" which further stimulated the Soviet and American programs.

The I. G. Y. has grown far beyond the original concepts of those who conceived and first planned it. Almost all countries capable of scientific effort are taking part. So far sixty-four nations have enrolled. It is estimated that some \$500,000,000 will be spent, a large part of it by the United States and Soviet Union.

The headquarters of this effort, involving about 2,500 stations and many thousands of scientists, is a modest suite of offices in the wooded suburban community of Uccle, on the outskirts of Brussels, Belgium. The offices are manned by about fifteen men and women.

The head of the staff is Prof. Marcel Nicolet, who is answerable to a committee (Comité Spécial, Année Geophysique Internationale) formed by the International Council of Scientific Unions to coordinate plans for the I. G. Y. The head of the committee is Dr. Sydney Chapman of Britain.

Actually the I. G. Y. is highly decentralized. Each country runs its own program. The United States effort has been organized by a committee formed by the National Academy of Sciences. Its chairman is Dr. Joseph Kaplan of the University of California at Los Angeles. Hugh Odishaw is the executive director, with offices in Washington, D. C.

The chief problem in obtaining an even distribution of stations was the southern quarter of the globe. Apart from the southern tips of South America and New Zealand, this region is virtually devoid of inhabited places. It consists of ocean areas and the ice-covered continent of Antarctica.

Hence ten nations have sent expeditions to the bottom of the world and about forty outposts

have been established on or close to the continent. In a massive effort, involving a small fleet of ships, planes and snow vehicles, the United States, during the past eighteen months, has established seven bases in Antarctica.

One is at the South Pole itself. It was a touch-and-go operation to airlift the men and supplies to the 10,000-foot plateau at the Pole. The two inland stations assigned the Soviet Union were even higher—one of them possibly 14,000 feet above sea level.

At the opposite end of the world the United States has established two drifting stations on ice in the Arctic Ocean. The Russians have two or three others.

Attempts will be made to trace the Antarctic bottom current which carries frigid water that has melted from the Antarctic ice sheet. This current may affect climate in many part of the world.

Other currents will be studied, as well as the relationship between changes in sea level and climate. For example, there is evidence that prolonged low sea level at Miami Beach means that there will be severe ice conditions in the Barents Sea, north of Russia and Scandinavia, three years later. The link is a side current of the Gulf Stream.

The world's glaciers will be surveyed and the great ice sheet of Antarctica explored to see if they are growing or shrinking. Holes 1,000 feet deep will be drilled into the Antarctic ice to study its history.

What benefits will the I. G. Y. bring to mankind? Fundamentally, the goal of the I. G. Y. is to obtain basic knowledge. The data to be obtained through observations of weather, cosmic rays, the ionosphere and aurora will be so voluminous that no man could fathom their meaning unaided. Computing and classifying machines are to be used for the analysis, both in the United States and the Soviet Union.

When this is done some of the basic truths concerning our planet, its atmosphere and the space through which it is flying may come to light.

Dr. Joseph Kaplan, who heads the American program, said that "these large views which are characteristic of astronomy and geophysics have given the I. G. Y. a role which may far transcend the gathering of data and the observing of physical processes."

These broader aspects of the I. G. Y., he added, may prove to be as important as the scientific achievements themselves.

During the next eighteen months several thousand scientists, manning stations in all the major nations, on remote islands and polar ice, will seek to expand knowledge in the eleven sciences of the International Geophysical Year. What follows is a statement of the large questions which each of the sciences or "disciplines" will seek to answer and how the scientists will make their observations.

#### METEOROLOGY

*What is the effect of that great refrigerator, the Antarctic continent, on the world's weather patterns? To what extent do weather conditions in the southern hemisphere affect those north of the equator, and vice versa? Are cold spells in one area balanced by dry spells in another, or do changes in the input of heat from the sun account for such phenomena? Is the increasing discharge of carbon dioxide into the atmosphere by industrial chimneys and automotive exhaust pipes making the earth warmer?*

During the I.G.Y. the entire globe—including the ocean areas, the polar regions and the uninhabited land masses—will be dotted by some 2,500 stations. These stations will be equipped with scores of instruments to measure various phenomena.

Instrument-bearing balloons that rise fifteen miles into the sky will be released simultaneously—at noon and midnight, Greenwich time—from many of the weather stations. Their wanderings will be tracked by radar to plot wind speed and direction at each elevation. Rockets and satellites will carry instruments through the atmosphere, reporting back their findings by radio.

The forty or more newly established stations in Antarctica are pooling their information to see where the storms of Antarctica—the most violent in the world—are born and to what extent they influence weather elsewhere.

#### OCEANOGRAPHY

*To what extent do the frigid currents which creep through submarine canyons several miles below the ocean surface affect our climate? How quickly does this water return to the surface? Are the patterns of its movement changing? What explains the strange, rhythmic changes in sea level which have been observed in many places, independent of ordinary tides? To what extent does heat from the heart of the earth radiate into the oceans?*

Tide gauges are being placed on islands scattered over the great water areas of the world

and around the coasts of Antarctica and the Arctic Ocean. By coordinated studies it is hoped to learn the nature of the various kinds of sea-level changes, some of which seem to provide a warning of warm and cold seasons several years in advance.

#### GLACIOLOGY

*How much ice is there in the world and is it expanding or contracting? What can it tell us of past climates, or of future changes? Why are the glaciers in some parts of the world retreating while others are expanding?*

Until recently it was thought that virtually all of the world's glaciers and ice sheets were shrinking. Recent discoveries indicate that the largest ice sheet of all, in Antarctica, may be stagnant or even growing. It already accounts for about 90 per cent of the world's ice.

Tractor parties from America, Australia, British, French, New Zealand and Soviet expeditions will make long traverses across the Antarctic ice sheet, stopping every few miles to set off explosive charges. By recording the interval until an echo returns from the underlying rock it will be possible to determine the ice sheet's thickness.

There will be a world-wide survey of glaciers and snow fields to compare with past records or make possible future determinations of change.

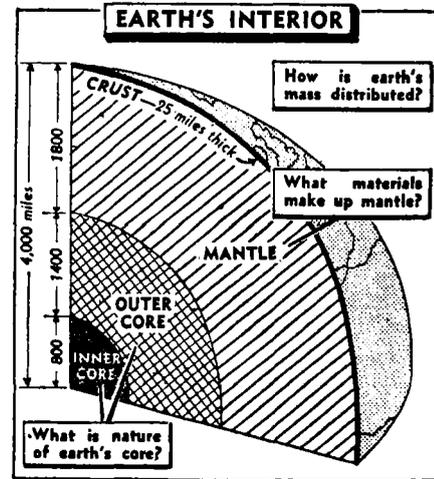
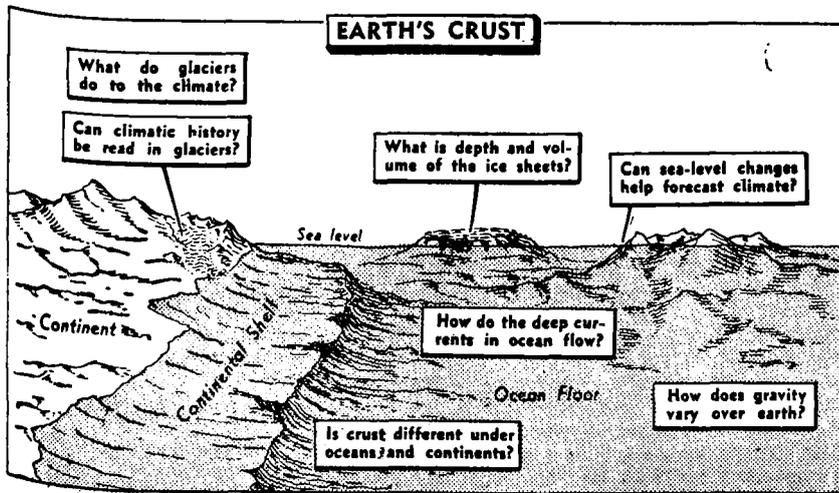
Glacier ice provides one of the most complete indices to world climate in past centuries. It is a "library" the pages of whose books are the successive layers of snow that have congealed into ice over the past thousand or more years.

The amount of the isotope oxygen 18 in snow or rain seems to indicate the coldness of the climate at the time of the precipitation. By analyzing chips brought up from various depths for oxygen 18, scientists hope to find out what the weather was like when some of the oldest glacier ice was laid down.

#### SOLAR ACTIVITY

*What happens on the sun to create the turmoil in the earth's atmosphere that follows a solar flare? What causes the bursts of cosmic rays and radio noise that may accompany these eruptions of light in the chromosphere—the atmosphere of the sun? To what extent are solar phenomena responsible for weather and climate changes on earth?*

The sun is believed to be a sort of hydrogen bomb in continuous explosion. Its radiation sustains life on the earth. Many



of them, including X-rays, cosmic rays and ultraviolet rays, are absorbed in the upper air. One of the tasks of the satellite and rocket program is to carry instruments outside the earth's atmosphere to record these radiations in their virgin state.

#### IONOSPHERICS

What are the characteristics of the vast region of ionized gases, known as the ionosphere, which girdles the earth at elevations between fifty and 300 miles? What sort of reactions take place there as cosmic rays and sun particles penetrate that region? What is the nature of the winds that seem to carry clouds of ions through various layers of this region?

The ionized (electrically charged) portion of the atmosphere extends from about 50 to more than 300 miles overhead. The air is so thin in this region that even a radio vacuum tube would explode. Various layers reflect radio waves back to earth. This region will be studied through instruments carried by rockets and satellites as well as with ground observations.

#### AURORA

What causes these curtains of light to hang in the polar skies? Why do they expand so dramatically when the sun acts up? What is the composition of the aurora? Do its displays throb simultaneously in the Arctic and Antarctic? What point is the focus of their activity in each polar region?

Auroras—also known as the Northern or Southern Lights—are visible on virtually every clear night in doughnut-shaped areas centered near both the North and South Poles. Triangulation from twin observation points has placed the aurora in the ionosphere. When solar flares erupt on the sun, the aurora expands dramatically. An attempt will be made to

find out what the aurora is, why it reacts to solar flares, and whether its displays occur simultaneously at the top and bottom of the world. Many all-sky cameras and instruments to record the aurora spectrum have been installed in the polar regions, and to some extent in lower latitudes. Radar is being used to detect the displays in daytime and cloudy weather.

#### GEOMAGNETISM

What is the shape of the earth's magnetic field in the space surrounding it? Why does its magnetism pulsate in various rhythms?

Geomagnetism controls the needle of the magnetic compass. Its lines of force extend for thousands of miles out into space. At the equator the lines are roughly horizontal, whereas at the magnetic poles they point downward.

During magnetic storms, which seem to originate with disturbances on the sun, the horizontal magnetic force at the equator becomes markedly weaker. This has led students of electro-magnetics to surmise that at such times immense currents of electricity in space girdle the earth at the equator and nearer the magnetic poles.

By rocket firings and surface observations during solar flares it is hoped to test this supposition and also find out the reason for the rapid and long-term fluctuations in the earth's magnetism.

#### COSMIC RAYS

What is the origin of these particles, whose energies far exceed those of any yet generated on earth? What is the mechanism which has produced them? Why do they seem to reach the atmosphere evenly from all directions, as though they came from everywhere in space?

Cosmic rays penetrate the atmosphere most easily near the poles, where the magnetic field is vertical, and hence much of the studies are concentrated in those regions. Observations will be made from the surface and by means of balloons, rockets and earth satellites.

#### GRAVIMETRY

Why does the speed of falling objects vary from day to day? Why do plumb lines hang "straight down" in different directions as time passes? What are the locations of key points on the earth in the third dimension, that is, how far are they from the center of the earth? What is the true shape of the earth and to what extent is the density of its crustal layers uneven?

The variation in the direction and force of gravity is one of the great mysteries. An instrument has been developed in the United States so sensitive that it can detect changes of one-billionth of the force of gravity. This is the change equivalent to an increase in the distance to the center of the earth of one-eightieth of an inch.

With this device it has already been found that earth tides lift and lower the Hawaiian Islands by several inches. Since the force of gravity indicates the distance to the center of the earth, gravimetric surveys will be made in many lands to determine the shape of our planet.

#### GEODESY

What are the precise locations of the various continents and isolated islands? Is there any indication that they are imperceptibly in motion with respect to one another? Is there evidence of former continental drift?

The theory that the continents and the islands that dot the earth surface are in motion with

respect to one another has been used by some to explain the ice ages in various regions. Special cameras capable of photographing the moon against an otherwise invisible panoply of dim stars have been developed by the Naval Observatory in Washington. They are being set up at twenty points around the world. It is hoped that each camera will make possible a determination of position to within a few feet. Thus, in the future, it will be possible to see if there has been any movement—and in which direction.

#### SEISMOLOGY

What are the contours of underlayers in the earth's crust, as revealed by seismic explosions? Which ocean floors are purely oceanic in nature and which seem to have once been continental? What is the relationship between weather phenomena—typhoons and other storms—and microseisms (miniature earth tremors)? With the new instruments for measuring stress in the crust, can techniques be developed for accurately predicting earthquakes?

The science of seismology concerns earthquakes. By analyzing the waves recorded by heavy tremors scientists can deduce data on the structure of the earth's interior.

Instruments capable of detecting stresses that precede earthquakes have been developed and will be tried out in a number of areas where faults in the crust have made earthquakes common. Possibly a technique will be found for accurate prediction of quakes.

The bosom of the earth shudders and heaves in ways that our forefathers never dreamed of. Hurricanes create miniature quakes that can be detected at great distances. These microseisms are typical of the mysteries of our earth that are targets of the I. G. Y.

# U. S. SPEEDS HUNT FOR ARCTIC BASE

Scientific Station on Pack Ice Must Be Built While Planes Can Land on It

FAIRBANKS, Alaska, March 18—Air Force and scientific personnel are racing against time to find and occupy a suitable section of pack ice in the 1,300 miles between Point Barrow and the North Pole.

Such a base, planned for about 600 miles north of Barrow, is to be occupied for eighteen months by about twenty men as part of the earth study program of the International Geophysical Year beginning July 1.

Searches for a base site have been conducted almost daily for the last month by Ladd and Eielson Air Force Base planes.

Housing materials and other supplies must be landed by early May to assure a firm landing surface on the ice. With the approach of the Arctic summer, the landing area will become mushy and dangerous to use.

The Alaskan Air Command is seeking a smooth section of ice, 2 or 3 years old and preferably 10 miles long by 5 miles wide.

When an apparently suitable site is located, a search plane is to go in for a landing. Tests will be made to determine the thickness of the ice, its composition and other data.

If the area meets specifications, other transport planes will fly in twenty prefabricated huts, 6,000 weather balloons, three Diesel generators, a freezer and refrigerator, two bulldozers, snow weasels and tons of food supplies for three to four months. Other supplies and mail will be flown to the site at least twice a month.

Maurice Davidson, 25 years old, of Columbia University's Lamont Geological Observatory will direct the scientific group of seven to ten men. The list

## The Polar Times

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AUGUST HOWARD, Editor

THE POLAR TIMES highly recommends "The Polar Record," published by the Scott Polar Research Institute, Cambridge, England.

The American Polar Society was founded Nov. 29, 1934, to band together all persons interested in polar exploration. Membership dues are one dollar a year, which entitles members to receive THE POLAR TIMES twice a year.

Back issues are 50 cents each. Bound volumes, covering five years, are \$8.00 each.

# Rear Admiral English Heads Polar Society



Robert A. J. English

April 2 (AP).—The election of Rear Admiral Robert A. J. English, USN (Ret.), of San Gabriel, Calif., as president of the American Polar Society was announced yesterday.

Admiral English, who retired from the Navy in 1950, was Captain of the "Bear of Oakland" on Admiral Richard E. Byrd's second Antarctic Expedition in 1933-1935, and was executive secretary of the United States Antarctic Service in 1939-1941.

of scientists has not been completed, but it is to include representatives from the University of Washington, Washington University (St. Louis), Air Force Cambridge Research Center, United States Weather Bureau, United States Signal Corps, Coast and Geodetic Survey, and the Arctic Aeromedical Laboratory.

Comprehensive studies will be made of the ice pack. The pack, it was noted, moves in a clockwise direction at the rate of about two and a half miles every twenty-four hours. Measurements will also be made of the earth's magnetic field, and constant weather observations will be taken.

Mr. Davidson is especially interested in research on crustal and marine geology. Studies are to be made of the bottom of the Arctic Ocean through the use of core samples and seismic refraction.

Seismic tests, it was explained, will be made by firing charges of TNT at scattered points through holes bored in the ice pack.

Mr. Davidson said that geolo-

# ALASKANS FORCED TO REBUILD TOWN

100 Eskimos and Indians Get \$15,000 Territory Aid to Flee Yukon's Erosion

FAIRBANKS, Alaska, Jan. 19—Residents of Beaver, a village of 100 Eskimos and Indians 100 miles north of here, are determined to meet the threat of their homes' gradually being washed away by the eroding Yukon River. They will build a new village this summer, using their own hands and materials. Tools will be supplied by the Alaska Rural Development Board.

The 1,800-mile winding Yukon is eating away the ground surrounding twenty or thirty buildings. Most of the structures are log cabins, built forty to fifty years ago. They include the center of the community's activities, the Alaska Native Service School.

Situated on the north bank of the river, about fifteen miles south of the Arctic Circle, Beaver was organized in about 1910 as a supply center for the Chandalar gold fields, which are now dormant.

Frank Yasuda, a Japanese trader, brought his Eskimo wife and their two daughters from Point Barrow to found the village.

The plight of the disappearing village was discovered last summer by Herman Turner of Fairbanks, an agricultural agent with the University of Alaska.

Mr. Turner, who visited many native villages to encourage the development of Arctic vegetable gardens, learned that plans for a new village were being made by a native leader, Moses Cruikshank, and Mr. and Mrs. James Sampsell, white teachers at the Native Service school.

Mr. Turner brought the matter to the attention of the Alaska Rural Development Board. After an inspection trip to Beaver, James E. Hawkins, director, said "the natives are emphatic in a desire to rebuild the town themselves away from the bank of the river. All they

gists were especially interested in the type of crust in the mantle of the earth under the Arctic Ocean.

Russians have published papers that imply that the crust is the continental type and that at some time thousands of years ago a huge land mass existed. The mass was supposed to have sunk beneath the ocean.

American scientists are a bit skeptical of this conception and are more of the opinion that the crust is oceanic. The ocean, it is said, is approximately 13,000 feet deep below the ice pack.

want in the way of help is the equipment to do the job."

The log cabins are beginning to rot and a new village is considered a necessity, regardless of the erosion accomplished by the river.

When the problem was considered by the board, which is financed by the territory, an expenditure of \$15,000 was authorized. "The \$15,000 we are supplying for tools," Mr. Hawkins said, "should be enough to help the natives to build themselves more than \$75,000 worth of new homes."

# Nome Is Major Port For the Arctic Region

NOME, Alaska. — Nome, the one-time gold-rush town, is the major port for the arctic region. It is accessible by sea from June to October.

Point Barrow, the northernmost community on the American continent, is open to ships only a few summer weeks.

## Alaska Time Zones

There are three time zones in Alaska: Pacific Standard, Alaska Standard and Bering Sea Time. There is an hour's difference between each.

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# Navy to Seek Northwest Passage in Arctic

## D.E.W. Line Supply Force to Survey Narrow Strait

The Navy's Military Sea Transportation Service hopes to add another chapter this year to the saga of the quest for the Northwest Passage.

For centuries mariners have sought a deep-water passage between the Atlantic and the Pacific through the chill waters of the north. The project this year is more than a lure to the men of the M. S. T. S., which is the sea-hauling agency for all the armed forces.

Each summer Naval vessels bore in from east and west to service and supply vital military bases and the equally important necklace of radar stations strung across the frigid top of the continent from Baffin Bay to Alaska. In two task forces, the fleet of nearly one hundred ships must penetrate into the Arctic, unload their cargoes and escape before ice closes in.

This year the western task force will go to Shepherd Bay east of King William Island. This is the farthest point east for unloading cargo directly to land installations serving the radar network, known as the Distant Early Warning line. Depending on ice conditions, the ships must head westward by late August or early September.

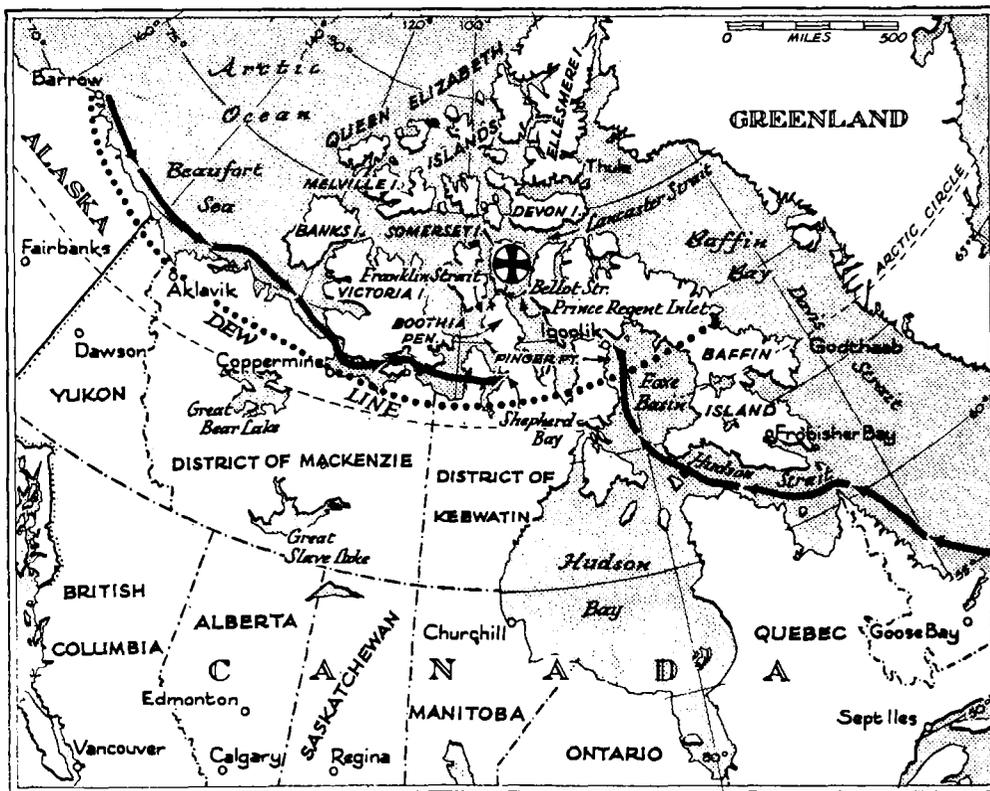
While the unloading is going on, a small survey group consisting of three small Coast Guard ships and a Canadian icebreaker will survey a possible escape route that would lead to the Atlantic.

The party will survey Bellot Strait, between Boothia Peninsula and Somerset Island, north of Shepherd Bay. The strait connects Franklin Strait and Prince Regent Inlet. The latter body of water leads into Lancaster Sound and Baffin Bay.

Vice Admiral John M. Will, commander of the M. S. T. S., announced plans for this year's project March 28 and told of the Bellot Strait phase of the operations.

He said that a partial aerial survey of the narrow passage in 1956 gave promise that it may be the Northwest Passage that would permit serving the Arctic or the Pacific. Fifteen years ago the schooner *St. Roch*, a Royal Canadian Mounted Police vessel, passed through the strait. The *St. Roch* made two voyages across the Canadian north, and several icebreakers have been through, taking different routes.

What the M. S. T. S. survey party seeks is a deep-water exit that will accommodate ocean-going ships of the supply fleet.



Where Navy hopes to find a new deep-water passage on its Arctic supply voyage (cross)

The idea of a Northwest Passage goes back to the sixteenth century when trader nations hoped to bring the riches of the Orient closer by circling the North American continent. Sir Martin Frobisher sought the passage in 1576. Other navigators followed, but the first to succeed was Roald Amundsen, who took the *Gjoa* in 1906. He entered Lancaster Sound and worked his way down the Western slopes of Boothia Peninsula to King William Land and thence along the northern coast to the Pacific.

The eastern task force in this year's operation will move from the Atlantic into Hudson Strait and then to Foxe Basin, probably about the first of July. The most distant D. E. W. line base that it can reach is on the northeast corner of Melville Peninsula, just below the seventieth parallel.

Between this base and the other task force's ultimate goal in Shepherd Bay, D. E. W. line stations receive their supplies and equipment overland and by air.

Ninety-six ships have been tentatively selected for this year's fleet, and the number may be increased by July when the operation begins. Last year 122 ships took part.

The Distant Early Warning Radar, known as D. E. W. line, stretches across the Far North from the Pacific to Atlantic. On rocky Arctic hillocks and frozen tundras are bases and supply lines that must be maintained.

It is the Navy's job to dash in as the ice melts and escape before the ice closes in for the winter.

Task forces will move in from the Atlantic and from the Pacific. The Western force, headed by Rear Admirals Henry S. Persons, commander of M. S. T. S. Pacific Area, and Frederick C. Stelter Jr., commander of the Navy's Amphibious Group One, will be ready to move eastward around Point Barrow, Alaska, about July 28.

This force, comprising icebreakers, salvage ships, tenders, landing ships (dock), tankers and freighters, must get out into the Pacific by the end of September.

It is 1,500 miles from Point Barrow to the last unloading base in Shepherd Bay, north of the Arctic Circle in the Northwest Territories of Canada, and the leaders of the force must closely calculate their struggle against the reforming ice or spend the winter icelocked in the North.

As one feature of this year's operation the force will seek a practicable Northwest Passage for its ships as an escape route eastward into Baffin Bay. Admiral Will said the probable course would be through Bellot and Lancaster Straits and an exit into the Atlantic through Baffin Strait.

Rear Admiral Redfield Mason, who commands the Atlantic area

of the M. S. T. S., will control and direct the eastern approach and the Atlantic supply fleet. In the east, operations into the frozen wastes will begin about July 1, and the task force may stay on the job until the first of October.

Each force proceeds as far as it can. From the last supply sites accessible by water cargoes of oil, machinery, construction machinery and supplies are off-loaded to be carried farther by air.

In addition to supplying the actual D. E. W. line installations, the two task forces carry in supplies for bases at Greenland, Baffin Island and the Pribilof Islands sealing stations.

Admiral Will said that many of the ships in the fleet this year will be again manned by merchant seamen—this makes the Arctic operation a project different from the Navy's Deep Freeze operation in the Antarctic.

The eastern and western task forces in the north will be made up of M. S. T. S. "nucleus" fleet vessels and merchant vessels serving under general agency agreements. The nucleus fleet includes regular Navy vessels manned by naval personnel.

The general agency commercial vessels will be manned by merchant seamen in the employ of their regular operators.

Admiral Mason's force will have fifty ships and the western force forty-six.

## CANADA TO STUDY CARIBOU'S HABITS

Wildlife Teams to Seek Cause of Drop in Herds of North's Most Valuable Animal

By TANIA LONG

OTTAWA, March 7—Teams of wildlife experts will move into Canada's sub-Arctic next month to investigate the rapid decline of the caribou, the north's most valuable animal.

The caribou is an essential source of food and clothing for the Eskimos and Indians, and provides the raw material for tents, sleeping bags, hide scrapers and other tools.

Recent surveys show that there has been a sharp drop in the number of caribou between Hudson Bay and the Mackenzie River from about 670,000 to about 277,000. There are other herds in the eastern Arctic and the Yukon whose sizes have never been estimated.

The investigation will be conducted by four two-man teams, who will remain with two large herds for eighteen months, moving north from the winter feeding grounds in northern Saskatchewan to the summer grazing areas of the Northwest Territories.

The teams will employ some of the hunting techniques of the South American tribes. They will render the animals temporarily unconscious by shooting narcotic-dipped darts into their rumps with air guns.

The wildlife teams will earmark the animals with metal tags. The animals will then be released for future surveys to establish migration patterns.

"All aspects of caribou mortality will be checked," according to W. W. Mair, chief of the Canadian Wildlife Service. "These include death by disease, predators (such as wolves), weather and extent of kill of native hunters. Animal behavior and range studies may give some clues to the changes in migration patterns. The present study will be the first to keep a herd under year-round observation."

The teams will follow the herds over some of Canada's most rugged and lonesome terrain across the northern barrens to the Arctic Circle. With cold weather they will follow the caribou south again.

Their transport will consist of ski or pontoon-equipped aircraft, helicopter, dog team and canoe. Contact with headquarters at Yellowknife, on Great Slave Lake, will be maintained by radio.

There is already some evidence to indicate that a combi-

## Arctic Institute Names A. T. Belcher



ALAN THOMAS BELCHER

MONTREAL, April 1. —(CP)—Alan Thomas Belcher of Ottawa, former deputy commissioner of the RCMP has been named executive director of the Arctic Institute of North America, it was announced Sunday.

The post has been vacant since the previous director, T. H. Manning, also of Ottawa, retired last October. Mr. Manning held the job on a part-time basis, but the institute said Mr. Belcher's job will be a full-time one, due to the institute's growth.

Mr. Belcher retired as deputy commissioner of the RCMP last year, after 36 years' service, largely in the Arctic and in Western Canada. In his new job he will be in charge of Arctic Institute branches in Ottawa, Montreal, Washington and New York.

nation of factors has been responsible for the decrease of the caribou population in recent years. Among these are late winter blizzards killing off many newborn calves, increased predation by wolves, and wasteful hunting by Indians and Eskimos.

Small local surveys have established that in certain areas the killing of caribou for human consumption exceeds the animal's natural rate of increase.

### SPEEDY GLACIER

Speed record for a glacier's movement seems to be that of the Black Rapids glacier, in Alaska. For several months in 1936, a speed of 115 feet per day was recorded for it.

## CANADA HAS 'RAT' FOR ARCTIC TRAVEL

OTTAWA, June 3—Arctic vehicles have never won prizes for esthetic design; and the latest Canadian machine is no exception.

The 1,500-pound vehicle is called the Rat. It looks like a miniature railroad train of two boxcars. But what the Rat lacks in looks it makes up for in performance.

Less than thirteen feet long and only about four feet high, the Rat is made up of two sections, both tracked. The forward compartment carries the driver, the engine and the steering mechanism. The rear section is a cargo carrier connected to the front half by cables.

In high gear the Rat can go over the snow at twenty-two miles an hour. It makes tracks no deeper than a man on snowshoes. It can turn in an eighteen-foot circle. It can also climb a sixty-degree slope, cruise over water at about five knots and carry or pull a maximum load of 1,600 pounds.

The Rat is powered by a four-cylinder air-cooled Volkswagen engine. If the vehicle is adopted by the army here a North American engine of similar size will probably be used.

Canadair, Ltd., Canada's largest aircraft manufacturer, built the Rat from plans designed by army engineers. The company is now negotiating with the Government for commercial production rights on the Government-owned patents.

## DATA LEFT IN ARCTIC IN 1882 DISCOVERED

OTTAWA, June 25 (Canadian Press)—A Canadian Arctic expedition has discovered documents left in a cairn in northern Ellesmere Island by an American explorer seventy-five years ago. However, the contents may remain a mystery.

The documents were left in a cocoa can under a pile of stones by Lieut. A. W. Greely of the United States Army in 1882. They are a sodden lump. Officials of the National Archives, where the papers now are kept, are afraid to try to sort them for fear of destroying them. Experts from London may be asked for help.

The discovery was made last month by Dr. Geoffrey Hattersley-Smith, 34-year-old glaciologist who led an eight-man expedition to the Hazen Lake area, 400 miles from the North Pole. The lake is near the northern tip of Ellesmere, Canada's most northerly land mass.

The expedition is a major Canadian contribution to the International Geophysical Year, which opens officially July 1. It will make a study of glaciers, climatic conditions and the like.

## DISTANT RADAR LINE NEARS COMPLETION

CHICAGO, April 25—The Distant Early Warning radar line, which extends 3,000 miles from Alaska to Greenland along the Arctic Ocean shoreline, is "nearing completion," one of its builders reported today.

Tests of all stations in the air defense project will be completed this summer, according to Hardy G. Ross, manager of Western Electric Company's Defense Division, prime contractor in the D. E. W. line development.

Mr. Ross said 369,600 tons of material had been shipped to sites in the Arctic since the work began four years ago.

More than 200 cargo ships have taken part in the transfer of material, he said. In addition, there have been 40,000 aircraft flights to deliver cargo.

Survey teams that selected the radar sites covered 1,000,000 air miles and took more than 80,000 photographs to determine where the radar units should be placed, Mr. Ross said.

## FAR NORTH FIGHTS COLD

D.E.W. Radar Line Workers Get Tips on Protection

OTTAWA, (Canadian Press)—The Defence Research Board has just published a pamphlet entitled "aids to working in the cold," which should make easy reading in a summer heat wave.

The book, however, is aimed particularly at workers on the D. E. W. (Distant Early Warning) radar line who have to be outdoors much of the time.

"The most important single point is the fact that the cold of the Canadian Arctic is not as bad as it seems at first, and is not nearly so bad as a great many people have made it out to be," the pamphlet starts out cheerily.

The first and most important rule about keeping warm "is to do something about getting warm before you get too cold." Running a couple of hundred feet in deep snow, wiggling the toes 100 or 200 times, opening and closing the hands hard and eating a couple of bars of chocolate are advised. Clothing should be kept dry; wet clothing loses its insulation value.

"Remember cold makes one depressed and makes one want to quit," the pamphlet says. "You always have to fight against this when you are working in the cold. Remember that wanting to quit and give up is very natural and you must fight as hard against it as you do keeping the cold out."

# Nine-Year Aerial Geodetic Survey Enters Final Phase

MARCH 25.

A nine-year aerial survey operation aimed at picking out Canada's whole geographical skeleton moves into its final phase next month over the country's northernmost extremities. It's called a geodetic survey.

Officers of 408 Photographic Squadron of the RCAF at Rockcliffe Station, which has been carrying out the vast project, today gave reporters a run-down of their plans.

About 300 members of the squadron, along with 11 specialists from the Mines Department's Geodetic Survey of Canada, move north during the next two weeks. They will set up shop at isolated points across the Arctic islands to Canada's northernmost limits, starting at roughly the 75th Parallel.

Using Shoran equipment—a variation of radar—they will establish permanent marker points and measure the distance between them by a combined ground-air operation. Once established, the marker points will become accurately located pegs from which to orient future maps of the country's immense Northern areas and by which present maps can be corrected.

Last year's operation, for example, resulted in the magnetic North Pole—the whole of Prince of Wales Island on which it is located, in fact—being moved three miles south on maps made previously from aerial photographs.

**Canada to Study Arctic**  
OTTAWA, June 22—Canadian scientists will play a leading role in the International Geophysical Year.

For some time Canada has been doing geophysical research in all fields to be covered by the year, with the exception of earth satellites and rockets.

Because of the scientific development in the Arctic since the war, most of the Canadian stations needed in the far north are already established.

Roughly ninety stations will be used in Canada primarily in the fields of auroral studies, meteorology, cosmic rays, the ionosphere and glaciology. The weather station at Resolute Bay



**ESKIMO CARVINGS TO TOUR EUROPE:** These miniatures of a hunter and a woman are part of a collection of Canadian Eskimo handicraft shipped to Europe by Canada's Department of Northern Affairs. Carvings are made of soapstone and rubbed with whale oil.

in the Arctic Islands will be geared for eight different fields of study. Fort Churchill will cover six fields, including the launching of a rocket under the United States program.

Canada will devote an important part of its research to the study of the Northern Lights. It is completing two lines of auroral stations, one running from Alert 1,200 miles above the Arctic Circle to Fort Churchill, on Hudson Bay, and the second from Norman Wells, on the Mackenzie River in the Northwest Territories south through Central Alberta and then West to Victoria, British Columbia.

At several of these stations automatic cameras will photograph the skies nightly every sixty seconds. Light recorders at the same time will scan a narrow arc of sky every five minutes of the night, recording various intensities of the aurora. Other instruments such as the "Patrol spectographs" and radar sounding devices will measure wave lengths of light from the aurora and auroral heights.

Because Canada has an important land mass in Northern latitudes, it will also devote special attention to cosmic ray research. Incoming cosmic rays are most intense near the poles because of the concentration there of the earth's magnetic lines of force. The purpose will be to try to find the origin of these high-energy rays, which bombard the earth from outer space and appear to be related to the sun's activities.

The ionosphere, a sort of inner tube of rarified upper air from

## ESKIMO WINS PLACE AS PRIMITIVE ARTIST

WINNIPEG (N.A.N.A.) — An Eskimo hunter comes into a remote Hudson's Bay Company outpost far above the Arctic Circle bringing a valuable haul of furs on a sledge pulled by his huskies.

He trades his furs, buys supplies and ammunition, drinks strong tea and smokes a pipe while he passes the news with the parka-clad Scots-Canadian trader who manages one of the northernmost shops in the world.

Then, almost shyly, he pulls out from under his caribou-skin coat a stone carving of an Eskimo straining to carry a speared seal.

Months later this work of art is being praised by aesthetic intellectuals in an exclusive gallery

in Paris. But the sculptor will never hear the words of praise nor read the enthusiastic reviews. He is busy hunting polar bear, walrus and seal somewhere on the roof of the world.

Substantial prices are being fetched, though not by the Eskimos, for the small artifacts. Art experts generally acknowledge that Eskimo carvings of stone and ivory represent a genuine primitive art form equaling any native art in North America today.

The carvings come from seminomadic Eskimos living in snow-houses and tents on Baffin Island and the eastern shores of Hudson Bay. About four or five thousand of them are scattered over more than half a million square miles of barren eastern Arctic wastes, relying on hunting and fishing for livelihood.

50 to 250 miles above the earth will also be studied. Its behavior is of importance to radio communications. The ionosphere normally reflects radio waves and is used by a network of radio stations throughout the world as a reflecting link.

Three main parties will intensify glaciological studies already begun in Canada. One project will be to study snow conditions in Canada. Another will investigate the Salmon Glacier in British Columbia to detect the movement and thickness of ice.

A third will study ice caps at Ellesmere Island, in the far

North. This expedition will try to solve a puzzle that has bewildered scientists. They will try to discover why Lake Hazen on Ellesmere Island is free of ice when salt water forty miles away is frozen.

Canada's glacial studies will be related to large programs in glaciology that the United States is conducting on the Greenland ice cap in Alaska and in Western Canada.

**Only 9,000 in Vast Area**  
The Yukon Territory, with an area of 207,000 square miles, had a population of 9,000 in 1955.

# 34 Adrift on Arctic Ice for Scientific Studies

## Americans Living on Floes to Further Geophysical Year

By WALTER SULLIVAN

Thirty-four Americans have allowed themselves to be set adrift in the Arctic Ocean. They will make scientific observations during the International Geophysical Year, which begins July 1.

Nineteen of them have been landed during the past month on an ice floe large enough for an air strip as well as their twenty-hut camp. Its present position is roughly midway between Alaska and the North Pole.

The remaining men, five scientists and ten Air Force personnel, have landed on T-3, a vast iceberg also known as Fletcher Ice Island.

This is the second time the United States has established an ice floe station. The first one was destroyed almost overnight when the floe disintegrated. In a dramatic rescue, all on the floe were saved.

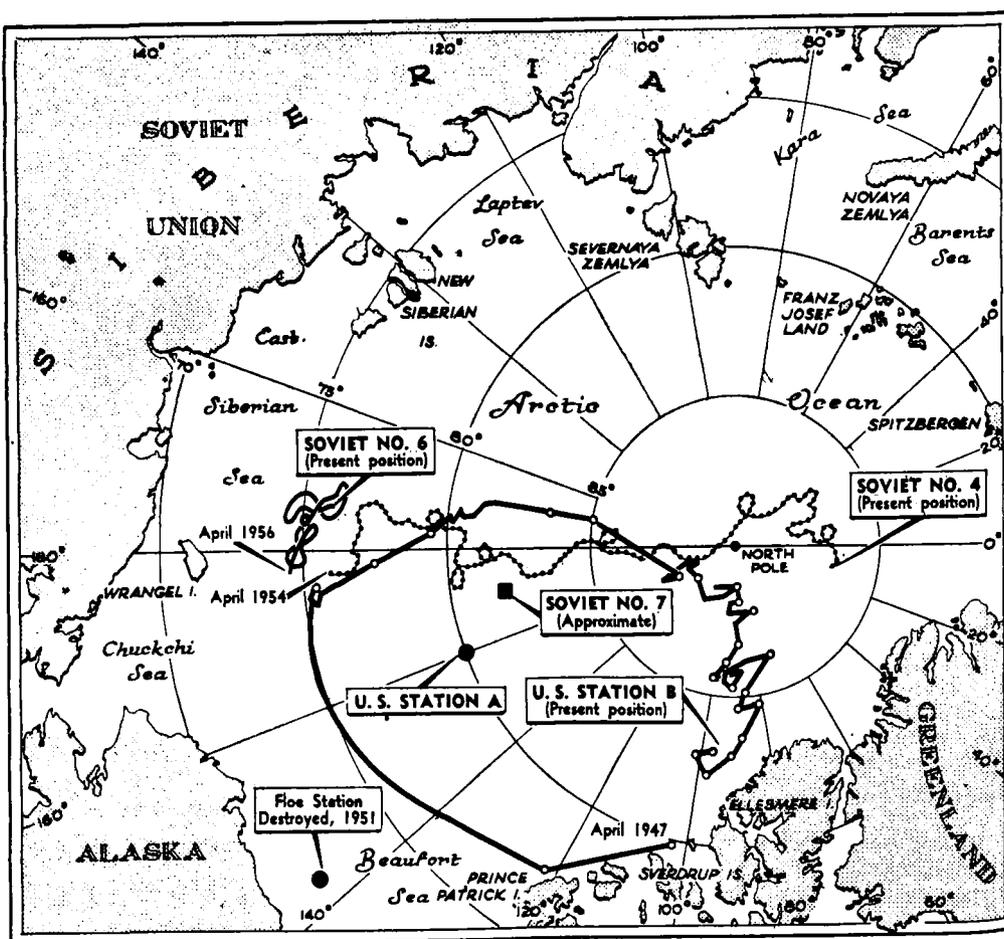
Although this episode took place six years ago, it hitherto never had been made public.

The current operation has appropriately been designated Project Ice Skate, for the huge C-124 Globemasters flying in supplies indeed have been skating on thin ice. The ice is from seven to thirteen feet thick and the floe is roughly four miles square.

Air Force men dynamited pressure ridges that crisscrossed the floe and bulldozed a runway, which was then flooded with water to form a smooth ice surface. The Globemasters have been landing on wheels.

The camp, which is designated Station A, is manned by nine scientists and ten supporting Air Force men. During the next nineteen months the scientists will join with other Americans, Canadians and Russians at Arctic stations in observing a multitude of scientific phenomena.

Among them are the Northern Lights that drape the polar skies with brightly colored curtains and the blizzards that sweep in mysterious patterns across the frosted sea. With echo-sounding explosions, they will probe the floor of the ocean.



**ADRIFT FOR SCIENCE:** Five parties of men, two American and three Soviet, are drifting through the Arctic pack ice. An American party (Station A) recently occupied an ice floe 600 miles north of Alaska. On April 16, a Soviet team (Station 7) occupied another ice floe. Since its discovery in 1947, T-3 (United States Station B) has been occupied three times—March, 1952, to May, 1954, three months in 1955 and since March of this year. Heavy line shows its wide movement in the Arctic Ocean. Soviet teams have occupied two ice floes (Stations 4 and 6) for several years. The line of circles shows the drift of Station 4 near Greenland, the light lines indicate the figure 8 course of Station 6.

Station A and Station B, which is on the ice island, T-3, are part of the network of stations organized for the worldwide team effort in the earth sciences known as the International Geophysical Year. The United States program has been organized by the National Academy of Sciences.

Station B at present is about 120 miles northwest of Ellesmere Island. During the ten years since its discovery this great, flat-topped iceberg has drifted several thousand miles through the pack in a sweeping circuit of the Arctic Ocean. It passed close to the North Pole.

This is the third time that T-3 has been occupied as an observation post. Whereas Station A rests on a floe—a fragile platter of frozen ocean—T-3 is a substantial piece of ice about 150 feet thick and ten miles long. It

has a long life expectancy.

The Soviet Union, at last report, had three drifting stations manned in the Arctic, one of them apparently on an ice island comparable to T-3. The others are on floes.

The first American attempt to establish a floe station was made in 1951. On Feb. 20 of that year the Air Force landed a small party on a floe 115 miles north of the Barter Islands at the northern tip of Alaska. The men set up a number of Jamesway huts.

These are semi-cylindrical—like Quonset huts—but are wooden framed with a covering of insulated mats. One purpose of the venture was to find out if such camps could be set up on the pack ice to serve as bases for search and rescue operations. The floe was large enough to accommodate a landing strip.

At 4 a.m. on March 10 the

men encamped there noticed a crack in the floe 100 feet from their camp. Within two and a half hours it was evident that their base was doomed and they radioed for help.

By noon, when a rescue plane arrived, the floe had split, overriding itself. Two of the huts already were being annihilated and the airfield, on the other half of the floe, had drifted away. To reach the plane the men had to walk a mile.

The next day the camp was still visible, but search flights on March 15, 16 and 17 could find no trace of it. The huts all had been engulfed.

Students of ice pack movements suggested later that the station, 115 miles offshore, was too near the mainland. When wind or current drives the pack against the coast, the resulting compression within the floes extends great distances out to sea, a phenomenon that has crushed

## Explorer Named Head Of Geographical Group



Conway Studios

**Dr. Walter A. Wood**

The American Geographical Society has announced the election of Dr. Walter A. Wood of New York as president of the organization.

Dr. Wood is internationally known as a geographer and explorer. Since 1929 he has participated in more than eighteen major exploratory expeditions, including the leadership of four Yukon expeditions of the American Geographical Society. Dr. Wood is also director of the Arctic Institute of North America, Inc., a scientific group that coordinates, initiates and sponsors research in polar regions.

The society, with headquarters at Broadway and 156th Street, was organized as a nonprofit organization in 1852 and is primarily a research group. Its object is the advancement of geographical knowledge.

by Capt. Burton P. Jenkins landed on its rough surface. A party was established on the floe, equipped with radio and a radar reflector that would enable other planes to find them. From then on Station A was on the map.

It was officially dedicated May 21 by Maj. Gen James H. Davies, head of the Alaskan Air Command. That day the Globemasters began arriving at three-hour intervals with material for the twenty Jamesway huts and other supplies.

Maurice J. Davidson of the Lamont Geological Observatory at Columbia University is scientific leader at Station A. Norman Goldstein of the Air Force Cambridge Research Center in Boston established the station

## Canadian Arctic Council Meets In Future Center of Northlands

### Frobisher Bay Is Selected for Semi-Annual Session of Governing Body

By TANIA LONG

FROBISHER BAY, Canada, June 4—Another page in the opening of the Canadian Arctic was written today, among the bleak, snow-swept hills of Baffin Island.

For the first time in its existence, the Council of the Northwest Territories, which governs Canada's vast northland, met in one of the remote and still largely primitive Arctic islands. The place chosen for the meeting has a history of its own, which antedates the exploration of North America.

It was the early Elizabethan explorer Sir Martin Frobisher who discovered the bay in 1576, when with two tiny ships he came in search of a Northwest Passage to India.

At that time he was distracted from his quest by the finding of what he thought was gold. On two subsequent trips he opened mines in the rocky shores of the bay, but the ore turned out to be iron.

This was considered worthless at the time. Today the iron bodies being established in recent mineral explorations may provide this otherwise barren area with the basis for a profitable economy, similar to that of the Ungava area of northern Quebec.

It was partly in recognition of the future potential of southern Baffin Island that the council is holding its semi-annual meeting here.

Partly, too, it has come to Frobisher Bay to give emphasis to the importance being given in Ottawa at this embryonic community as the future administrative, health and educational center of the eastern Arctic.

With the advent of the Distant Early Warning radar line, and with the increase in scientific and mining activities in the Far North, the Arctic is having to develop rapidly.

In the west a new town of Aklavik is rising, built on modern lines for the native Indians and Eskimos as well as the whites.

In the east the new town of Frobisher Bay, built to similar

on T-3, where he lived for three months in 1955. He is to be relieved by John A. Murray Jr. of the Weather Bureau.

The two stations move from a few hundred yards to several miles each day.



The Council of the Northwest Territories met at Frobisher Bay (cross).

requirements, will provide the Eskimos of this region with facilities essential for the preservation and integration of their race.

In the main these facilities will consist of modern housing for wage-earning Eskimos, a rehabilitation center for Eskimos recuperating from tuberculosis, a medical center, a school, and enough small businesses to provide employment for the growing population. A movie house and recreation center will be added later.

Frobisher Bay is well beyond the tree line, and the scenery is stark and dramatic; nothing but scraggy brown moss grows on the rocky undulating land, except when for a brief period each summer the country is covered with the tiny brilliantly hued flowers of the Arctic.

Two years ago there was not even a shack on the present town site. The first building materials were brought in by dog-sled in the spring of 1955. Now there are fifty-five wooden buildings, each gaily painted in bright pastel colors. The village has the only bridge in Baffin Island, and on this bridge, at the entrance to the site, is a large sign announcing: "Frobisher Bay, established 1955, population 67."

The council of the Northwest Territories meets twice annually under the chairmanship of Commissioner Gordon Robertson to legislate for the coming year. In the summer the meetings are held somewhere within the territory, in the winter they are held in Ottawa.

a number of exploration ships. Station A, the new floe station, is 600 miles offshore.

In testifying before Congress last month, Hugh Odishaw, who is organizing the United States program under the National Academy of Sciences, reported that the floe at one of the Soviet drifting stations had disintegrated. All of the personnel, he said, were rescued by aircraft.

Soviet Station No. 4 has been occupied since April, 1954. During that time it has drifted all the way across the Arctic Basin in cold pursuit of T-3, which had sailed the same route along the International Dateline four years earlier.

The Russians, however, after passing within a few miles of the North Pole, continued on towards Greenland. T-3, in its meanderings, wandered back towards its presumed place of origin on the north coast of Ellesmere Island.

An apron of semi-permanent ice attached to that coast bears the same pattern of wrinkles that ruffles the surface of T-3. Hence the latter is thought once to have been part of this floating ice shelf. Freshwater lakes form in some of the gullies between these wrinkles and it is on the ice covering one of these that the Air Force planes have landed.

The approach of summer has begun to melt this runway and it is not certain whether it will be possible to fly in the two scientists who, at last report, were still waiting for transportation. The planes flying to T-3 take off from Thule, Greenland.

The ice island that bears Soviet Station No. 6 has roamed in north circles in an area 400 miles north of Siberia. On April 16 the Russians established their Station No. 7 near the International Dateline, presumably in the expectation that it will follow T-3 and Soviet Station No. 4 across the Pole.

Station No. 4 will probably be evacuated if it gets much closer to Greenland.

Landings on the Arctic pack were made by pioneering air explorers such as Sir Hubert Wilkins. Sir Hubert, on his expeditions of 1927-28 landed and took soundings of the sea beneath the ice. On one occasion, after a forced landing, he had to walk 100 miles over the floes to the Alaskan coast.

The search for a suitable ice floe this year was a game of hide-and-seek that kept Air Force planes busy for several weeks. Several times a likely looking floe was sighted, but no one could find it again in the endless jig-saw patterns of the pack.

The leading figure in the search was Col. Joseph Fletcher of the Air Force, who commanded the unit that first occupied T-3, from March, 1952, until May, 1954.

On March 30 of this year a suitable floe was seen and a twin-engine Douglas transport, equipped with skis and piloted

# POLAR AIR ROUTE OPENED TO TOKYO

Twin Flights Mark Inaugural  
of Scandinavian Line's  
Europe-to-Japan Service

TOKYO, Tuesday, Feb. 26 (AP)—The first scheduled Europe-to-Tokyo airliner to come by the North Pole route arrived from Copenhagen at 8:15 A. M. today.

The Scandinavian Airlines System's DC-7C was fifteen minutes ahead of schedule. A sister snip that took off from Tokyo completed the inaugural flight to Copenhagen at 9:45 A. M. Monday.

The two big planes missed a carefully planned rendezvous 10,000 feet above the geographic North Pole by three minutes, but the passengers toasted the occasion with champagne.

S. A. S. has been operating regular flights between Los Angeles and Stockholm over the Pole since 1954.

The plane from Tokyo landed its forty-five passengers and crew at Copenhagen an hour and a half behind schedule, at 9:45 A. M. Headwinds had slowed it off Norway and had forced it to refuel at Oslo. The plane had refueled earlier in Anchorage, Alaska.

The elapsed time, including the refueling, was 32 hours 31 minutes. This compares with 52 hours for the line's older Tokyo-Copenhagen service via south Asia.

The west-bound airliner, with forty-seven aboard, also refueled in Anchorage.

S. A. S. plans twice-a-week service over the Pole between Denmark and Japan and expects to cut twenty hours off the present route around southern Asia. The shortest distance via Anchorage is almost 7,000 miles, but weather conditions can increase the flying distance considerably.

Aboard the plane from Tokyo were Prince Takahito Mikasa, youngest brother of the Emperor of Japan, and his wife, and Japanese, Burmese, Thai and Filipino officials and reporters.

The party from Copenhagen included Premier H. C. Hansen and Prince Axel of Denmark; Halyard M. Lange, Norwegian Foreign Minister; Ingvar Lindell, Swedish Deputy Foreign Minister; Thor Heyerdahl, Norwegian explorer, and European newsmen.

In a message broadcast from the Pole, Premier Hansen termed the flight "a great pioneering exploit accomplished by the Scandinavian Airlines System in the interests of civil aviation."

# Geographic North Pole Skyway Opens

By Ansel E. Talbert  
Military and Aviation Editor  
N. Y. Herald Tribune

COPENHAGEN, Feb. 23.—United States aviation—both civil and military—is making invaluable contributions to the opening tomorrow of the world's first commercial skyway directly over the geographic North Pole.

The 8,000-mile-long skyway—an Arctic Ocean "short-cut route" between Copenhagen and Tokyo with one stop in Anchorage, Alaska—slices 2,300 miles and twenty-two hours of flying time from the current fifty-two-hour flight route linking northern Europe and Japan by way of the Middle East and southern Asia.

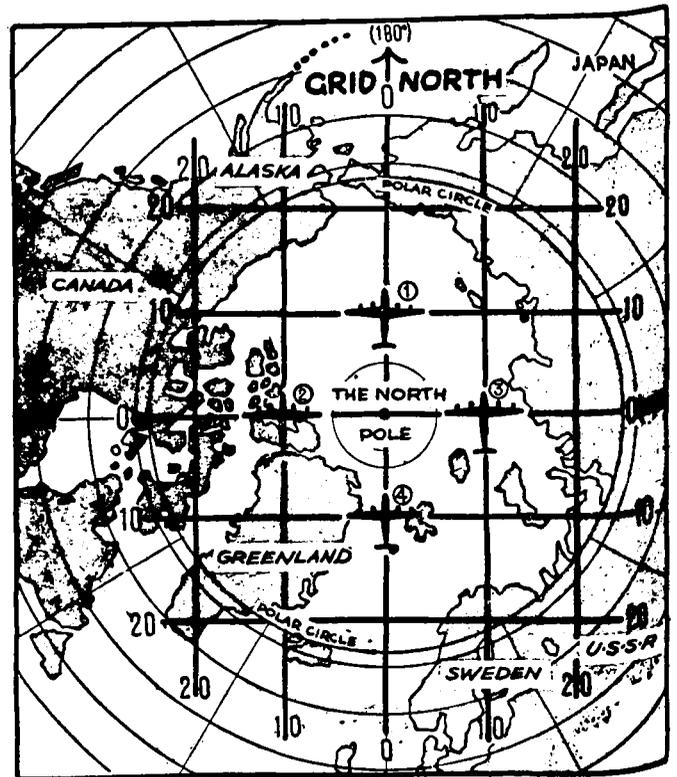
In order to aid pilots and navigators of the Scandinavian Airlines System taking off in long-range American-built Douglas DC-7s at each end of the route on the inaugural flight, the United States Air Force turned over the secret chart it has been using for military flying over the frozen Arctic Ocean area.

Since World War II the Air Force has made more than 2,000 weather flights to and from the geographic North Pole, and its knowledge of the area is the most extensive in the entire free world. The plastic film of this special North Pole area chart, engraved with all the geographic and aeronautical information which could be made available for civilian use, was sent by air to the Scandinavian Airlines System headquarters in Stockholm. The S. A. S. turned it over to the Esselte chart-making firm, which supplemented it with sections of Scandinavia and Alaska not included in the Air Force charts and with all available material on the Arctic region adjoining Russian territory.

The chart finally was overprinted with what is known as a "polar grid system" adapted from Arctic navigational methods developed jointly for military use by the Royal Canadian and United States Air Forces during the last decade.

The S. A. S. polar grid system has a center line identical with the prime or "Greenwich Meridian" of longitude running from Greenwich, England, across the North Pole to the South Pacific. The other meridians, which on orthodox maps and charts meet at the North Pole, are discarded, since they would cause endless confusion to a trans-polar navigator having to change course each time his fast-moving aircraft cut across one.

Instead, there are a series of lines drawn parallel on the chart to the prime meridian, or



"POLAR GRID SYSTEM"—Flying over the North Pole, navigators abandon geographical maps some 250 miles north of the Arctic Circle and use instead this "polar grid

system." It avoids confusion at the Pole, where all longitudinal meridians come together. It is overlaid on geographical chart based on secret data from United States Air Force.

"grid north." with other equally-spaced parallel lines drawn at right angles. Navigators anywhere can take a heading of "grid north" parallel to the prime meridian and keep it even after they have passed over the North Pole and are headed south. They do not have to worry about the fact that east becomes west and west becomes east "on the other side."

Because the northern Magnetic Pole is about 1,000 miles south of the geographical North Pole and causes ordinary compasses in the Arctic either to point due south when they should be reading north or to fluctuate widely, a "polar path gyro" was constructed to Scandinavian Airlines specifications by Bendix Aviation Corp. It points in one direction and stays put as long as the airplane in which it has been installed is flying.

The "polar path gyro" can be connected to steer the automatic pilot of a DC-7-C over the long stretches between Copenhagen and Anchorage and between Anchorage and Tokyo.

With a new, American-built Kollsman sky compass, which works on the principle of polarized light, Scandinavian Air-

lines North Pole navigators will be able to "see" the sun no matter where it is, and even when it is below the horizon.

From now on, two flights a week from each end of the new "Northwest Passage" of the air will be operated regularly with the aid of American equipment.

## Soviet Weather Stations in Arctic

MOSCOW, May 5 (AP).—Soviet scientists are establishing fourteen floating weather stations in the Arctic to radio weather information to a central collecting point, it was announced today.

An expedition from the Leningrad Arctic Institute recently left for the central Polar basin to set up the stations. The stations will be unmanned. Instruments and radios will gather meteorological data and forward it automatically. An experimental station established last year proved successful.

New Soviet Icebreaker Named—LONDON, May 3 (Reuters).—The first atomic-powered icebreaker, being built in Leningrad, will be called Leningrad according to the Moscow radio

## GEOGRAPHIC GETS A NEW PRESIDENT

Dr. Melville Grosvenor, Son  
of Former Society Head,  
Succeeds La Gorce

WASHINGTON, Jan. 8—Dr. Melville Bell Grosvenor has been elected president of the National Geographic Society to succeed Dr. John Oliver La Gorce, the society announced today.

Dr. Grosvenor, son of the society's former president, Dr. Gilbert Grosvenor, had been vice president of the society and associate editor of the National Geographic Magazine since 1954, when Dr. La Gorce became president.

He has been on the staff of the society and magazine since 1924. His grandfather, Alexander Graham Bell, inventor of the telephone, was also president of the society, as was his great-grandfather, Gardiner Greene Hubbard.

Dr. Melville Grosvenor was born here in 1901. He was graduated from the Naval Academy and after a year of sea duty resigned to join the magazine staff. He became assistant editor in 1935 and three years ago became vice president and associate editor.

He received a doctorate of science from the University of Miami in 1954.

## 2 Pilots Survive Crash on Ice Cap

ST. JOHNS, Newfoundland, Jan 10 (AP).—The United States Air Force announced today that two of its officers crashlanded their F-89 scorpion jet in darkness and 40-below-zero cold high on the Greenland ice cap last week. They were rescued uninjured four and one-half hours later.

United States Northeast Air Command headquarters here identified the officers as Lt. Jerry T. Holman, 26, of Hartford, Ala., the pilot, and Lt. James J. Phielix, 22, of Elmira Heights, N. Y., radar observer.

The two were unable to radio a message on their plight when they went down on the 3,800-foot-high ice cap 12 miles east of their base at Thule, Greenland. They made an emergency shelter from materials in their survival kit and built a small fire.

The Air Force's 55th Air Rescue Squadron at Thule began a search when the plane did not report by the time its fuel supply would have been exhausted.



Col. Bernt Balchen

## PILOTS HONOR BALCHEN

Polar Flier Receives Group's  
First Aviator Award

WASHINGTON, June 24. (UP)—Col. Bernt Balchen, the first man to pilot a plane over the South Pole, was awarded the first "outstanding aviator award" tonight from the National Pilots Association.

The award, presented by Gen. James H. Doolittle at a dinner honoring the Norwegian-born pilot, cited Colonel Balchen for "outstanding airmanship, high ethical standards, and inspirational conduct."

Colonel Balchen piloted the late Admiral Richard E. Byrd's airship, "America," on the 1927 trans-Atlantic flight and the Bremen relief expedition to Greenly Island in Labrador in 1928. The following year he piloted the first airplane over the South Pole as Admiral Byrd's chief pilot.

During World War II, Colonel Balchen served with the Royal Air Force and the United States Air Force. He now is an American citizen and vice president of Resort Airlines, Inc.

## TO EXPLORE GREENLAND

French Expedition in 1957-58  
Will Study Topography

A French expedition is planning a long-range exploration of Greenland, the United Nations Educational, Scientific and Cultural Organization says.

Explorer Paul-Emile Victor will direct the expedition during its 1957-58 study. The scientists will attempt to discover whether Greenland, beneath its vast ice-cap, is one vast island or a number of smaller islands. They will make soundings through the ice to help ascertain the general topography of the land.

## North Pacific Seal Pact Is Signed by 4 Nations

WASHINGTON, Feb. 9 (AP)—The United States, the Soviet Union, Japan and Canada signed an agreement today to regulate the hunting of fur seals in the North Pacific.

The agreement is in the form of an international convention. It was reached after almost two years of negotiations.

It would establish a North Pacific Fur Seal Commission and set up a six-year cooperative seal research program.

It prohibits seal hunting at sea and permits the search of vessels at sea in suspicious circumstances.

The convention is to continue for six years and will go into effect upon the deposit of ratifications in Washington.

The seals summer each year on the Soviet Union's Commander and Robben islands off the Asia coast, and in Alaska's Pribiloff Islands. The hunting is usually accomplished on the islands.

## RUSSIANS LAND AT POLE

2 Planes Make Arctic Flight  
to Set Up Weather Station

MOSCOW, May 16 (UP)—Two Soviet planes landed at the North Pole today, the first such landing since a United States Air Force plane made a similar flight to the area in May, 1952.

A radioed dispatch published in the newspaper Evening Moscow said the planes stayed at the Pole for six hours while technicians set up an automatic weather reporting station. The station was one of a series being established in the Arctic to transmit meteorological data to a central collecting agency via radio.

The report said the pilots landed and took off again without mishap despite strong headwinds and low visibility. The last polar landing was by Lieut. Col. William Benedict of the United States Air Force May 4, 1952. He and his crew stayed at the Pole for about three hours.

## Revisits Glacier After 26 Years

ALBANY, June 25 (AP).—

Dr. William E. Carlson, a geologist, president of the State University of New York, is on his way to Greenland to measure the retreat of the Upernivik Glacier. He last measured the glacier's eastward progress in 1931, when he estimated the mass of ice was moving at about sixty-seven feet a day. He expects the ice is moving faster now.

## Uranium Find May Make Greenland Pay

Copenhagen, May 9 (Reuters)—Reports that uranium has been found in the mountains of southern Greenland have raised hopes that the island, which since it came under Danish sovereignty in 1814 has been more of a financial burden than an asset, may supply Denmark with unexpected wealth.

Mineral samples brought back to Copenhagen from Narssaq, on the Skov Fiord, have been found to contain a fairly high uranium concentration.

The Danes, who have to import uranium from the U. S. for their atomic research, have greeted the news from Narssaq with enthusiasm in the hope it may mean Denmark will be able to produce her own atomic fuel.

Denmark's annual energy requirements are equal to 12,000,000 tons of coal, and she has no natural fuel. This means that over 1,000 freighters and tankers are employed every year to supply the same quantity of energy as can be obtained from 1,200 tons of natural uranium, a cargo which could be shipped in one small freighter.

It long has been known that the mountains of Greenland contain minerals—gold, silver, nickel, lead, graphite, marble, coal, oil and iron. But all attempts to mine them have failed.

The long sea journey, the severe climate, the intractability of the mountain rock and the widely scattered sites of the deposits have made production unprofitable, with the exception of cryolite, one of the raw materials for aluminum, the annual production of which amounts to 40,000 tons.

## Coast Guard Aide Named

The Coast Guard announced May 10 that Capt. Charles W. Thomas, experienced in polar expeditions, had been assigned to the post of deputy commander of the Eastern Area.

Captain Thomas, author of a book, "Ice Is Where You Find It," has commanded vessels on assignments in the polar latitudes. Recently he served as a task group commander during Operation Deep Freeze II in the Antarctic.

## Poles Sail for Spitsbergen

WARSAW, June 27 (Reuters)—Thirty-five Polish scientists sailed today to carry out research on Spitsbergen Island in the Arctic as part of the International Geophysical Year.

# POLAR EXPEDITION BATTLES PENGUINS

**Antarctic Beachhead Taken  
From an Army of 150,000  
Birds on Cape Hallett**

**McMURDO SOUND, Antarc-**tica, Jan. 10—After a long, sea-saw struggle, the United States Navy has successfully seized a four-acre beachhead at Cape Hallett from an army of 150,000 penguins and begun to build a base there.

The unloading of supplies has been completed and a joint New Zealand-United States party has been put ashore. The two United States ships that accomplished the landing, the attack cargo ship Arneb and the Coast Guard icebreaker Northwind, now are en route to McMurdo Sound, 400 miles farther south.

Three permanent buildings of eleven to be built at Cape Hallett have been erected. They will house a party that will make scientific observations during the International Geophysical Year, 1957-58. The party consists of four scientists, three of them New Zealanders, and one American.

Ten members of the group are United States Navy Seabees who will operate the camp and its radio station. In addition, there is a small group of builders who will remain until the camp is finished. They then will be evacuated before winter freezes all the sea approaches to the bay.

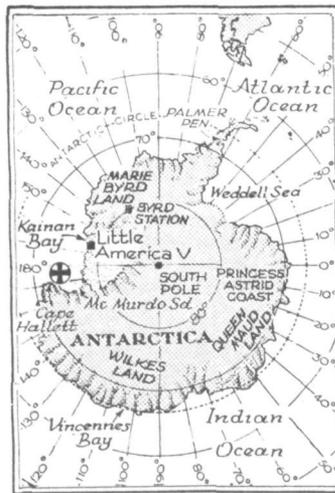
The battle with the penguins began when a landing was made on a beach of volcanic ash along the west side of the cape. The latter rises abruptly 1,000 feet into the air, and the coast is backed by 10,000-foot mountains whose skyline is a combination of needle-like rock pinnacles and soaring glaciers.

The beach is a triangular area that was completely occupied by Adelie penguins that had just completed hatching their eggs. The pot-bellied little balls of gray fuzz that were their chicks were everywhere. But this was the only level ground for the station. So a small portion of it, 100 yards square, was fenced off.

The penguins and their offspring eyed these preparations with interest but did not move. They know no enemies that walk either on two feet or four.

Then the battle began. Sailors gathered the squawking youngsters into baskets while their shipmates threw nets over the struggling adults. The four acres of ground were a scene of bedlam, the air pierced by sharp, indignant cries until all the birds in the area had been moved outside the enclosure.

Then, just as the builders prepared to go ashore, there were rumblings in the penguin Olym-



**NEW ANTARCTIC BASE:  
Facilities at Cape Hallett  
(cross) are being erected.**

pus — or so some sailors later conjectured—for a furious storm struck the ships. The Arneb was badly holed and dented from stem to stern by driving ice floes. The Northwind, trying to save her, broke a propeller blade on the ice.

When the wind died down and the air had cleared, the fence was down and the birds had returned to their homes. But the Seabees returned to the fray and gained a firm foothold at Cape Hallett.

When a tractor bulldozed the area later so buildings could be erected, it was found that the ground was a mixture of gravel and penguin guano to a great depth—the residue of centuries of penguin habitation.

Meanwhile, the Arneb, by lowering a fifty-six-ton barge and other landing craft over one side was able to list herself thirteen degrees, thus lifting the damaged part of the hull out of the water. The torn plates were then repaired.

## Adm. Wright In Antarctica

**McMURDO SOUND, Antarc-**tica, Feb. 16 (AP).—Adm. Jerauld Wright, commander-in-chief of



the United States Atlantic Fleet, arrived here today after a seventy-hour flight from his headquarters at Norfolk, Va., to observe the closing phase of this year's Operation Deep Freeze. Adm. Wright took off again seven hours after his 9,000-mile flight from Norfolk to try to reach the South Pole on a Globemaster transport, but bad weather forced his return to the main base here. The admiral

# Ice Cream Best Seller At Base in Antarctica

**LITTLE AMERICA V, Antarc-**tica (AP).—The meals are hearty in this village dug out of snow and ice. And no matter how cold the weather the favorite dish is ice cream.

That's the experience of the men who run the "Little America Restaurant and Coffee Shoppe," a box-like aluminum building that serves as the mess hall for scientists and sailors preparing this American base for use in connection with the International Geophysical Year.

Second to ice cream in popularity is canned chocolate milk — served ice cold.

Then come pastries, said commissaryman 1/c. Richard Banasiak, of Ballston, N. Y., the chief cook. Right now, Banasiak and his two helpers serve four meals a day to more than

100 men. The number will drop to about fifty soon when what Banasiak calls the "summer tourists" leave.

Those staying behind will man the base to make scientific observations during the sunless Antarctic winter.

Mechanic 1/c. Henry Deeks, of Islington, Mass., in charge of the mess hall, said the men can have almost anything they want to eat that can be preserved by cold storage.

Steak is on the menu three times a week, and even "gets monotonous," Deeks said.

What the men miss most are fresh vegetables, fresh milk and fresh eggs.

The food supply is stacked in the snow behind the kitchen. It takes the cooks two days to thaw out an item for cooking.

## GROUP FACES RECORD COLD

**WASHINGTON, April 22 (AP)**

—The first men to spend the winter at the South Pole expect the thermometer to drop to 120 below zero at midseason, the Navy said today.

This would be 30 degrees colder than anyone else has ever experienced, Navy weather experts said.

Some 700 miles away, at Little America, temperatures last month averaged 14 degrees colder than in March 1956. Even so, the Navy said, the Antarctic occupants have discovered that they can work outside in 80-below weather for up to three hours at a time without discomfort.

Altogether, 338 United States scientists and military men are spending the polar winter at seven "Operation Deep Freeze" outposts, scattered over distances of hundreds of miles.

A sampling of the reports they send back:

Little America—Lt. (jg) Robert J. Adams, Memphis, reported that an attempt to hatch chicks for Easter had failed.

is expected to make recommendations for next year Antarctic operations which the Navy has organized in support of scientists for the 1957-'58 International Geophysical Year. Adm. Wright also will fly to Little America, 400 miles east of McMurdo on the Ross ice barrier, to inspect the scientific headquarters.

Byrd Station—Scientists were "astonished" to discover that ice in the area extended to a depth of 7,800 to 9,750 feet.

McMurdo Sound—Marine Maj. S. A. Antos, Buffalo, N. Y., discovered near the Wilson-Piedmont glacier an ice tunnel more than a mile long.

Little America—A chapel library was built, for Easter dedication as the Richard E. Byrd Memorial Chapel.

Ellsworth Station—Navy Cook Edward H. Davis, Clinton, Iowa, said the men are eating one and a half times their normal amount of food.

Little America—Lt. Pat B. Unger, Miami, Fla., successfully removed the appendix of Allen E. Pracht, builder 3/c, Pittsburgh, and reported his patient is doing fine.

## 23 REACH POLAR BASE

**Science Group Arrives at  
Little America V**

**LITTLE AMERICA V, Antarc-**tica, Feb. 1 (AP)—Twenty-three scientists and technicians have arrived at this Antarctic base for a year's work. This is part of the International Geophysical Year worldwide program, beginning July 1, to conduct and coordinate observations of the earth and its atmosphere.

Nineteen of the twenty-three will remain at snow-buried Little American V on the Ross Sea Ice Shelf. The others will push on to Byrd Station, more than six hundred miles to the southeast. The operation Deep Freeze ship Curtiss brought the twenty-three here from McMurdo Sound, five hundred miles to the west.

The two top United States scientists in Antarctica flew in earlier to set up their headquarters.

# Navy Men Repair Plane On Antarctic Ice Shelf

McMURDO SOUND, Antarctica, Feb. 13 (AP).—Six Navy men arrived safely back at this Antarctic base last night after engine trouble forced their plane down on the flat Ross Sea ice shelf.

They spent three hours repairing an oil leak in one of the two motors of their ski-equipped Navy R4D (C47) transport before continuing to McMurdo Sound, 260 miles to the north.

The plane was returning after flying five more scientists and two seabees to the United States scientific base at the South Pole 800 miles from McMurdo. It carried food and survival gear.

Lt. Harvey G. Speed of North Muskegon, Mich., the pilot, said he was not a bit worried during the emergency landing—his fourth in the Antarctic.

He said the oil leak developed while the transport was skimming over Beardmore Glacier on the way down from the high polar plateau, and "I headed straight for the ice shelf, which is as flat as a table."

Others aboard the plane were Ensign William T. Shick of Redding, Calif.; Ensign Earl R. Hillis, Chattanooga, Tenn.; Chief Aviation Machinist Mate William R. Miles, New London, Conn.; Aviation Electronics Technician 1/c William A. Cumbie, jr., Milton, Fla., and Construction Mechanic 3/c Martin L. Brown, Davisville, R. I.

The flight of the seven men to the South Pole brought the base there to full strength for the first attempt in history to spend the long winter night at the pole.

The arrival of the new men raised the polar station population to 18—nine scientists and nine Navy support personnel.

The Navy transport made the flight to the pole in 7½ hours. It remained there only 15 minutes before starting back to McMurdo.

The five scientists making the flight were Robert F. Benson of Minneapolis, Minn.; Herbert L. Hansen, Nebraska City, Nebr.; William F. Johnson, Ada, Okla.; Arlo U. Landolt, Pocahontas, Ill., and Edward W. Remington of Bethesda, Md.

Meanwhile United States Air Force Globemasters made three more nonstop flights to the polar station and back to drop supplies.

McMurdo Sound, Antarctica, Feb. 13 (UP).—The pilot of a Navy plane forced down in the icy wastelands of the Antarctic, 260 miles from its base, praised the work of his oil-covered mechanic today for getting the five crew members back safely.

Speed said Chief Aviation Mechanic William R. Miles of New London, Conn., worked two hours in freezing temperature. Miles

was "covered with oil from head to foot," but succeeded in equalizing oil pressure in all four engines, and the plane finished its flight.

## Pole Flier Lands Disabled Plane

By the United Press.

McMURDO SOUND, Antarctica, Jan. 9.—A Rhode Island Navy pilot skillfully landed a crippled twin-engine plane on the ice of McMurdo Sound today, averting injury to himself, his co-pilot and five passengers.

The ski-equipped Neptune bomber developed landing gear trouble shortly after taking off for New Zealand, so Lt. Cmdr.

## U. S. SEABEE DROWNS AT ANTARCTIC BASE

McMURDO SOUND, Antarctica, Jan. 14.—A Navy Seabee was pulled to his death today when the weasel in which he was riding broke through the bay ice off this United States base.

Five other occupants of the vehicle, including the driver, escaped. The man drowned was Ollie Barrett Bartley, construction driver 3/c, 22 years old, of Slaughters, Ky.

This brings to three the number of Navy men in the current expedition who have perished when vehicles in which they were riding broke through the Antarctic ice or snow. A year ago, Richard T. Williams, construction driver 3/c, of Iliion, N. Y., died when the tractor he was driving plunged through the ice of McMurdo Sound off Cape Royds. Max Kiel, construction driver 2/c, of Joseph, Ore., was killed last March when his tractor crashed through a snow bridge into a crevasse in Marie

John H. Torbert of North Kingston, R. I., cricled over the McMurdo Sound ice strip for two hours to use up the fuel and decrease the weight of the plane before landing.

Byrd Land.

Driver Bartley was in the Seabee unit here to help in the unloading of ships. He was one of six men riding on a route that had been used by vehicles before; but the summer thaw has apparently weakened the ice in many places.

Mr. Bartley's body was recovered nine hours after the accident by Navy frogmen flown in by helicopter from the cargo ship Arneb.

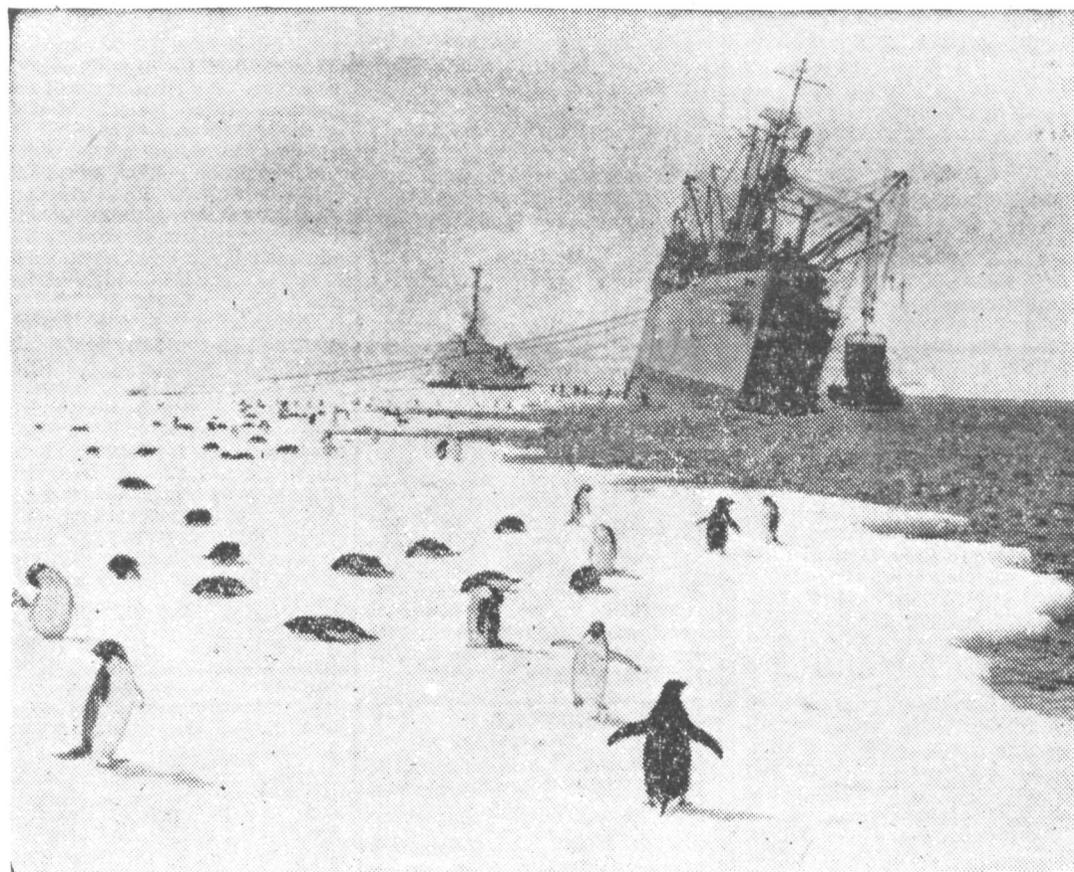
The five men who escaped from the sinking Weasel were Aubrey O. Weems, 26, Canton, Miss.; Leroy E. Arnold, 23, Black Oak, Ark.; George W. Bailey, 25, Milton, Del.; Karl J. Lagenback, 19, Lanesboro, Mass., and Lewis A. Layton of Atlantic City, N. J.

The Weasel was traveling over ice formed in the year since the icebreaker glacier broke a channel to Hut Point.

The four divers flown in to recover the body were:

Lts. John S. Connelly of Dorchester, Mass., and Norman H. Olson of Providence, R. I., and two enlisted men, Robert Salerno of Brunswick, Ohio, and James McGee of Granite Falls, N. C.

Mr. Olson and Mr. McGee descended 30 feet into the icy water while the other two stood by in case of an emergency.



## CHILLY WELCOME IN PENGUINLAND

The penguins turned out in force to watch the Navy freighter Arneb unload supplies at McMurdo Sound, Antarctica, main-base of Operation Deepfreeze, while the Coast Guard Icebreaker North Wind stands by against the floe.

# U. S. TEAM STARTS SOUTH POLE VIGIL

## Navy Group and Scientists Mark Byrd's Death With Special Observance

By WALTER SULLIVAN

RIVERSIDE, Conn., March 21—Eighteen Americans, encamped at the South Pole, reported today on their feelings at the start of the six-month winter night, which officially began there yesterday.

Their morale seemed to be high as they talked over a special radio and telephone hook-up that linked them with the Connecticut home of this correspondent, who returned Feb. 28 from the Antarctic after about five months there.

Dr. Paul Siple, the scientific leader of the station, said the Stars and Stripes, which has been flying over the South Pole since the scientific outpost was established there early this year, would be lowered tomorrow for the duration of the winter night. The flag, he added, has been at half-staff since word came ten days ago of the death of Rear Admiral Richard E. Byrd.

"It was a terrific blow to all of us here," Dr. Siple said. He explained that the group had decided to keep the flag at half-staff beyond the official mourning period and until the annual sunset. "We thought this was the one spot where he would have liked to have a special observance," he said.

Dr. Siple was one of Admiral Byrd's closest friends, having accompanied him on all his Antarctic expeditions. On the first, in 1928, he went along as a Boy Scout. Dr. Siple reported that memorial services for the admiral were held last Sunday at all seven United States stations in Antarctica.

The men at the Pole have been racing to finish their camp before darkness overtakes them. On Saturday they plan to celebrate completion of the job "in grand style," but the first item on their agenda for that day, Dr. Siple said, is "to collapse" on their bunks and have a long sleep.

Their last direct contact with the outside world was a month ago when, in a series of flights, the Air Force dropped materials for one large barracks building and other supplies.

By tomorrow the men at the Pole hope to have their outside work finished. It will be none too soon. The temperature at the Pole this morning was 66 degrees below zero with a twenty-mile-an-hour wind. On Saturday it fell to 79 degrees below,

their lowest temperature so far, but Dr. Siple expects it to sink to 110 to 130 degrees below once the sun has vanished.

Despite their exhausting work in the frigid, rarified atmosphere on the 10,000-foot-high South Polar plateau, the men sounded full of pep during today's long conversation. The hook-up was made possible by Jules Madey, a 16-year-old amateur radio operator in Clark, N. J., who "works" the amateur station at the Pole almost nightly.

By connecting his receiver and transmitter to the telephone, he made it possible for this correspondent to speak directly with the Pole. Once the Pole transmitter went dead for several minutes, then came back on the air.

"The lights went out again," said Lieut. John Tuck of Auburn, Mass., commander of the Navy men at the Pole. "Our generator likes to shut itself off every now and then," he explained.

One could hear the laughter of the men gathered around the transmitter in the little hut, completely buried under snow at the bottom of the world. For one sitting by a crackling wood fire in a Connecticut home, it was a picture hard to comprehend.

Yesterday the group completed a 1,000-foot tunnel to link the camp with the seismic hut. The seismograph has to be remote to be free of camp vibrations. The men can now carry out their entire daily routine without going outside except for certain scientific observations.

The tunneling job was complicated by the hardening of the snow in the extreme cold.

"We bashed in the top of a crow bar with a sledge hammer trying to drive it in two feet," Dr. Siple said.

The only isolated building is a hut set up 100 yards away and stocked with extra sleeping bags, food and fuel. In case the main camp is destroyed by fire this would be the group's only chance for survival until contact was re-established with the outside world late this year.

When the men were asked whether they had made any trips away from the camp, there was a general laugh at the South Pole. Yes, Lieutenant Tuck said, they had made a trip, quite involuntarily. One of the last items dropped by the Air Force was a bundle of girders for the barracks building.

Normally they pursued the falling parachutes in their Weasel, a light tracked vehicle that itself had been parachuted at the Pole. The Weasel men tried to cut the parachute shrouds before the cargo was dragged far afield.

On this occasion, the Weasel battery was dead and a stiff breeze was blowing. Parachute and girders vanished over the horizon before the vehicle could

# South Pole Base Is Completed

By DON GUY

Associated Press Staff Correspondent

McMURDO SOUND, Antarctica, Jan. 7.—United States Navy Seabees have finished building a United States base at the South Pole. It will be home during the approaching Antarctic winter to 18 American scientists and Navy men who will make observations for the International Geophysical Year.

The Seabees in six weeks put up seven buildings on the two-mile-high plateau around the pole. Prefabricated parts for the building were dropped by parachute to the 24-man construction party.

Lt. Richard A. Bowers of

be started. It took a day of travel before the girders could be found twenty-five miles away.

Because all hands, scientists and their supporting Navy men, have been working without pause to finish the camp, the full scientific program has not yet begun.

Dr. Siple hopes all the projects will be in full swing some time next month, well in advance of July 1, the start of the International Geophysical Year 1957-58. During this period, scientists of all nations will coordinate their studies of the earth and its atmosphere.

The seventy-five-foot mast for sending probing signals into the ionosphere is complete and has been tested successfully. Within a few days the men hope to begin sending up balloons to learn weather conditions high above the Pole.

Observation of the aurora australis, or southern lights, has never been possible at the Pole, since no one has been there in darkness. Within a month, Dr. Siple believes, it will be dark enough to see the first displays. Although the sun officially set yesterday, it was still visible today because of refraction.

Dr. Siple described it as a great orange sphere circling just above the horizon. The camp is bathed in deep purple shadows except down-wind, where a bank of steam forms as the fumes from camp smokestacks strike the frigid air. The sun may vanish tomorrow, Dr. Siple said, and during the coming weeks will sink lower and lower, producing a slow-motion version of twilight.

So far the men at the Pole have been unable to keep ice from forming on the three plastic domes from which they plan to observe the aurora. Lieutenant Tuck now plans to move a jet heater into the aurora tower to direct multiple blasts of hot air on the domes.

Harrisburg, Pa., who directed the construction, flew back to McMURDO SOUND with the last of his Seabee group. He left behind Dr. Paul A. Siple of Washington, D. C., leader of the scientific expedition, and eight Navy men commanded by Lt. Jack Tuck of Auburn, Mass.

The rest of the scientists are en route to Antarctica by ship.

The buildings are connected by tunnels. Eventually all but the weather observation dome, the radio towers and ventilation pipes will be covered by the deep winter snows.

Lt. Bowers said during his six weeks at the bottom of the world he took 120 observations of the sun and believed he had pinpointed the pole to within a quarter of a mile. Refraction caused by the cold air caused some error, but the scientists hope to locate the pole even more accurately with star sightings through the sunless, six-month winter.

Lieutenant Tuck noted that there had been "speculation" on the problem of divided leadership at the pole. He is in charge of the Navy men and Dr. Siple is leader of the scientists. Lieutenant Tuck's admiration for Dr. Siple, a veteran of many Antarctic winters, shone through many of his remarks.

"I can very honestly say that cooperation between the two groups has been wonderful," he reported. "They have worked together as one."

Only one resident of the outpost at the South Pole is "slightly under par." His condition is attributed by his companions to the eating of glass wool.

The unfortunate one is Bravo, a husky pup. His human companions reported that this was not the first time the dog had suffered from his omnivorous appetite. He had also devoured coaxial cables and rubber insulation from electric lines.

Despite his unorthodox menu the pup seems to have thrived. Born last August, he could hardly be described as a pup any longer for he had been gaining several pounds a month. Lieutenant Tuck said Bravo had helped to fill a big gap in their isolated lives. He is a much-petted animal, for he provides an outlet for otherwise pent-up emotions.

The voices from the Pole were almost always understandable, though at times there was a flutter in the transmission. Jules Madey, who was in contact with Antarctic stations during the same period last year, said this was characteristic of the transition to the winter night.

At the end of the conversation Jules asked the men at the Pole to wait while he disconnected the phone hook-up.

"Okay," they said, "we are not going any place."

## South Pole Crew Loses Weight And Sleep but Is in Good Health

By WALTER SULLIVAN

The eighteen Americans encamped at the South Pole have lost weight to a dramatic degree since they arrived on the 10,000-foot plateau at the bottom of the world.

As of May 1 seven of them had lost twenty-five pounds or more. The average loss was fifteen pounds a man, the weight of five men having remained stable. Half of those at this remote outpost have complained of insomnia and several have experienced a strange "weakening."

The most weight was lost by Dr. Paul A. Siple, scientific leader of the South Pole station. Dr. Siple is a big man. He estimates that when he landed at the Pole last December he weighed nearly 250 pounds. He now weighs 217, but went as low as 211.

Although these men will be cut off from the outside world until the end of the winter night, next September, no alarm is felt for them. Their loss of weight leveled off several weeks ago and some have even gained a little back.

In fact, according to recent radio reports from the Pole, the camp physician has found everyone to be in robust health, if somewhat lighter than before. The spirit of all is high. Their physician is a Navy lieutenant, Dr. Howard C. Taylor 3d, of 30 East 71st Street, New York City.

Never have human beings experienced temperatures so low as those being endured by the men at the South Pole. On May 11 the mercury sank to 100.4 degrees below zero, by far the lowest temperature recorded to date on the surface of the earth.

Dr. Robert C. Darling of the College of Physicians and Surgeons at Columbia University, a well-known authority on problems of fatigue, said the weight loss at the South Pole was "not unexpected."

Dr. Darling was formerly with the Fatigue Laboratory at Harvard University.

Exposure to extreme cold, he said, leads to a large increase in the number of calories required by the body. This, coupled with heavy work by men not fully conditioned for it, tends to make for extensive loss of weight. Dr. Darling said. This was especially true of big men, he added, with thin individuals more apt to hold their own.

This appears to have been the situation at the South Pole, where the average weight of the men at the start was 178 pounds. Some of the men have been there since December. The remainder were flown there in January and February. An understanding of the situation there has been pieced together from official reports in Washington and from amateur radio men who speak almost nightly to the Antarctic.

The South Pole camp was established to join with more than 1,000 other outposts throughout the world in observing earthquakes, weather, the magnetism of the earth and other such phenomena.

The program is to continue throughout the International Geophysical Year which runs for eighteen months, beginning July 1.

The race to ready the camp for the winter night was a Herculean effort. Dr. Siple, in a radio conversation with friends in the United States a few nights ago, told how he spent a day stacking fuel drums that weighed more than 100 pounds three tiers high.

He figured that he lifted several tons during that day. In the days that followed Dr. Siple, who is 48 years old, experienced a strange weakness in his arms and wrists, as did a number of the other men.

Now that they have settled in for the winter, he added, their normal strength has returned. He believes the rarified air on the polar plateau may have been partly responsible for this weakness.

Sleeplessness seems to be a common complaint during the polar night. During the previous winter at McMurdo Sound, the operating base for the planes that landed at the Pole, this insomnia was given a special name. The men called it "The Big Eye." Almost all of them suffered from it.

Dr. Siple believes it may be related to the dryness of the air in the camp buildings. On the earlier expeditions of Rear Admiral Richard E. Byrd, in all of which Dr. Siple took part, the stoves were turned off at night to conserve fuel. At the present bases this is unnecessary.

To aid in his study of this problem Dr. Taylor has constructed an ingenious device that he calls an insomniometer. It consists of a tin can with nails soldered to it and magnets arranged about them. It is rigged to each of the six bunks in the Jamesway hut where Dr. Siple lives. Whenever anyone tosses or turns this is recorded on the insomniometer.



Lieut. John Tuck



Dr. Paul A. Siple

Dr. Siple reported that, even at 100 degrees below zero, it was possible to go outside without ill effects. One man, he said, spent a half hour out of doors in that temperature. The South Pole camp is completely buried under drifted snow and its insulated buildings are snug and warm.

The coldest place on earth, prior to May 11, was in Siberia. Soviet publications make conflicting assertions as to the low. Both Oymekon and Verkhoyansk are cited as the coldest places, and the lows range from 89.9 degrees below zero to 93.7 below.

At such temperatures the tunnels linking the buildings at the South Pole become filled with fog, formed when warm moist air escaped into the frigid passageways. At the time of the low at the Pole, Little America, 800 miles to the north, was experiencing a record-breaking "heat wave."

The temperature at Little America was 30 degrees above zero, a record high for the month of May. The next day this warm air apparently reached the Pole, for the mercury soared. After the evening moving picture, the Pole men trooped out under the stars in light shoes and their shirt sleeves and walked over 100 yards from the burrows in which they normally live their prairie-dog existence.

One surprise at the Pole has been the strength of the wind, even at low temperatures. It was expected that the air be calm much of the time, but in recent days it has blown at twenty or thirty miles an hour.

Such wind, because of its rapid cooling effect, makes it unwise to venture outside except for brief periods. When the wind is not severe, however, the men have been able to work outside.

A recent dispatch from the Pole said the first stars appeared March 31. Opposite the sun the men there could see the earth's shadow thrown against the sky.

"Despite the seemingly bleak aspect of our present environment," said the message, "it is one of constant interest to all. Even in minus 80 degree weather, personnel were able to work outside for up to three hours at a stretch without undue discomfort. Time passes quickly and morale continues to be high. \* \* \*"

## Base Named for Explorers and IGY

WASHINGTON, Jan. 12 (AP)

—The U.S. scientific observation base at the South Pole will be named the Amundsen-Scott-IGY station in honor of the first two men to arrive at the pole.

The "IGY" denotes the base's connection with the International Geophysical Year.

McMurdo Sound, Antarctica, Jan. 23 (Delayed) (U.P.)—The world's loneliest outpost was dedicated here today in ceremonies which included a message from President Eisenhower.

The ceremonies honored the South Pole station where nine scientists and eight Navy men will pass the long Antarctic winter.

Flags of the United States, Britain and Norway fluttered from standards during the ceremony, and messages from Eisenhower, Norway's King Haakon and Britain's Foreign Secretary Lloyd were read.

Four of the scientists and eight Navy men already are at the pole. The five other scientists arrived here Tuesday aboard the relief ship Curtiss.

One ton of food per man is required to sustain those who will spend the next year at the pole. Their life is "comfortable," with hot showers, washing machines and dryers and the "best food in Antarctica."

## RONNE DESCRIBES POLAR BASE TASK

39-Man U. S. Party Races to  
Complete Ellsworth Unit  
for Antarctic Winter

By CAPT. FINN RONNE

North American Newspaper Alliance.

ELLSWORTH STATION, Antarctica, March 20—Since I took over command of this station Feb. 12, the thirty-nine of us have labored day and night to complete our base for the winter.

With only two exceptions, the weather has been too foul to permit any airplane flights.

On March 3, a brief respite in the otherwise constant overcast allowed us to make a short flight to the British Shackleton base, fifty-one miles to the east of us. Hugo Neuberg, glaciologist for the International Geophysical Year beginning July 1, was along to discuss his program with members of the sixteen-man British group headed by Dr. Vivian Fuchs.

In the next Antarctic spring, Dr. Fuchs, whom I met in the Antarctic in 1948, will lead the British trans-Antarctic sledge party across the continent to meet another British party led by Sir Edmund Hillary, the conqueror of Mount Everest. The Hillary party will sledge southward from McMurdo Sound.

The two British parties plan to meet in the vicinity of the South Pole.

At present, our two groups are interested in exchanging information about the crevassed and mountainous terrain south of our respective bases in order to facilitate our field work next spring.

The sun broke through our usual heavy overcast—March 16, and we took advantage of it for a five-hour reconnaissance flight south into the core of Edith Ronne Land. This part of the Antarctic was discovered on my 1946-48 expedition, when we were based in Marguerite Bay on Palmer Peninsula.

With Lieut. Comdr. Charles McCarthy of New Richmond, Wis., as pilot, we flew almost due south in a single-engine Otter airplane. The purpose was to survey a safe route for our International Geophysical Year traverse party scheduled to go into the field next spring.

Two hours after take-off black and massive mountains loomed straight ahead. They were the flattop mountains sighted earlier this year by Dr. Fuchs. These mountains in the eastern part of Edith Ronne Land are about 4,500 feet high, with glaciers flowing into the ice shelf from the higher inland elevations.

Upon reaching them, we



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changed course to due west and could then see a long string of mountains stretching in a westerly direction toward the horizon. The elevation of the terrain under the flight track was about 800 feet above sea level.

The ice shelf ended here in a steep, heavily-crevassed ice fall rising to about 4,000 feet as it blended into the higher continental land due south. We could look straight into the unknown and unexplored part of the Antarctic.

The base organization now is running smoothly. We hope to have our station 100 per cent completed by April 1.

It is getting colder now, with many snowdrifts piling up outside. But our outside work fortunately has been completed.

For the last thirty-six hours prior to the departure of our two supply ships Feb. 12, we worked without let-up. Our Seabee mobile construction battalion took exactly fifteen days to establish our base, an estimated five-week job.

Under the direction of Lieut. Comdr. Henry Stephens, U. S. N., of Fairbanks, Ga., 6,250 tons of building material and equipment were hauled to this station site. Near the edge of the shelf ice, a temporary camp was set up and a supply dump laid out. Then a trail party set out to assure a safe route two miles up to our permanent base site.

Traveling on skis, attached to each other by lengths of rope the party probed the ice ahead for crevasses or other weaknesses. The men were followed by a "weasel" equipped with an electronic crevasse detector and a sled with explosives and trail-marking poles.

Shortly before leaving, Capt. Edwin A. McDonald, U. S. N., task group commander, turned the command of the Ellsworth Station over to me in what might be described as a formal ceremony for this part of the world.

"We have gone into waters where ships have never sailed before us," Captain McDonald said. "They were uncharted waters without knowledge of ice conditions.

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ELLSWORTH STATION, Antarctica, June 15 — A scientific watch goes on around the clock at this ice-entombed Antarctic station. But the clock does not really matter much.

The depth of the ice below us and the elements and the eerie noises and the spectacular lights above are under the scrutiny of the scientific staff of Ellsworth Station. All these activities go on with little relation to normal life, however. Except for a few short hours of twilight during the day, we are encased by the winter night with its cold, storms and snow drifts.

Dr. Edward Thiel of Wausau, Wis., has concluded his seismographic soundings of the ice under the station, which has been established to stand exactly at latitude 77 degrees 44 minutes south, longitude 44.07 minutes west — which means about one mile south of the waters of the Weddell Sea, which are filled with pack ice. The station is floating on water, Dr. Thiel has determined.

His reflection shots of sound determined that the ice barrier of the Filchner Shelf under our station is 760 feet thick, floating over 2,000 feet of water. Fifty miles south it is 700 feet thick, but resting on land.

An even sharper rise occurs 100 miles still further inland, where crevassed ice falls form an escarpment 4,000 feet high. Still further inland rise the massive, unknown mountain ranges we first sighted on our last plane flight before winter set in seriously. These mountains merge into the polar plateau to the south.

A scientist from Yonkers, N. Y., has turned up still more facts about this great ice pile we live on in search of facts for the International Geophysical Year. Hugo Neuberg has determined that our station is 138 feet above sea level. Mr. Neuberg and his assistants are now preparing to dig a 100-foot-deep pit to study the layers making up the ice shelf.

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Meanwhile the pressure ridges are cemented together by frozen sea ice which is continuously grinding under the push of wind and water. One-half mile west, a deep rift in our ice barrier extends south for ten miles. In time, that section of shelf will break loose to become an iceberg. Then Gould Bay, discovered by this writer in 1947, and named for Dr. Laurence McKinley Gould, chairman of the Antarctic programs for the International Geophysical Year, will become twelve miles wider than at present.

"Whistlers" are being recorded by Donald Skidmore of Bedford, Mass. These sounds are thought to be reflected "harmonies" of electrical storms whose "echoes" howl down like the toot of a passing locomotive.

Snow drifts now cover the eighteen buildings of our station and our two 35-ton tractors and sledges. But in comparison to the 180 expeditions that have preceded us since the Antarctic was discovered some 136 years ago, the 1957 explorer has a luxurious life.

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## ANTARCTIC PARTY BEGINS NEW BASE

Blasts Start Job at Site on Vincennes Bay to Be Seventh U. S. Station

ABOARD U. S. S. GLACIER, in Vincennes Bay, Antarctica—This ship finally pierced a 125-mile belt of pack ice today to reach a strange region of ice rock and penguins.

It took four tries before a path was driven through the ice.

Success came at a time when members of the United States Antarctic Expedition had begun to despair of reaching their proposed base site here at the junction of Knox Coast and Budd Coast. Approaches from other directions had run into impenetrable pack ice or into areas where the sea was frozen solid.

As soon as the ship had anchored this morning in the lee of Holl Island, one of the larger islands in the Windmill group, a party was sent ashore in a Greenland cruiser, a covered motorboat, to look for a site.

Although the Glacier ran into heavy pack ice on the way to the anchorage, it was never stopped dead as on the previous attempts. This time it ran south along Long 109 degrees E.

This region of the Antarctic is booming with life. On the outer edge of the pack there were more seals than anyone aboard had seen elsewhere around the perimeter of Antarctica.

The scientific leader of the station, Carl Eklund of the United States Fish and Wildlife Service, is now out in the Greenland cruiser looking for a site for the base. Once it has been found, the Glacier will sail out to lead the cargo ships Arneb and Greenville Victory, which are carrying the base supplies in through the pack ice.

VINCENNES BAY, Antarctica, Feb. 2—Thanks to twelve tons of explosives and pick and shovel work by a score of men, the first vehicle to land on this part of the Antarctic continent scrambled ashore yesterday.

It was a traxcavator, a medium-sized tractor, which went ashore on Clark Peninsula from a landing barge. It landed at a point where a fifteen-foot ice cliff had been reduced to a ramp by repeated blasting. It soon began shaving down the ramp with its bulldozing blade to make the slope gentle enough for larger tractors.

Then the first 3,000 tons of supplies for the United States scientific station here began pouring ashore. By this morning the first building of the station

## Scarlet Antarctic Birds May Infiltrate Russians

ABOARD U. S. S. GLACIER, in Antarctic, Jan. 26—During the coming months the Russians at their Antarctic base may see a delegation of scarlet penguins advancing upon their camp.

If they interpret this as a measure of success in propagandizing the native population they will be mistaken.

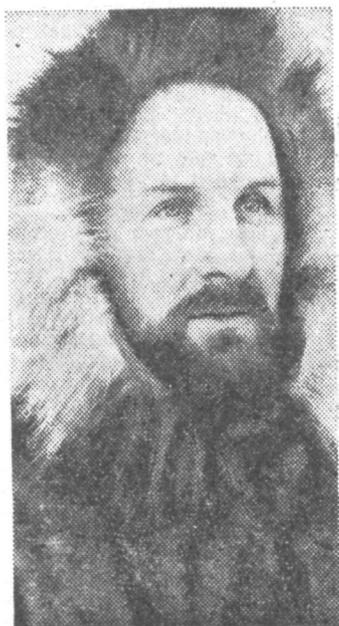
Scarlet is the dye color assigned to the United States scientific station on the Knox Coast, 485 miles east of the Soviet base. It is planned to dye a number of penguins and skua gulls near the American base to aid in studying their migration habits.

Carl R. Eklund, scientific leader of the Wilkes station at American outpost, believes his scarlet penguins may wander as far as the Russians' camp.

had already been erected by Navy Seabees. It was a hut that will provide temporary shelter until the permanent base is completed six weeks hence. Twenty-seven men will live on this virgin stretch of Antarctic coast for the next two years, making scientific observations.

### Whale Has Naked Skin

The whale, though a descendant of land animals that were hairy and four legged, has a naked skin except for a few scattered hairs on the head. The only trace of hind limbs are a few tiny bones hidden at the base of its powerful tail, says the National Geographic Society.



**STAYS IN ANTARCTICA:** Carl Eklund of Tomahawk, Wis., head of scientific section of party that is remaining at Wilkes base.

## NEW POLAR BASE BUILT IN A WHIRL

Seabees Assemble Antarctic Luxury Station on Barren Peninsula in Only 2 Weeks

WILKES STATION, Antarctica, Feb. 16—The construction of this base, completed last night by Navy Seabees has been a wonder to behold.

Two weeks ago this spot was a barren, partly ice covered peninsula on a largely unexplored coast. Today, with the sixteen windowless orange buildings, a forest of radio masts and various odd shaped towers and domes, it looks like a motion picture version of a Martian city.

The station hums with the sound of generators in the power plant and tractors moving busily down its narrow "streets." Even the penguins seem impressed as they stand on recently bulldozed rock heaps and watch like sidewalk superintendents.

The construction job was done by a team of ninety-five Seabees. The work, under direction of Comdr. James A. Hiegel of Winter Park, Fla., was scheduled to take seven weeks, but with the aid of working parties from the icebreaker Glacier and the cargo ship Arneb it was done in two weeks.

Nevertheless, the task could not have been accomplished in so short a time but for months of planning and skilled work of the craftsmen who designed and made the quick-assembly buildings and fittings of this scientific station.

The buildings at the base include girders fabricated in Arlington, Va. They are heated by stoves from Wisconsin Rapids, Wis., and lighted by electrical equipment from Plainville, Conn. The twenty-seven men who will spend the next year here will eat food cooked on a range from South Bend, Ind.

Workers in Brooklyn fabricated the tile on the floors. Others in the old whaling town of New Bedford, Mass., made the hydrogen generator that twice daily throughout the winter will inflate the weather balloons.

This year probably marks the first time that teams of scientists have been able to move right into fully built and operating camps, making it possible for them to start at once on their observations. In former years expedition scientists often had to work well into the winter—which here coincides with summer in the northern hemisphere—to make their camps livable.

The ten scientists who will be stationed here still have a good deal of work to do, but it is of



**BASE IS CONSTRUCTED:** Work has been completed at Wilkes Station (cross).

comparatively minor proportions. Some scientific observations have already begun and all will be in full swing several months before July 1, the start of the International Geophysical Year, during which scientists of many countries will join in studies of the earth and its atmosphere.

As polar stations go, this is a luxury camp. Its residents sleep on inner-spring mattresses, three to a room, in buildings whose heat is thermostatically controlled. Enclosed passageways make it possible for them to move between their barracks, mess hall and wash house without going outdoors.

## U. S. ASKS EXTENSION OF ANTARCTIC STUDY

BRUSSELS, June 29—A proposal to continue cooperative Antarctic research after the end of the International Geophysical Year has been discussed here.

The executive board of the International Council of Scientific Unions was told by the United States delegate, Lloyd V. Berkner, that the heavy investments in scientific apparatus in the Antarctic justified continuation of a research program. The I. G. Y. is scheduled to end December 31, 1958.

The meeting decided to refer the proposal to a committee of representatives of nations that are doing or contemplate doing research in the Antarctic. The committee was ordered to report by Sept. 1.

The three-day meeting, which closed today, decided also to set up a special committee on oceanic research. At its first meeting, scheduled to take place in August at the Oceanographic Institute of Woods Hall, Mass., plans will be made for special research of the ocean.

The twenty-four delegates to the meeting represented thirteen national scientific organizations.

# POLAR SNOW HUNT IS GETTING IN DEEP

## Glaciologists Start to Dig 100-Foot Hole to Study Centuries-Old Layers

WILKES LAND, Antarctica, Feb. 9—After a twenty-five-mile journey inland in quest of snow, a seven-man party has found it aplenty.

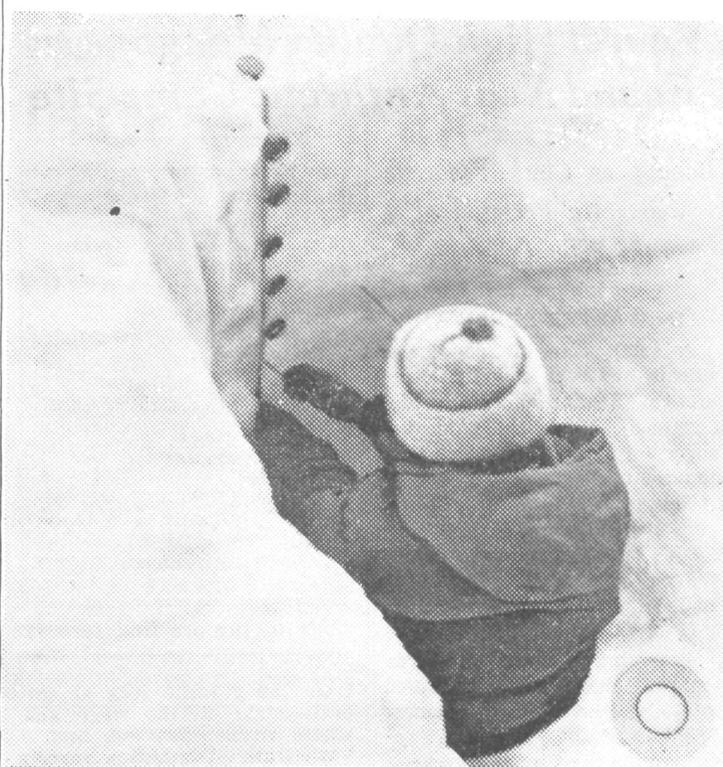
It is blowing through the air on a twenty-five-mile-an-hour wind and hugging the white surface like a layer of smoke that reaches to the flat horizon in all directions. But more important, it is deep under foot.

The purpose of this trip—the first penetration of the Antarctic hinterland behind the Budd Coast—by a trail party—is to find a place where glaciologists can dig a 100-foot hole to study the snow layering over the centuries.

In the view of Richard L. Cameron of Laconia, N. H., the leader of the party, this is the spot. The trip is a prelude to what Mr. Cameron and his companions hope will be a 200-mile journey inland a year from now.

The problem has been to move inland beyond the coastal slope, which is sheathed with iron-hard, blue ice. This formation seems to be typical of most of the Antarctic coast south of the Indian Ocean.

The seven-man party set forth yesterday from Wilkes Station, the United States scientific base that is being built at Vincennes Bay, traveling in two tracked vehicles. One of these small sleds laden with camping equip-



**Richard L. Cameron, glaciologist and leader of seven-man party, putting thermometers into ice at various levels.**

ment, food and a multitude of special augers, saws, thermometers and sampling kits for ice studies.

The route was uphill the whole way as the two vehicles worked toward the southeast. The elevation of this camp is 2,300 feet.

The party has dug an eight-foot test pit. Mr. Cameron, who is the chief glaciologist at Wilkes Station, believes that a 100-foot shaft will give an adequate cross-section of the upper portion of the hinterland ice-sheet.

One of the objectives of this journey is to test the Navy's new emergency rations for polar

regions. These are carried in the expedition's airplanes and on trail journeys for use when members are stranded, or when they are forced to drag their survival rations by foot.

Dr. Sidney A. Schwartz of 1071 Shore Parkway, Brooklyn, a Navy physiologist, is serving as cook to try out the ration. The basic ingredient of the daily unit consists of four bars of pemmican, a compressed meat compound.

Whales, like other mammals, can drown if they get water in their lungs.

## 'Ice Concrete' Expert Slated for Decoration

By Reuters

Wellington, N.Z.

An American natural scientist, whose ice know-how enabled heavy-laden transport planes to land on Antarctic ice-floe air strips with supplies for the American expedition, has been recommended for the Navy's highest civilian decoration.

He is Dr. Andrew Assur, from the Snow, Ice and Permafrost Institute in Wilmette, Ill. This has been announced by Rear Admiral George Dufek, Antarctic expedition operational commander.

Dr. Assur used a World War II technique for making "ice concrete" to repair the runway. He filled thawed patches and lakelets with a mixture of ice blocks, ice chips, snow, and a little water.

## PRINTS RADIOED TO POLE

### Tractor Repair Plans Beamed by Facsimile Equipment

ABOARD U. S. S. GLACIER, in Antarctica, Thursday, Feb. 14—Blueprints needed for tractor repairs at the Navy's remote Antarctic outposts have successfully been transmitted to the bottom of the world with radio facsimile equipment.

Four pages of mechanical drawings were sent by radio from Washington through a relay station at Balboa in the Canal Zone. They were received on this ship with such clarity that lettering on the drawings was clearly legible.

The equipment used was made by the Times Facsimile Corporation of New York for the Navy. As far as is known, this was the first time it had been put to such use in south polar regions.



The seven-man party that blazed a trail into Wilkes Land traveled in two weasels, one of them towing a cargo sled. This was laden with camping equipment, food and a multitude of augers, saws, thermometers and kits for ice studies.

# 27 IN ANTARCTICA BEGIN YEAR ALONE

## Ships Sail From New Base on the Indian Ocean Sector After Protracted Parting

**ABOARD U. S. S. GLACIER,** Off Antarctica, Monday, Feb. 18—Twenty-seven men were left at Wilkes Station Saturday night for a long year alone together.

The men of the three-ship United States naval task group headed by this icebreaker sailed north into the pack ice.

In two arduous weeks they had built a new base on Antarctica's barren Clark Peninsula. Now the about 850 men aboard these ships are homeward bound—and happy about it.

Here, off Vincennes Bay, a dispersal of the pack enabled the three ships to sail from the coast almost unhindered.

In the Weddell Sea on the opposite side of Antarctica, two other United States ships broke out into open water yesterday and likewise started home.

They are the cargo ship Wyandott and the icebreaker Staten Island, both had been damaged in a month-long struggle to reach the coast and supply the United States station there. That task completed, they sailed out in six days.

From the new Wilkes Station on Clark Peninsula, the parting was a bit prolonged. The scientists and Navy personnel of the base stood on the ice cliff waving as landing craft carrying the departing sailors struggled against floes that had drifted in and clogged the harbor.

All the men were gaudy in windproof trousers and parkas brightly colored to aid identification. The Navy Seabee construction men wore yellow. Crew members were in green, while members of the task unit staff were in blue.

Those ashore waved and continued to wave, but the barges got no farther away despite the efforts of their diesel engines. Then at last the floes began to move aside and the landing craft finally reached the ships.

When the task group prepared to depart at 2 A. M., the Glacier found two knots tied in her anchor chain just above the anchor. This delayed the sailing almost three hours.

The icebreaker had to go alongside the cargo ship Arneb, which hoisted the anchor and the knotted chain onto her own deck to enable the Glacier's men to straighten out the tangle.

At the flag-raising ceremony,

# Vein of High-Quality Manganese Found Near Antarctic Camp Site

## Deposit on Clark Peninsula Points Up Potential of the Polar Continent

By WALTER SULLIVAN

A small vein of manganese silicate has been found in Antarctica. So far as can be determined, this is the first discovery of high-grade ore on that continent.

The ore is in a rare form, known as tephroite, and was found on Clark Peninsula in Wilkes Land. The peninsula was visited for the first time in January of this year.

According to available records tephroite has been discovered in only three other places: Franklin, N. J.; Varmland, Sweden, and in the French Pyrenees.

Dr. Brian H. Mason, Curator of Geology and Mineralogy at the American Museum of Natural History, who identified the specimens, notes that in both Sweden and New Jersey tephroite is found in conjunction with extensive and valuable mineral deposits.

The ore has not been found in sufficient quantity in its three previously known locations to justify its being mined. Nevertheless it is a rich ore, bearing from 60 to 70 per cent manganese oxide.

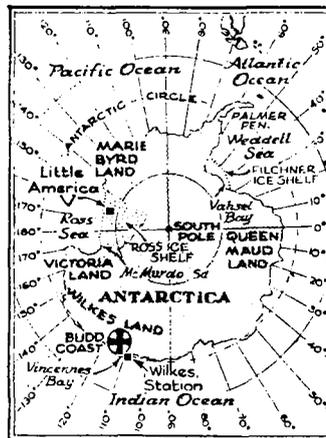
The specimens were obtained by this correspondent, who was in Antarctica to report on the establishment of the United States outposts for the International Geophysical Year. The latter, which begins in July, is a period of world-wide scientific observations.

The ore came from a vein of dark, metallic-looking rock on a ridge near the site chosen for Wilkes Station on Clark Peninsula. The specimens had a dull luster and were unusually heavy.

Copper stain was visible in crests of the rocks throughout the area where the specimens were found.

The vein broke into the open

Capt. Gerald L. Ketchum of Bellingham, Wash., the task group commander, congratulated the various Navy units that had built the station in less than a third of the scheduled time. Then he turned the base over to Carl Eklund of Tomahawk, Wis., leader of the scientific party, and Lieut. (j.g.) Donald R. Burnett of Mount Clemens, Mich., who heads the Navy supporting group at the station.



Site of the ore find (cross)

from the granitic rock at several points on the ridge and, where visible, was less than a yard wide. Dr. Mason reports that the specimens also contain small amounts of rhodonite (another form of manganese silicate) and barite (barium sulfate).

Although the Antarctic Continent is far larger than Europe, no important mineral deposit has yet been found there. This is largely due to its inaccessibility and to the fact that most of the continent is buried under an ice sheet.

Last year, in a paper published as an introduction to the International Geophysical Year, Dr. Duncan Stewart catalogued the 174 minerals that have been reported from Antarctica. None of the foregoing was listed, nor were any other ores of commercial importance. Dr. Stewart, who is at Carleton College in Northfield, Minn., is a leading authority on Antarctic minerals.

Clark Peninsula, which had not hitherto been visited, lies on a part of the Antarctic coast from which the ice sheet has withdrawn, leaving about 100 square miles of land free from ice and snow.

Manganese has become a strategic metal because of its role in strengthening steel. As Dr. Mason pointed out, the deposit on Clark Peninsula may not, of itself, be of commercial value, but it points to a region whose rocks will be well worth exploring.

Wilkes Land lies in the sector claimed by Australia, although this claim is not recognized by the United States. A Soviet outpost has been established 265 miles to the west in an area known as Bunge's Oasis. The Australians, in recent months, have built a station still farther west, in the Vestfold Hills. These outposts were established for the International Geophysical Year and their stated objectives are non-political.

# ANTARCTIC RADIO TELLS OF DRAMA

## Listeners in Old Greenwich Hear Cry for Help by 3 'in Trouble' on Ice

By WALTER SULLIVAN

OLD GREENWICH, Conn., May 16—A cry for help from a trail party in Antarctica interrupted a radio conversation between here and that continent yesterday.

The men at Wilkes Station, an American outpost on the Budd Coast, which has been isolated from the outside world since mid-February, were telling of their battle with the elements. Winds that reached ninety-six miles an hour had torn the fabric roof off one structure and had made others bulge and quiver.

Carl R. Eklund, scientific leader of the station, told of the achievements of his men despite the vicious weather. Three of them, he said, reached Vanderford Glacier, about thirty miles southwest, the first men to set foot in that area.

Suddenly shouts and excited voices in the background cut Mr. Eklund short. A voice called into the microphone that the men at Vanderford Glacier were "in trouble."

For several minutes the listeners in Connecticut waited anxiously. At last Mr. Eklund's voice came on the air again. He seemed relieved. The three men had reported by radio that their Weasel, a small tracked vehicle, had broken down. They were all well and would await a party that Mr. Eklund said, would set out the next day in another vehicle to rescue the men and, if possible, salvage the Weasel.

This correspondent was able to interview those in Antarctica through the facilities of Stuart D. Cowan Jr., who operates amateur radio station W1RST in Old Greenwich.

The winds that race down the ice-sheathed slope along the coast have drifted snow over much of Wilkes Station. Just before leaving, the Navy built enclosed corridors linking many of the buildings. Had this not been done, Mr. Eklund said, "we would be running around like ground-hogs here."

Mr. Eklund spoke with pride of his success with a cannon net. Three cannons are buried at an angle in the snow and fired simultaneously. Their projectiles tow a net of 1,800 square feet which hurtles through the air enveloping large numbers of birds for biological studies.

He reported that he had caught 324 skua gulls and fifteen giant fulmars. The birds were placed in cartons to be weighed, were banded for identification and released.

## GLACIER APPEARS TO SETTLE DOWN

Copter Check of Antarctic Area Found by Scott in '03 Detects No New Retreat

By WALTER SULLIVAN

**TAYLOR GLACIER DRY VALLEY**, Antarctica, Jan. 13—The glacier whose retreat from this valley is perhaps the most spectacular evidence of Antarctic ice sheet shrinkage has not withdrawn perceptibly in more than half a century.

The glacier ends abruptly at the western end of Lake Bonney, just as it did when this remarkable region was discovered by Capt. Robert Falcon Scott in 1903.

One of the objectives of the International Geophysical Year, which begins in July, is to determine if the ice of Antarctica is expanding, shrinking or stationary in volume. The status of Taylor Glacier, however, is by no means conclusive evidence of the over-all trend.

Extensive changes in the size of the Antarctic ice sheet are of interest to the rest of the world, for they can alter the level of the oceans by 100 feet or more.

Even the "hanging glaciers"—torrents of ice which pour down the steep walls of this valley only to stop suddenly near its floor—seem to lie as they did in Scott's day.

The upper end of Taylor Glacier Dry Valley was visited today by a helicopter piloted by Lieut. Comdr. Donald E. Nash of Little Falls, N. Y. As observers he had brought in Dr. Willis L. Tressler, an oceanographer of the United States Navy Hydrographic Office, and this correspondent.

The purpose of the flight was to determine if Taylor Glacier had withdrawn.

Also on today's visit the desiccated remains of three seals were seen on the ice covering of Lake Bonney. These huge creatures, weighing up to 700 pounds or more, had inched their ponderous way twenty miles over undulating hills of rock and soft gravel to breathe their last in a region remote from their watery habitat and utterly devoid of food.

Scott himself saw a seal skeleton in this valley. The only explanation seems to be a compelling instinct for the hulking creatures to seek seclusion when weakened by illness or senility. A warm sun beats down on

Taylor Glacier and on the bare hills to either side, for it is mid-summer in Antarctica. Waterfalls cascade over the cliffs of ancient ice in which occasionally are embedded great boulders carried by the ice river from somewhere in the hinterland.

## Hams Keep Men at Pole In Contact With Families

SYRACUSE, N. Y., June 7 (AP).—To 315 men at the seven United States bases in Antarctica, the name R. A. G. S. connotes a warm oasis in a frigid expanse of desolation.

The R. A. G. S. are a group of amateur radio operators in North Syracuse who tend the night watch at short-wave radio sets in the cellar of the home of their chairman, Paul Blum.

The cellar is the operational "shack" of the Radio Amateurs of Greater Syracuse. A little

over a year ago Mr. Blum and his organization joined with the American Red Cross to form the Morale Message Service Center. The Red Cross teletype network brings messages from across the Nation to Syracuse for relay by R. A. G. S. to men in the Antarctic. Messages from the bottom of the world received by R. A. G. S. are put on the Red Cross network here for transmission to relatives.

On May 5 Mr. Blum and his associates became the first ama-

teurs to complete a transmission to the Antarctic of a page of pictures, comics, greeting cards and news stories.

Now Little America and McMurdo Sound Base receive the "Antarctic Edition of the Syracuse Herald-Journal," put together twice a week by the Herald-Journal staff. The transmissions are made on equipment similar to that used by the Navy in the International Geophysical Year operation.

### Similar Report By Russians

**ABOARD U. S. S. GLACIER**, in Antarctica, Jan. 24—Soviet scientists at Bunger's "oasis" on the Antarctic coastline have reported that no evidence exists there of appreciable ice sheet shrinkage in recent decades.

The Russians estimate the "oasis" to contain 235 square miles of ice-free terrain. In a report on their observations there, they point to evidence that the ice sheet that once covered this region took more than 4,500 years to withdraw from it. Nevertheless, they say, the present frontiers of ice around the "oasis" are virtually stationary.

The Soviet expedition now has a semi-permanent weather station at Bunger's "oasis," which lies 275 miles west of Vincennes Bay on the Knox Coast, where this United States icebreaker is seeking to find a base site. The Soviet report is based on work done a year ago.

In another development, an Australian landing in one of the least known regions of this continent was described today by Philip Law, director of the Australian program in Antarctica. Mr. Law came aboard the Glacier as his expedition ship, Kista Dan, was alongside refueling.

By using dukws, the amphibious trucks developed during World War II, the Australians have "driven ashore" at Vestfold Hills and established a base, Mr. Law said.

Almost 300 tons of supplies, including six prefabricated huts, were landed in this manner in the strange ice-free region discovered by a whaling captain, Klarius Mikkelsen. He landed there twenty-two years ago with his wife and named the region for the Norwegian county of Vestfold.

Mr. Law said his ship had been

unable to break through the pack ice to reach the main Australian base at Mawson. Hence he decided to establish the subsidiary base at Vestfold Hills and then have another crack at the pack off Mawson.

The Kista Dan reached Vestfold Jan. 12 and left after the base had been set up on the twentieth. Four men were left to man the station. A fifth will be taken there from Mawson later.

Richard G. Casey, External Affairs Minister, said tonight the new station had been officially named Davis in honor of Capt. John Davis of Melbourne, who was master of several famous Antarctic ship and member of the expedition committee.

### Antarctic 'Desert' Reported

**LONDON, Jan. 31 (AP)**—Soviet scientists have found a "salt desert" within the Antarctic Circle, the Moscow radio reported today. It said a party from the Soviet Exploration ship Ob landed on one of the more than 150 islands of the Rauer Archipelago in Prydz Bay. The surface was found completely free of ice and with no vegetation or fresh water, the broadcast said.

### French in Antarctica

**PARIS, June 8 (AP)**—Two French bases are now established in the Antarctic area and are preparing to exchange reports with similar American and Russian expeditions during the International Geophysical Year beginning July 1, it was announced here yesterday. The main French base is in Adelie Land and the other one is 180 miles inland.

## U. S. SHIP REVISES MAGNETIC CHARTS

Observations in Antarctica Tend to Shift Geomagnetic Pole 600 Miles West

By WALTER SULLIVAN

**ABOARD U. S. S. ARNEB**, in Vincennes Bay, Antarctica, Feb. 13—This ship and a scientific station are taking part in a world-wide exploration of the earth's magnetic field.

Recent observations indicate that the great arcs of magnetic force linking the polar regions are oriented far differently from the previously supposed positions.

Recordings of cosmic rays by the Arneb, the United States Navy icebreaker Atka and several Air Force planes indicate that the South Geomagnetic Pole may be 600 miles west of the position at which it is now charted.

The magnetic pole is the spot to which a compass points. The earth's magnetic poles fluctuate somewhat because of variations in the planet's magnetism. Hence scientists also speak of the geomagnetic pole, which is really an average position.

Several "poles" appear on this expedition's maps of Antarctica. There is the South Geographic Pole, the bottom of the earth, where all directions are north. There is the South Magnetic Pole, toward which compasses point as ships near the Antarctic. There is the South Geomagnetic Pole.

Cosmic rays, which provide almost the only clue to the outer reaches of the earth's magnetic field, point to another pole.

Its position was suggested by studies of the observations made on an Antarctic voyage by the Atka in 1955 under the auspices of the Enrico Fermi Institute for Nuclear Studies at the University of Chicago.

Two similar journeys by the Arneb in the last fifteen months and a zigzagging flight by the Air Force around the Magnetic Equator have further confirmed the existence of such a displaced magnetic axis or "dipole." In each case, the ship or plane carried equipment to record incoming cosmic rays.

The more nearly tangential to the earth's surface the lines of magnetic force, the more difficult it is for cosmic particles to break through. By continuous recording of the rays in crossing the equatorial regions, the point of lowest cosmic ray strength can be located. This has brought to light a "cosmic ray equator," which in effect is a new magnetic equator.

# U.S. Antarctic Base Is on 10,000 Feet of Ice

## Findings May Lead to Increased Estimate of World's Water

By WALTER SULLIVAN

Byrd Station, the United States outpost in Antarctica, appears to rest on 10,000 feet of ice—5,000 feet above and 5,000 feet below sea level.

Echo soundings have shown that the land beneath the ice sheet at this point, 650 miles "inland" in Marie Byrd Land, is 5,000 feet below sea level. The echoes indicate that the substance beneath the ice is land or rock, not water.

The discovery, which was recently reported by radio from Little America, may lead to revolutionary changes not only in the estimates of ice in Antarctica but also in the entire "water budget" of the world.

About 90 per cent of the world's ice is believed to be in the Antarctic. Any substantial increase in its known volume, it is noted, would mean a substantial increase in the known volume of water on this planet.

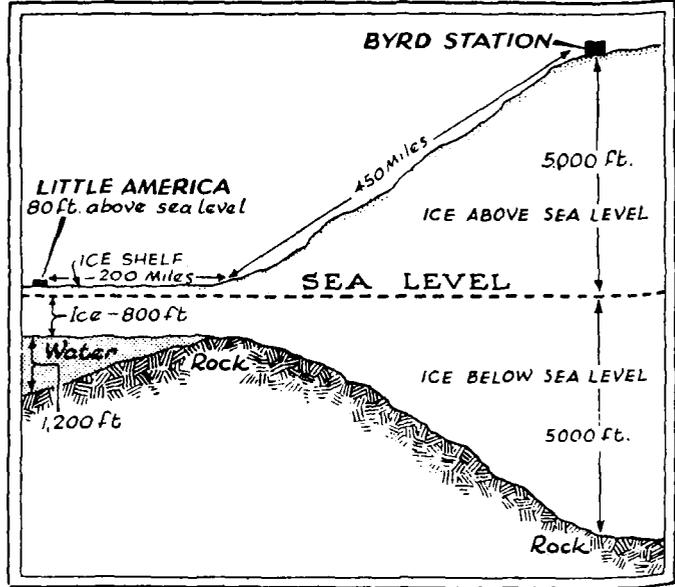
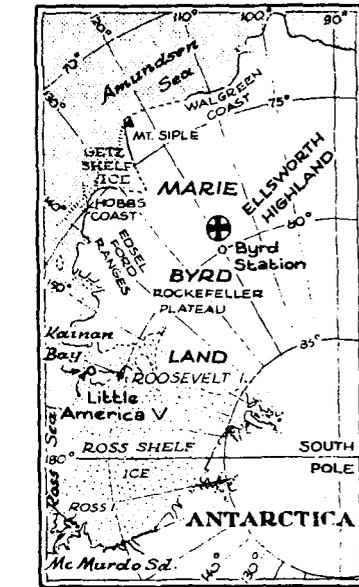
It is widely believed by scientists that the Antarctic continent has sunk under its burden of ice. The crust of the earth is viewed as floating on molten under-layers. When a load is added, the crust sinks in that area, scientists say.

Tests in recent years have shown that the center of Greenland in some places where the ice is 10,000 feet high is 1,000 feet below sea level. The volume of ice in Greenland is very small compared with that in the Antarctic.

The question arises: If the ice in Antarctica is 10,000 feet thick at an elevation of 5,000 feet, what is the situation near the "Pole of Inaccessibility," the farthest point from the sea on that continent? There, American fliers last year reported the ice surface to be 14,000 feet high.

According to Richard Foster Flint, Professor of Geology at Yale University, the land under an ice sheet sinks about one-third the thickness of the ice. This is based on the comparative weights of rock and ice.

According to this theory, the land under Byrd Station would not rise above sea level, even if



The weight of 10,000 feet of ice found at Byrd Station (cross on map) is believed to have caused a depression in Antarctica 5,000 feet below sea level, as shown in diagram.

the ice were removed.

The tests in Marie Byrd Land were made following a "traverse" by American glaciologists along the 632-mile route from Little America to Byrd Station. Starting at a point 200 miles out from Little America, near where the ice sheet slips off the continent and becomes waterborne, they set off a series of explosions on the ice surface.

By timing the interval until an echo bounced off the rock beneath the ice, they were able to estimate its thickness.

Their observations were checked by sensitive observations of gravity. Because ice is less dense than rock, the gravity reading becomes slightly less as the ice thickens.

It was found that near the coast the ice was 2,000 feet thick and that it grew steadily as they advanced until it was 7,000 feet thick when they were well inland. Then a series of explosions near Byrd Station established the thickness there at 10,000 feet.

In 1951, a Norwegian-British-Swedish expedition ran a similar traverse 375 miles into Queen Maud Land on the opposite side of Antarctica. The deepest sounding of the ice was 7,800 feet, but the rock floor under neath was 600 feet above sea level.

Nearer the coast, some places were found where the rock floor was below sea level, but the ice thickness was not comparable to that discovered in Marie Byrd Land.

During the next two years, extensive traverses are planned by many nations across sections

of Antarctica. They are part of the studies planned for the International Geophysical Year, a world-wide scientific effort beginning in July.

One of the objectives of these studies will be to provide a basis for a more accurate estimate of the ice in Antarctica and hence of the world's water. The most recent figure is that published by Prof. Albert Bauer at the University of Strasbourg in 1955.

His estimate was 2,817,500 cubic miles of ice in the Antarctic ice sheet. This was based on his belief that the average thickness was 4,920 feet thick.

But in the words of Dr. William Field, glaciologist, of the American Geographical Society, the report from Little America "could indicate that there is a great deal more ice in the Antarctic than we had hitherto believed."

Marie Byrd Land lies in the unclaimed sector of Antarctica, a region larger than Alaska. Its coast is marked by an almost unbroken string of mountains—the Rockefeller Mountains, the Edsel Ford Ranges, the Executive Committee Range, the Kohler Mountains and so forth.

It is thought that these mountains possibly lie on a string of islands that at present are buried under the ice.

The surprisingly heavy load of ice, it is said, may account for the unusual depth of the continental shelf that fringes the coasts of Antarctica. This shelf is about 1,800 feet lower than similar formations that fringe other continents.

In the view of some, the depth of the Antarctic shelf is cause

by the sinking of the continent under its ice load.

The American ice studies in Antarctica are under the supervision of Albert P. Crary, scientific leader at Little America. His report was transmitted by radio to the leaders of the program in Washington.

## Navy Planning Meals Out of This World, Too

BOSTON, June 4 (AP)—Navy chow is slated to have a new look, new savor and flavor in the Antarctic during the International Geophysical Year, which will start July 1.

Twelve Navy cooks are taking courses of instruction in the fancier phases of the culinary art at Sheraton hotels in Boston, Washington, Baltimore, Philadelphia, New York and Providence.

They are members of the United States naval support unit, Antarctica, a force of 350 volunteers who soon will leave to "winter over" the eight months of Antarctic night.

The unit will be host to scientists and fliers forming of the I. G. Y. The cooks will be stationed at seven bases the United States will maintain for weather studies.

Lieut. Melville S. Walters Jr., supply officer for the support group said:

"Our men are learning to make different Sheraton sauces for meat, deserts and pastries. Every man's birthday and all holidays will be celebrated and bases will serve attractive cakes on those occasions."

## U.S. NAVY FINISHES ANTARCTIC PHASE

Seabees and Airmen Lauded  
for an 'Outstanding' Job  
for Geophysical Year

McMURDO SOUND, Antarctica, Feb. 21 (UP)—The United States Navy completed today its second phase in the international polar expedition. Rear Admiral George J. Dufek, commander of the operation, called it "a very happy" one.

Men and machines overcame almost unbelievable obstacles to establish six International Geophysical Year science bases and a naval air base.

Scientists assisted by Navy men are preparing for a year of scientific observations beginning July 1 in the Antarctic's long winter night.

United States bases at the South Pole, Marie Byrd Land, Filchner Shelf on the Weddell Sea, Cape Hallett on the Ross Sea and Vincennes Bay, as well as here and at Little America, are in operation.

The big venture started last year with an operation that consisted mainly of surveys and construction of temporary camps.

This year's operation involved more than 3,500 Navy, Air Force, Marine and Coast Guard personnel, twelve ships and forty airplanes.

"I've been greatly impressed with everyone's performance during Deepfreeze II," Admiral Dufek said as the last of the United States forces left New Zealand.

The admiral said establishment of a base at the South Pole was "one of the most outstanding operations in history."

The base was built by a team of Seabees during November and December. Members of the Navy's Construction Battalion were flown to the Pole and landed on a 10,000-foot plateau.

### Homebound Plane Forced Back

McMURDO SOUND, Friday, Feb. 22 (AP)—A United States Air Force Globemaster heading for New Zealand with forty-two men aboard, was forced back here today by engine trouble. The 92-ton transport landed smoothly on the ice runway on three of its four engines.

Capt. Marvin Besch of Greenville, S. C., brought the C-124 back from a point 743 miles out.

The passengers were homebound. Two other Globemasters scheduled to depart were forced to remain another day or two to make previously unscheduled cargo flights to a science station inland.

## Tractors End Antarctic Dog Era, Dufek Says

WASHINGTON, Mar. 28

Heavy-duty tractors have replaced the dog in development of the last frontier—the frozen Antarctic.

Real Admiral George Dufek, commander of the Navy's Antarctic Support Force, said here last night that the world's search for knowledge has spelled an end to the glorious days of dog teams. It also ended the era of heroic individual exploits in Antarctic exploration.

The admiral, guest speaker at the Woman's National Democratic Club, was referring to current preparations in the South Pole area for the International Geophysical Year.

One of the prime movers in "Operation Deepfreeze," he returned to the United States on March 15, in time for release next Monday of his book by that name, his own personal account of the struggle "down under" to establish some seven bases.

Heavy-duty equipment, like bulldozers and high-powered airplanes, have replaced forever the old-time dog team travel, he explained somewhat sadly, and the days of lone explorers like the late Admiral Richard E. Byrd, whose exploits in the area brought him fame, are a thing of the past. They have had to give way to exploration by masses, the officer said.

The masses, he explained, are the Army, Navy, Air Force and Government scientists who are building the IGY posts. Dog teams are smaller than tractors

and the masses can't wait, he added.

Soon after the program began in 1954, Admiral Dufek became the first American to set foot on the South Pole. He arrived by air, not dog team, and was followed by hundreds of men who have changed the Antarctic into a scientific-military beehive.

Some 317 men, including 70 scientists, are now "wintered over" in preparation for the scientific studies, he said.

He told some 100 listeners that the recent death of Rear Admiral Richard E. Byrd will long be remembered as the end of an era—the era of private backing and lone undertakings in the way of Antarctic expeditions.

"It was his individual leadership, courage and perseverance that . . . focused the attention of the world on the remote Antarctic lands," Admiral Dufek said, "and no one can ever take his place."

"Engraved in our minds are

### Dufek Asks for Rewards For Antarctic Crews

WASHINGTON, March 15 (UP)—Rear Admiral George J. Dufek, first American to set foot on the South Pole, returned from the Antarctic today with a plea for special rewards for Americans exploring the South Polar wastes.

He suggested they be excused from income taxes while at the Pole.

The commander of Operation Deep Freeze said that men who wintered-over in Antarctica particularly deserve generous treatment at the hands of their Government. He predicted that "when the glamour wears off" in a few years it would be hard to get volunteers for polar expeditions.

The 54-year-old admiral, who has made four Antarctic expeditions, proposed that a special medal be given to all military and civilian personnel participating in South Polar explorations and advocated that they be "excused from income taxes" while they were there.

He also proposed that time in the Antarctic count double for military men toward retirement.



Rear Adm. George Dufek points to Navy photo taken at American station in Antarctic during "Operation Deep Freeze II."

his great individual accomplishments—the first man to fly over the North and South Poles, the first man to fly over the Atlantic in a transport plane, and his early Antarctic discoveries."

### 2 SAVED IN ANTARCTIC

Helicopter Falls Into Ross Sea  
—Boat Rescues Crew

ABOARD THE U. S. S. GLACIER, in the Antarctic, Jan. 19—The Glacier's helicopter fell into the Ross Sea today with its pilot and co-pilot, Lieut. Comdr. Charles Costanza of Lakehurst, N. J., and Lieut. (j. g.) John W. Erlewine of Kansas City.

Both men were rescued by a boat from the U. S. S. Curtiss. Commander Costanza said by radio he and Lieutenant Erlewine were unharmed.

The accident has deprived this Antarctic task group of a helicopter on which it depended heavily for selection of a base site on the Knox Coast.

The accident occurred as the helicopter was taking off from the flight deck of the Curtiss, a seaplane tender that is carrying most of the scientists who will man the six stations being established in the Antarctic by the United States Navy for the International Geophysical Year, 1957-58. The Glacier was escorting the Curtiss.

As Commander Costanza lifted his machine from the Curtiss, the ship's bow apparently rose on a swell and hit the helicopter's tail.

### FIRE AT U. S. POLAR BASE

\$106,000 Damage Caused at  
McMurdo Sound Outpost

WASHINGTON, April 29 (UP)—A fire that raged for four and a half hours yesterday caused \$106,000 worth of damage at the largest United States base in Antarctica, the Navy said today.

No men were "seriously injured" in the blaze, the Navy said. The cause of the fire was not known.

The blaze broke out in a garage several hundred feet from barracks where eighty-seven military men are spending the Antarctic winter.

The base is the naval air facility at McMurdo Sound, the largest of seven Antarctic bases.

The Navy said the fire destroyed the garage, a thirty-five-ton tractor-trailer and a number of pieces of electrical equipment.

Rear Admiral George J. Dufek, commander of the United States Polar operation, said in Washington the fire "may slow us down a bit but I'm sure it will not affect getting the job done"

### Big Whale Oil Harvest

Norwegian whaling expeditions in the Antarctic garnered 855,489 barrels of whale oil in 1956, an increase of 200,000 over 1955.

# ICE FORCES SHIFT IN ANTARCTIC SITE

Commonwealth Base to Be on East Instead of West Side of McMurdo Sound

By WALTER SULLIVAN

McMURDO SOUND, Antarctica, Jan. 9.—Extremely rough ice conditions have forced the British Commonwealth trans-Antarctic expedition to give up its plan for a base on the western side of McMurdo Sound.

Sir Edmund Hillary, leader of the Pacific element of the expedition, said today the base would instead be placed at Pram Point, on Ross Island, near the United States air operating facility on the east side of the sound. This adds about fifty miles to the distance which the Transcontinental party will have to travel.

Despite this setback the trail-blazing party has already set forth with three dog teams to mark a route up Ferrar Glacier and over the inland plateau toward the South Pole. Behind it two small tractors are hauling a load of food. They are to climb as far up the glacier as possible and cache provisions for the trail party.

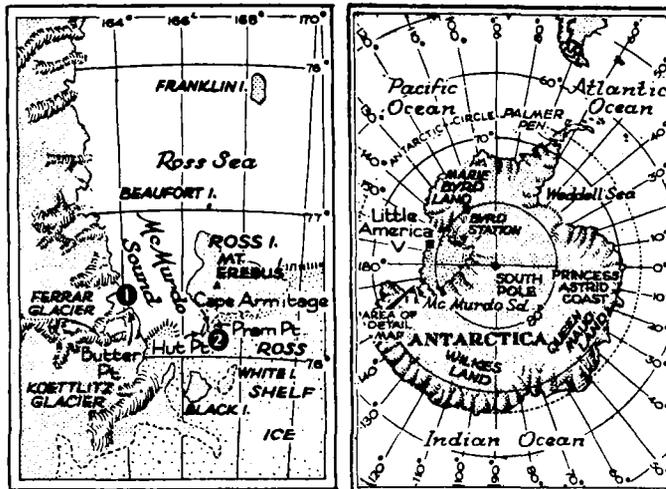
The party consists of Harry Ayres, one of New Zealand's best known mountaineers and an old associate of Sir Edmund, Dr. George Marsh, expedition medical officer who commanded the British base at Hope Bay on Palmer Peninsula and is an experienced dog driver, and Lieut. Richard Brooke of the Royal Navy, who made long sledging journeys in Greenland.

On the basis of reconnaissance last year the trans-Antarctic expedition had planned to put its base on a moraine near the foot of Ferrar Glacier, a few miles west of Butter Point. The expedition ship Endeavour landed several tractors and a scouting party on an apron of sea ice attached to the coast at that point early Saturday.

By late yesterday it was evident that the roughness of the ice off the coast made it impracticable to move the expedition supplies ashore on tractor-drawn sleds. The only passable route was eighteen miles long and difficult at that. Hence Pram Point was selected. It lies about two miles east of the United States camp over a low pass. The American base is near Hut Point on the tip of Cape Armitage.

The United States expedition, which already had been helping the Commonwealth expedition in a number of ways, will lend a heavy tractor to bulldoze the camp site for the New Zealanders, who make up the Pacific element of the trans-Antarctic venture. A smooth patch of bay ice off Pram Point that already

# Base Site in Antarctica Is Altered



Unable to use a spot near Butter Point (1), the British Commonwealth expedition will go to Pram Point (2).

## Food Preserved 45 Years In Antarctic Cache

LONDON, March 21.—The son of Capt. Robert Falcon Scott sampled today canned rations from the cache his father died trying to reach on his last South Polar expedition in 1912. The food was in excellent condition.

The son, Peter Scott, artist and wildfowl authority, ate some of the rations at the Tin Research Institute on Greenford. They were recovered after forty-five years in the frozen wastes by a United States expedition.

One of the cans was labeled "keep in a cool place."

Mr. Scott said the canned tongue tasted slightly "cheesy" but that the gooseberry jam was better than the gooseberry jam made today. Captain Scott had deposited the food to be used on the return from his famous dash for the pole but he died in a blizzard on the way back.

has been used by United States planes is an excellent landing area for ski aircraft.

The task of this part of the expedition is to lay depots toward the South Pole to supply the tractor party due to cross from the Atlantic sector a year from now.

The trail party now in the field is to push south to the 150-mile mark and select a spot easily identified in terms of mountain peaks for a major depot. Food and fuel for the depot will then be flown in by the expedition's Beaver aircraft, which, despite its pummeling in heavy seas, appears serviceable. A second depot will be placed 300 miles out.

The placing of the New Zealand base near that of the Americans will simplify the unloading

## HILLARY REPORTS ON POLAR SET-UP

### Stormy Trip of New Zealand Party to the Ross Sea Station Is Described

By SIR EDMUND HILLARY  
World © Reserved by The Times, London.

It was a sad moment for all of us when our little ship Endeavour pulled away from a New Zealand wharf on Dec. 21 and we saw our wives and families disappearing into the night. It would be fifteen months before we saw them again and there were few of us without a lump in our throats.

We entered the open water of the Ross Sea at 7 A. M. on Jan. 1 and met the worst storm I think I have ever experienced—a howling southerly gale, enormous waves, a black lowering sky, and frequent snow showers. By midday the storm reached a crescendo of fury and our little ship was tossed round like a cork.

Our initial task was to choose the site of Scott Base in McMurdo Sound. This site must

problem. About 1,000 tons of cargo for the Commonwealth expedition is on the Private John R. Towle, a United States cargo ship, now unloading supplies for the American base at Cape Armitage. She can now discharge her New Zealand cargo without shifting to the other side of the sound, a maneuver that would be difficult at the moment, as northerly winds have driven pack ice there.

have reasonable access for tractors from the ice edge; it would need an area large enough for all our buildings; it required a near-by patch of level snow suitable for an aircraft landing strip and, of course, it was most important that we should be able to establish a vehicle route from it up on to the Polar Plateau.

As we approached the entrance of McMurdo Sound we ran into an area of pack ice off Beaufort Island—bad going for our small ship. The American icebreaker Glacier was in the vicinity and as our relations with the United States Navy were very close and cordial, Captain Harry Kirkwood of the Endeavour asked for assistance in order to stop wasting unnecessary time.

The Glacier carved an inlet for us in the ten-foot-thick bay ice and then departed with our thanks. We tied up alongside the ice and began unloading a strong reconnaissance party of four tractors and three dog teams, plus all our requirements for a month.

### Scott Party Hut Found

WELLINGTON, N. Z., March 23 (Reuters)—A stone hut built in the winter of 1911 by three members of Capt. Robert F. Scott's ill-fated British Antarctic expedition was discovered today by Sir Edmund Hillary.

A radio message from Sir Edmund's Ross Sea base said the hut was near Cape Crozier at the eastern tip of Ross Island.

Captain Scott, who reached the South Pole a month after the Norwegian, Roald Amundsen, had got there Dec. 12, 1911, died with other members of his discovery party on the return journey.

According to a book written later by one of the men who built the hut, Apsley Cheery-Garrard, it was constructed on a trek from Cape Evans to Cape Crozier to obtain specimens of the Emperor penguin embryo. The Hillary party found at the hut a nine-foot sled and some Emperor penguin carcasses.

## Diphtheria Case

By the Associated Press.

SCOTT BASE, Antarctica, Feb. 15.—Sir Edmund Hillary said today a doctor at this New Zealand outpost in the Antarctic recently suffered a "mild" case of diphtheria but now is well and working again.

Sir Edmund, co-conqueror of Mt. Everest and head of New Zealand's Antarctic expedition, said there is "no danger" to the 35 men stationed here.

### World's Largest Animal

The world's largest animal is the blue whale, the United Nations Educational, Scientific and Cultural Organization says. A specimen has been known to weigh as much as 131 tons.

## DR. FUCHS DETAILS ANTARCTIC FLYING

British Expedition Chief Tells of Visiting Advance Base and of Scouting by Air

By DR. V. E. FUCHS

World © by The Times, London

LONDON, Feb. 6—On Jan. 11, the Magga Dan completed unloading at Halley Bay, the Royal Society Expedition base. On the same date, the Trans-Antarctic Expedition plane flew east from Halley Bay, confirming the suspected existence of a mountain range, 250 miles east of the base.

On the following day, John Lewis, George Lowe, Donald Milner and I flew south to Shackleton, our base on the Filchner ice shelf at the head of the Weddell Sea. Owing to low cloud, most of the 250 miles was flown at an altitude of 200 to 300 feet, following the coastal ice cliffs. After seventy-five miles we found a field of unbroken sea ice extending westward from the coast for twenty miles.

Turning westward to follow the ice edge we saw the coastal lead of open water dwindle until it was replaced by closely packed floes between which little water could be seen. In spite of this, the small size of the individual floes told us that the Magga Dan could almost certainly force her way through.

At Shackleton the plane arrived in brilliant sunshine. As the plane came to rest and we all jumped out to shake hands with the waiting group, it was difficult to realize that almost a whole year had passed since we waved good-bye as the Theron pulled away from the ice edge.

Later, the leader of the advance party, Kenneth Blaiklock, showed me round the base outside.

Not only has the advance party built the hut, installed the generators and wireless equipment, but it has also accomplished a number of dog sledge journeys. The most important of these were the last two when Blaiklock and Goldsmith first established a depot fifty miles south of Shackleton and then made a longer journey passing through the depot and going on to the mountain area which we had observed from the air last year.

With the arrival of the Magga Dan in the evening of the thirteenth, the expedition main and advance parties were once more united.

The following day we settled down to the unloading of all the new stores. While the unloading was in progress, we also completed the installation of the

## British Duke Gets Penguin Icy Stare

LONDON, Jan. 2 (AP).

A GROUP of polar penguins have resented the presence of the touring Duke of Edinburgh in Antarctic regions, a message from the royal yacht Britannia said tonight.

Touring the Falkland Isles dependencies, the Duke transferred to the survey ship John Biscoe and on New Year's Day walked on to some pack ice when the ship was off the tip of Adelaide Island.

"Many nursing penguin mothers took exception to his visit," said the radio message to Buckingham Palace, "but the unattached birds gave a fine exhibition of tobogganing and upright traction."

Accompanying the Duke was Crawford Brooks, a U. S. State Department officer acting as observer on the John Biscoe.

The message said Brooks took two tennis rackets onto the pack ice and played tennis with Sir Raymond Priestly in the "first game of tennis within the Antarctic Circle."

The Duke did not participate.

base hut and built a number of small workshops for the air and motor transport stations besides a meteorological balloon hut and a store for emergency equipment well separated from the base in case of fire.

By the time unloading was completed on Jan. 19, the area occupied by the various huts and stores dumps had extended in a complete plan over an area a quarter of a mile long by 200 yards wide. In all this work we have had the enthusiastic assistance of the ten members of the Royal Society Expedition advance party whom we had picked up at Halley Bay.

At the same time as this base work was in progress, two long-range inland reconnaissance flights have been made, each lasting between five and six hours. The first flight was made on Jan. 20 when Haslop (pilot), Blaiklock, Lowe and Fuchs flew a course passing west of the Theron range with the object of investigating a second group of mountains to the south.

These two ranges are separated by an immense and heavily crevassed glacier about 100 miles long and some thirty miles wide, extending in an east-west direction. Shortly before reaching the inland margin of the Filchner ice shelf, which was found to lie 150 miles south of Shackleton, the plane turned east up a glacier which promised a possible land route to the interior.

Over the last of the Nunataks in Lat. 81 degrees 30 minutes S. we turned back to base, where we arrived after 5 hours 20 minutes in the air. The flight had shown that there was a possible but difficult route through the mountains, and that there was an excellent position for our inland depot site near one of the most distant Nunataks.

## BRITON DESCRIBES POLAR BASE WORK

Antarctic Team Fights Cold 50° Below Zero—Weather Maroons Two on Ice

By Dr. V. E. FUCHS

World © by The Times, London.

LONDON, April 7—When the Magga Dan left Shackleton Jan. 28, we were enjoying relatively good weather and consistent sunshine. Since then conditions have gradually deteriorated and now the sun rises only twelve degrees above the horizon. The winds are strengthening and becoming more constant, the temperatures have fallen to the minus thirties.

At South Ice, our inland station, 270 miles south of Shackleton and at an altitude of 4,700 feet, temperatures are already in the minus forties and fifties, with almost perpetual southeast winds of twenty to forty knots.

When reconnaissance flying was completed on Jan. 30, the site for South Ice was determined. On Feb. 4, the first landing was made to set down the party that was to build the small aluminum and plywood prefabricated hut. This will be occupied during the winter for meteorological and glaciological purposes.

The builders, Hal Lister, Ken Blaiklock, Jon Stephenson and George Lowe, immediately set about digging a pit 20 feet square and 5 feet deep in which to build the hut. This was to insure that the structure would be rapidly covered with snow and so remain warmer in the very low temperatures that are expected.

By Feb. 22, the building was sufficiently complete for members of the party to abandon their tents and sleep indoors for the first time. Eleven flights had now been completed and the

The second reconnaissance was made on Jan. 22, when Lewis (pilot), Blaiklock, Lowe, Williams, Goldsmith and I flew first to the most westerly point of the Theron range, then east along its towering 2,000-foot cliffs until we found a wide, smooth glacier providing a gentle uncrevassed route to the snowfields above.

Even here, seventy miles to the east, the glacier was twenty-five miles wide with steep sides and impassable belts of crevasses running along its length. As we flew south across it toward rocky mountains that lay beyond, we quickly realized that there was no hope of forcing a route in that direction.

minimum of food and fuel had been transported to South Ice to make the party secure in the event of accident or trouble with the aircraft.

On Feb. 18, the expedition's two bases, Shackleton and Scott on opposite sides of the continent, made their first contact by wireless.

This two-way radio telephone has enabled Sir Edmund Hillary and me to exchange information, and permits discussion each week among the members of the two bases.

By March 3, South Ice was sufficiently established for Jon Stephenson, our Australian geologist, and Ken Blaiklock, surveyor, to be picked up by plane and set down near some nunataks [insular hills surrounded by an ice sheet] thirty miles north of South Ice.

There they were to do some work for forty-eight hours, equipped with a manhauling sledge, ten days' food and fuel, and a radio receiver.

Unfortunately, weather conditions then made further flying impossible. Every few hours, day and night, Shackleton and South Ice made radio contact, but it was not until 4:30 A. M. on March 15, two days after the field party's rations should have run out, that we could fly again.

As we traveled south, we saw the whole area toward the nunataks completely blanketed. Then, suddenly, the top of the highest hill appeared. Miraculously, a few minutes later, we could see all the nunataks standing sharp and clear through the only break in the cloud.

We were only ten miles from the South Ice station when a tiny black triangle became visible a mile to starboard. In all that wide expanse of snow this could only be the tent, and soon we were circling it, finally coming in to land fifteen yards away.

Thirty-five minutes later we were all at South Ice having breakfast, hearing the account of the work Blaiklock and Stephenson had done, and how they had managed to manhaul twenty miles toward South Ice in temperatures of 40 degrees below zero, with winds of over thirty knots.

It is now six days since they returned to Shackleton, and the minor frostbites of face, fingers and feet have recovered, but we still await suitable weather to fly them back to South Ice.

### Bill Asks Antarctic Body

WASHINGTON, May 31 (AP)—Congress was asked today to set up an Antarctic commission bearing the name of the explorer, the late Admiral Richard E. Byrd. A bill introduced by Senator Alexander Wiley, Republican of Wisconsin, would establish the Richard E. Byrd Antarctic Commission for "establishing a spearhead for a continuing Antarctic policy in the Government of the United States."

# ANTARCTIC SLOWS RUSSIANS' EFFORT

Placing of Inland Stations for International Program Reported Delayed

By WALTER SULLIVAN  
Soviet explorers in Antarctica have been unable to set up either of the inland stations assigned to them in time for the start of the International Geophysical Year.

In 1955, when stations were allocated for the International Geophysical Year, the Soviet Union undertook two of the most remote locations—the South Geomagnetic Pole and the so-called Pole of Inaccessibility. The Pole of Inaccessibility is the geographically most remote spot in Antarctica, roughly 1,000 miles from the sea in any direction.

During the Antarctic summer just ended, according to Soviet press reports, a tractor train from the main base of Mirny, on the coast of the Indian Ocean sector, reached a point 540 miles inland. There a subordinate base, Komsomolskaya, was established at Lat. 74:3 South, Long. 97:23 East.

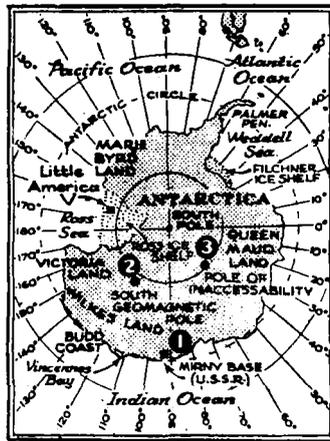
The site is slightly more than half way along the projected route from Mirny to the Geomagnetic Pole. Another tractor train has dug in for the winter 100 miles short of Komsomolskaya and is due to complete the journey to the Geomagnetic Pole in the Antarctic spring (October-November).

The tractors bearing supplies for the outpost at the Pole of Inaccessibility will apparently not leave Mirny until spring.

A third Soviet tractor party is in the field in Antarctica. Led by P. A. Shumsky, a geographer, its task is to determine the ice sheet thickness at intervals of thirty-seven miles along its route. The party is to winter at Komsomolskaya and then continue on to two projected hinterland stations.

It would apparently return to Mirny in a straight line from the Pole of Inaccessibility. The Soviet scientists, however, have also talked of turning in the opposite direction and going to the South Pole, where the United States has an outpost. They would there abandon their vehicles and "hitch" a ride out to McMurdo Sound on an American plane.

Proposals for such great treks seem to be in fashion. Carl Eklund, scientific leader of the United States base in Vincennes Bay, east of Mirny, has sent a radio message proposing a tractor journey from his base to the



**ANTARCTIC IMPASSE:** Soviet explorers at Mirny (1) have been unable to set up bases at the South Geomagnetic Pole (2) or at the "Pole of Inaccessibility" (3).

### South Pole.

The distances involved in these Antarctic journeys are formidable. From Wilkes Station, where Mr. Eklund and his men are encamped, to the South Pole is 1,700 miles. From Mirny to the Pole of Inaccessibility is 1,600 miles. The deepest known penetration of the continent by tractor to date was to Byrd Station, the United States outpost set up during the past season 632 miles inland.

While Mr. Eklund's journey would have great scientific value there are no supporting aircraft at his base. Supplies would have to be air-dropped along his route by planes from McMurdo Sound 1,360 miles to the east.

It has been expected that the Soviet expedition would establish its hinterland bases by aircraft, much as the United States placed its outpost at the South Pole. Last year, however, both Soviet and United States planes flew to the heartland of the continent and found it to be a dome of ice about 14,000 feet high.

Presumably the Soviet explorers were hesitant to land their planes at such an elevation for fear that they could not take off again in the rarified air. Even at the South Pole, whose elevation is 10,000 feet, a P2V-7 Neptune patrol bomber of the United States Navy was unable to get into the air until it used a cluster of jato bottles to give it an added jet boost.

Soviet accounts tell of a similar crisis at Komsomolskaya, but the failure in take-off was attributed to soft snow, as well as to the thin air at 8,750 feet.

The Soviet expedition appears to be the largest in Antarctica, except for that of the United States. Its ships unloaded 8,000 tons of supplies at Mirny this year—roughly as much as were delivered to each of the main United States bases at Little America and McMurdo Sound.

# U. S. and Soviet Agree Antarctic Ice Is Thick

WASHINGTON, June 27—Pionerskaya, a Soviet camp 250 miles inland in Antarctica, has been found to rest on from 10,000 to 12,000 feet of ice, though it is only 9,000 feet above sea level.

This was reported today by Dr. Laurence M. Gould, chairman of the committee in charge of the United States scientific program in Antarctica for the Geophysical Year. He said this finding of the Russians and a similar report from a United States outpost on the opposite side of the continent "indicate strongly that there is much more ice in Antarctica than previously believed."

A party of Americans at Byrd Station in Marie Byrd Land reported earlier this year that their camp, although only 5,000 feet above sea level, rested on 10,000 feet of ice.

The Russians still appear to be manning Pionerskaya, a station 230 miles inland, and another outpost in the Bunger Hills. Their personnel in the Antarctic total about 160 men, compared with more than 300 Americans. According to the Soviet press, the Russians have twelve aircraft and thirty-eight tracked vehicles. Some of these look in photographs like heavy-duty trucks equipped with tracks instead of wheels.

## WOMEN IN ANTARCTIC

3 Scientists Are in Soviet Group—Caviar on Menu

McMURDO SOUND, Antarctica, Feb. 13 (AP)—The Russians took with them to the Antarctic three woman scientists, Gordon D. Cartwright, United States meteorologist, reported today.

He said the Soviet South Polar expedition with which he is stationed under a Soviet-American exchange arrangement also had caviar, carpets, wallpaper, dial phones, fresh meat and taped music.

"Caviar at breakfast is hard to face," he radioed from the Soviet Antarctic base at Mirny.

Mr. Cartwright added that on the expedition staff there were three Russian women scientists who are not housed on the mainland but work instead from the Soviet icebreaker Ob offshore.

These are probably the only women in the Antarctic—except for eight to twelve women crew members on other Soviet ships in the Soviet expedition.

McMURDO SOUND, Antarctica, Feb. 17 (AP)—A group of Soviet scientists who lived fourteen months in Antarctica have left for home. It was replaced by a fresh Soviet contingent that will remain for the International Geophysical Year 1957-58.

# Antarctic Ship Freed From Ice, Heads for Japan

TOKYO, Mar. 1 (AP)—Helped by the Soviet icebreaker Ob, the Japanese Antarctic expedition ship Soya reached the open sea today after being trapped in ice packs off Prince Harald coast since February 17.

The Antarctic expedition office here said the Russian ship broke a path through 4 to 5 miles of ice as thick as 16 feet to free the Soya.

The Japanese vessel, with 110 persons aboard when icebound, is on her way home after taking a scientific team to Antarctica to establish a base camp for the international geophysical year program.

The Soya carried ample supplies to sit out the winter, but it was feared the tightening ice ring might seriously damage her hull.

The Soviet vessel was in Antarctic waters when the Japanese ship became stranded. It was assumed that the rescue trip of the United States icebreaker Glacier now would be called off. The Glacier was on the opposite side of the Antarctic continent when ordered to the Soya's aid and was not expected to reach the scene before March 15.

### Japanese Party Arrives

TOKYO, Wednesday, Jan. 30—Japan's Antarctic expedition planted the rising-sun flag on the east coast of Lutzow-Holm Bay last night, according to a radio message received here from Dr. Takeshi Nagata, leader of the Japanese scientific party.

Twenty-one men, including scientists and crewmen, debarked from the expedition ship Soya at Ongul Island, while another group with snow vehicles explored a near-by unnamed island, the newspaper Asahi reported.

### Polar Party Loses Supplies

TOKYO, March 25 (AP)—The eleven-man Japanese observation team in Antarctica has lost more than six tons of winter supplies. An iceberg where the supplies had been dumped drifted away in a blizzard last week.

## Land Captured on Film

By the United Press.

LONDON, March 12.—A British air survey firm said yesterday it has photographed 40,000 square miles of British-claimed Grahamland in the Antarctica and discovered new islands off the coast.

## Japan, Norway Issue Geophysical Year Commemoratives

June 16

**C**OLLECTORS expect a small deluge of foreign stamps commemorating International Geophysical Year, which begins on July 1. Japan and Norway are the first to announce plans for such postal observance.

At Washington last week it was stated that Postmaster General Arthur E. Summerfield does not contemplate an I. G. Y. issue.

From Tokyo comes official word that the scientific period will be ushered in with a 10-yen item illustrating the Japanese Antarctic Expedition's ship Soya. In lower right stands a penguin. In upper left appears the I. G. Y.'s globe insignia.

The designs in Norway's contributions, comprising three denominations, have reached J. and H. Stolor. "Intern. Geofysisk Ar 1957-1958" is inscribed on 25-øre green, 35-øre red and 65-øre blue.

Jan Mayen Island, from a water color painting, is pictured on 25-øre. This volcanic bit of land was discovered in 1607 by Henry Hudson four years before the English adventurer found New York's Hudson River. Today the seat of a meteorological station, the island lies in the Arctic Ocean, 360 miles north-northeast of Iceland.

### Arctic Archipelago

Another Norwegian possession in the Arctic—Svalbard, otherwise Spitsbergen—is shown in map form on 35-øre. An archipelago north of Norway, Svalbard was probably known to the Vikings but in modern times was not discovered until 1596—by the Dutch navigator Willem Barents while he was searching for a northeast passage to eastern Asia.

On 65-øre is a map of the South Pole area, with the position of "Dronning Maud Land" indicated. Inscribed on English-printed atlases as Queen Maud Land, this terrain was claimed in 1939 by the Norwegian Government.

### Deep Freeze II Covers

The world's first post office at the South Pole has canceled 125,000 Operation Deep Freeze II covers for collectors. Associated Press Correspondent Don Guy reports from the Antarctic. The five-day job was done on a hand-cranked canceling machine set at December 15, 1956. The covers were flown in and out on a space available basis.



**ANTARCTIC MAP**—Norway's Antarctic claim, Queen Maud Land, is emphasized on this International Geophysical Year 65-øre stamp, one of a set of three to be issued July 1.

## New Zealand Presents Its Initial Series From Antarctica

Feb. 24

**R**OSS DEPENDENCY, comprising an ice-bound sector of the Antarctic continent which New Zealand has for thirty-three years claimed as a territorial possession, and which it nominally administers on behalf of Great Britain, is 1957's first addition to the world's stamp-issuing regions.

This came about, according to word received by The New York Times from Antarctica, after New Zealand's Trans-Antarctic Expedition reached McMurdo Sound about mid-January. The expedition is part of New Zealand's participation in the International Geophysical Year explorations.

Information came from Wellington last week that the expedition's leader, Sir Edmund Hillary, who was the conqueror of Mount Everest, has been appointed by the New Zealand Government as the expedition's postmaster. Sir Edmund designated, as Deputy Postmaster, Arthur Helm, secretary of the New Zealand Ross Sea Committee; and immediately upon arrival at McMurdo a postal system was established. Scott Base Post Office was placed in operation near Butter Point and four stamps with "Ross Dependency" inscribed were placed in use.

Wellington advises that the expedition's cargo included 100,000 philatelic covers received from various countries. How many of such mail pieces were sent by United States collectors was not immediately disclosed.

**SOVIET UNION** — A 40-kopec stamp has been issued to mark the 275th anniversary of the birth of Vitus Bering, the Dane who became one of Russia's great explorers. He charted the Siberian coast, determined that Asia was not joined to America, and sailed along the Aleutian chain to the Alaskan mainland. The brown and blue stamp pictures Bering, his ship, and a map of the Bering Sea area, tracing his voyages.



Australia's new two-shilling stamp, placed on sale March 27, shows a map of the portion of the Antarctic in which Australia is vitally interested.

Territorial claims on stamps are not new. But every time we see such a stamp it is further evidence of how effective stamps can be as a means of spreading propaganda.

The latest nation to publicize its land rights is Australia, with long time interests in the Antarctic.

Just received is a new 2 shilling blue adhesive inscribed "Australian Antarctic Territory." The design shows a map of the territory and its relation to the Australian mainland.

The positions of Macquarie, Heard and the French Kerguelan Islands also are indicated.

At the left of the stamp is a scene showing the Australian flag being flown in the Vestfold Hills area on March 3, 1954.

The design is based on an original photograph by explorers from the Australian national Antarctic research expedition.

**GREENLAND**—A 60-øre dark blue stamp will be issued May 2 to replace the overprinted values now in use for the foreign letter rate.



The design, by the Greenland artist Jens Rosing, is based on the legend of the "Mother of the Sea," from whose hair came the sea animals and fishes which provide food for man.

In all, about 700,000 covers were canceled at the expedition's three post offices—Pole Station, Byrd Station and Little America—most of them at the Little America base. Pole Station covers and a number of covers postmarked at Little America on January 13 have been received.

## MEETING DEBATES WHALE QUOTA CUT

Stocks Are Being Depleted,  
International Body Fears  
—Short Season Cited

LONDON, June 25 (UP)—The International Whaling Commission began discussions today on the catch quota for whales during the 1957-58 summer season in the Antarctic.

The Scientific Subcommittee is reported to be in favor of reducing last year's quota, which was 14,500 blue whale units, because it believes that whale stocks are being depleted too rapidly.

Prof. Johan T. Rudd, technical advisor to the Norwegian delegation, said that the approximate annual whale mortality rate in the Antarctic Ocean from natural causes and hunting was 27 per cent. He said he believed from his analyses that this rate would diminish the stock of whales if the quota remained at 14,500.

It is reported that some of the member countries, particularly the Netherlands, oppose further cuts in the catch quota.

The problem facing the conference is how to adjust the catch quota to preserve the dwindling stocks of whales while enabling a whaling expedition to make a profit.

The Norwegians are strongly in favor of limiting both the number of whaling expeditions to the Antarctic and the number of catching boats employed by each factory ship.

They contend that the present catch limit and the consequentially shortened season makes it no longer an economic proposition to catch whales in the Antarctic. This view is also shared by the British and South African whaling companies and has resulted in the sale of British and South African whaling ships and equipment to the Japanese.

Norwegian and British whalers, supported by scientists, say that by the end of the Antarctic summer the whales are grown fat from the vast beds of plankton, which are richest in the late summer. Consequently, whales caught at the end of the season produce greater quantities of oil and are thus economically more valuable.

Under the International Whaling Convention rules, the season ends when the catch quota is reached. And as neither the number of expeditions nor the number of catching boats in each expedition is limited, the season tends to end earlier and earlier with a total catch producing less and less oil.

### More Japanese Whalers

Japan will send seven fleets for 1957 Antarctic whaling, compared to five fleets last year.

## Dr. Wilhelm Filchner, 79, Dead; Explorer of Antarctic and Asia

ZURICH, Switzerland, May 7 (UP)—Dr. Wilhelm Filchner, German explorer, died here today after a long illness. He was 79 years old.

His many publications included "Storm Over Asia," and "My Tibet Expedition." He received the German National Prize in 1937.

He was a member of the German Academy for Natural Science, the Sineca Academy and the Swiss Natural Science Society.

### Explored Antarctica

Dr. Filchner became famous for his several expeditions into the remotest parts of Asia, particularly Tibet, but he also was the leader of a German expedition to Antarctica.

The Filchner expedition was made during 1911-12 at a time when the British expedition of Capt. R. F. Scott and the Australian expedition of Douglas Mawson were attracting wide attention.

Although little heeded except in Germany, the Filchner expedition built a large base on the ice shelf of Vahsel Bay. The Germans named that part of the Weddell Sea coast Luitpold Land.

The Germans barely had completed their base when the entire section of icecap on which it was constructed, 600 feet thick, went to sea. The men were barely rescued by their vessel, the Deutschland.

This expedition was recalled two years ago when the recent American expedition was seeking an icecap base. The Germans' experience did not recommend Vahsel Bay.

Kaiser Wilhelm II of Germany was an enthusiastic admirer of Dr. Filchner, and spent hours after World War-I in his retreat at Doorn, the Netherlands, watching films of the Filchner expeditions.

The world first became conscious of Dr. Filchner's work in Asia when word went out from Berlin, in September, 1927, that the scientist was missing near the Tibetan border of China. The next year it developed that Dr. Filchner had completed a two-and-a-half-year trip through vast regions of Asiatic Russia, China and Tibet.

Dr. Filchner owed his life to rescue work by a British missionary named Plymire and an American missionary named Matthewson, who brought him through to India. His hands and feet were badly frostbitten.

It turned out that Dr. Filchner had nearly been killed by Tibet-



Dr. Wilhelm Filchner

an soldiers at Lhasa when they became afraid of his scientific instruments. Only the intervention of British officials with the Dalai Lama saved him.

Yet the intrepid explorer returned to the same region in 1933, spending four more years there. He came out in rags in 1937 to learn that a \$40,000 prize had been awarded to him by the German Government.

### R. N. RUDMOSE-BROWN, 77

British Naturalist Who Took  
Part in Polar Trips Dies

SHEFFIELD England, Jan. 29 (Reuters)—Robert Neal Rudmose-Brown, who took part in expeditions to the North and South polar regions, died here Sunday. He was 77 years old. He had been a member of the Sheffield University faculty since 1908 and professor emeritus of geography since 1945.

Professor Rudmose-Brown was the naturalist on the Scottish National Antarctic Expedition aboard the Scotia, 1902-1904. In 1907, he served as an Indian Government commissioner for pearl oyster fisheries in Burma.

He subsequently was surveyor and naturalist on several Scottish expeditions to Spitsbergen, including those of 1909, 1914 and 1919. He was vice president of the International Polar Congress of 1906.

He wrote detailed reports on the results of most of the expeditions he accompanied, as well as many articles for scientific journals. His book, "A Naturalist at the Poles," was published in 1923.

## CHILE SHIPS BACK FROM ANTARCTIC

Tie Up in Strait of Magellan  
—Expedition Built Airstrip  
as Polar Stepping-Stone

PUNTA ARENAS, Chile, March 11—This gale-lashed city of 35,000 inhabitants on the Strait of Magellan is the gateway to the Antarctic and a way station to the South Pole.

Early this morning four ships of the Chilean Antarctic Squadron—Dasy, a 6,000-ton transport serving as flagship, a 7,000-ton tanker and two patrol boats, slipped into port here. They thus ended their four and a half months in the Antarctic on an assignment that included important contributions to international efforts to learn more about the vast ice-covered continent.

One of the expedition's achievements was the building on Robert Island in the South Shetlands of an airstrip that will serve United States Navy aircraft as an intermediate landing point in flights from here to such Weddell Sea bases on the Antarctic continent as Shackleton and, presumably, to the South Pole.

The airstrip, along with the erection off Palmer Peninsula of the scientific base of Luiz Risopatron, where ten Chilean scientists are spending the winter, is Chile's main contribution to the International Geophysical Year.

The Chilean sector of the Antarctic is a triangular slice with apex at southpole running from Lat. 90 degrees W. to 53 degrees. Argentine and British claims overlap it.

Despite diplomatic difficulties, there have been no incidents in recent years and the men returning here today reported several "pleasant social contacts" with the Argentines and British.

Chile maintains four permanent Antarctic bases on Palmer Peninsula, a slightly crooked finger of the Antarctic continent pointing at South America. Chileans call the peninsula Tierra O'Higgins, after Bernardo O'Higgins, Chilean patriot and dictator (1778-1842).

### 2 Russians Killed in Antarctic

LONDON, Feb. 11 (UP)—Two Soviet Antarctic explorers were killed Feb. 4 when a huge ice barrier collapsed and swept them into the sea, the Moscow radio reported today. Seven men were rescued, one critically injured, the radio said. The dead were identified as Nikolai Buromsky, a hydrographer, and Evgeny Zykov, a cadet from the Leningrad naval engineering school.

# Admiral Byrd, 68, Dies; Flew Over Both Poles

BOSTON, March 11 (AP)—Rear Admiral Richard E. Byrd, U. S. N., retired, the first man to fly over the North and South Poles, died in his sleep tonight at his Brimmer Street home. He was 68 years old.

His death was attributed to a heart ailment brought on by overwork in connection with his many activities.

The polar explorer, who had been named head of the Navy's Operation Deep Freeze in Antarctica, had been ill for several months. This prevented him from assuming on-the-spot supervision of the polar expedition in the International Geophysical Year beginning July 1.

Admiral Byrd was decorated on Feb. 21 with the Defense Department's Medal of Freedom. The presentation was made quietly by Admiral Arleigh Burke, Chief of Naval Operations, who flew to Boston, made the award and returned immediately by air to Washington.

Admiral Byrd had been under the care of Dr. William E. Greer and Dr. Paul Dudley White, heart specialist who was a consultant when President Eisenhower suffered a heart attack.

At Admiral Byrd's bedside when he died were his wife, the former Marie D. Ames, whom he married in 1915, and their four children, Lieut. Richard E. Byrd Jr. of the Navy, Mrs. William A. Clarke Jr. of Swarthmore, Pa., Mrs. Robert G. Breyer of Los Angeles and Mrs. Lawrence J. Stabler Jr. of Milmont Park, Pa., a suburb of Philadelphia.

Rear Admiral Richard Evelyn Byrd, who passed on at his Boston home March 11, headed two Arctic and five Antarctic expeditions. He charted an estimated two million square miles of the earth's surface that had not previously been seen by man.

Holder of a Medal of Honor and Navy Cross, Admiral Byrd pioneered in naval aviation and commanded the first multi-engined plane to fly the Atlantic, nonstop.

Admiral Byrd was officer in charge of the United States Antarctic program and kept up his work in that connection without cessation. According to his family, the admiral had worked for three years without a holiday.

A native of Winchester, Va., Admiral Byrd was graduated from the United States Naval Academy at Annapolis in 1912. He entered the naval aviation service in 1917 and about a year later was made commander of the United States Air Forces in Canada.

He made his historic flight over the North Pole with Floyd Bennett on May 9, 1926. The Hubbard Medal for valor in



Rear Adm. Richard E. Byrd

exploration was presented to him in June, 1926, by President Coolidge, and the same year he received the Medal of Honor. On July 1, 1927, he flew the Atlantic with two other pilots, and made his first expedition to the Antarctic in 1928-29.

His historic flight over the South Pole was made Nov. 29, 1929, and his second Antarctic expedition in 1933-35. He was commander of the United States Antarctic expedition in 1939-41.

During World War II Admiral Byrd was decorated by President Roosevelt for exploring islands in the Southeast Pacific which resulted in a new air route from the Panama Canal area to Australia.

In 1946-47, Admiral Byrd commanded the United States Navy Antarctic Expedition, and in 1955 he was recalled to active service as officer-in-charge of Operation Deep Freeze, still in the Antarctic.

## POLAR UNIT MOURNS

### Men of Operation Deep Freeze Shocked by Byrd's Death

SAN FRANCISCO, March 11 (UP)—Personnel of the United States Navy's Operation Deep Freeze at the Antarctic said tonight they were "deeply shocked" by news of the death of Admiral Byrd.

A radio operator, speaking for himself and others in the Antarctic expedition, said:

"We all feel a deep personal loss over the admiral's death. Admiral Byrd was personally responsible for the great work that has gone on here.

"His real drive showed the way for the great need for America to establish settlements down here."

## EISENHOWER PAYS TRIBUTE TO BYRD

### Polar Explorer Buried With Full Honors at Arlington —Hundreds Attend

WASHINGTON, March 12 (UP)

—President Eisenhower paid tribute today to the late Rear Admiral Richard E. Byrd, U. S. N., retired, today as "one of the truly great explorers of all time" and "an old and dear friend."

The President, in a special statement mourning Admiral Byrd's death, said his explorations of the north and south polar regions had added tremendously to the scientific knowledge of the world. He predicted that the knowledge made available by Admiral Byrd would become increasingly important and would always remain as a constant tribute to the explorer.

The President, extending his sympathy to members of the Admiral's family, praised him as "a gallant gentleman, a fearless and determined explorer and a true servant of his country."

General Eisenhower also issued an Executive Order directing that flags on all Government buildings and naval vessels be flown at half-staff until the funeral.

WASHINGTON, March 14—Rear Admiral Richard E. Byrd, famed explorer of the polar regions, was buried today in Arlington National Cemetery with full military honors.

His grave is on a slope facing the Potomac River not far from the mansion that was once the home of Robert E. Lee. The military high command and ranking members of the Administration and Congress joined close relatives and hundreds of friends in ceremonies accorded national heroes.

The procession moved under a faultless, spring-like sky through the half-mile wooded pathway leading from the Fort Myer Chapel to the site of the grave. The coffin was carried on an Army horse-drawn, flag-draped caisson.

Capt. John D. Zimmerman, Navy chaplain, said in the chapel service that death for Admiral Byrd was "only a horizon" that he had now passed.

The Navy band and a detachment of sailors and marines formed an honor guard outside the chapel as the coffin was carried out by eight sailors.

A thirteen-gun salute burst as the cortege neared the site of the grave. A sailor held aloft the two-star flag of a rear admiral. The chaplain read the committal of the dead. Then there were three sharp musketry volleys, followed by a bugler's Taps in the distance.

## EXPLORER SET UP OUTPOSTS FOR U. S.

### As Head of Navy's Operation Deep Freeze He Established Year-Round Polar Bases

Admiral Richard E. Byrd's greatest polar expedition was achieved when he was in his late sixties. He was in over-all command of the Naval task force that, between 1955 and 1959, was to prepare, supply and maintain a series of scientific stations in the Antarctic. In addition, he was appointed the Government's chief Antarctic policy-maker.

In the first phase, 1955-56, seven ships and fourteen aircraft, with 1,800 men, were involved. They constructed the two largest year-round bases ever set up in the Antarctic. One was a seventy-three-man outpost in Kainan Bay at Little America. The other was a ninety-three-man outpost on Ross Island in McMurdo Sound.

They also established an air-operating facility at McMurdo Sound to support the construction of a manned station at the South Pole, 800 miles away. They stockpiled 500 tons of cargo at McMurdo Sound for the Pole station and 550 tons at Little America for a station to be built in Marie Byrd Land 500 miles away.

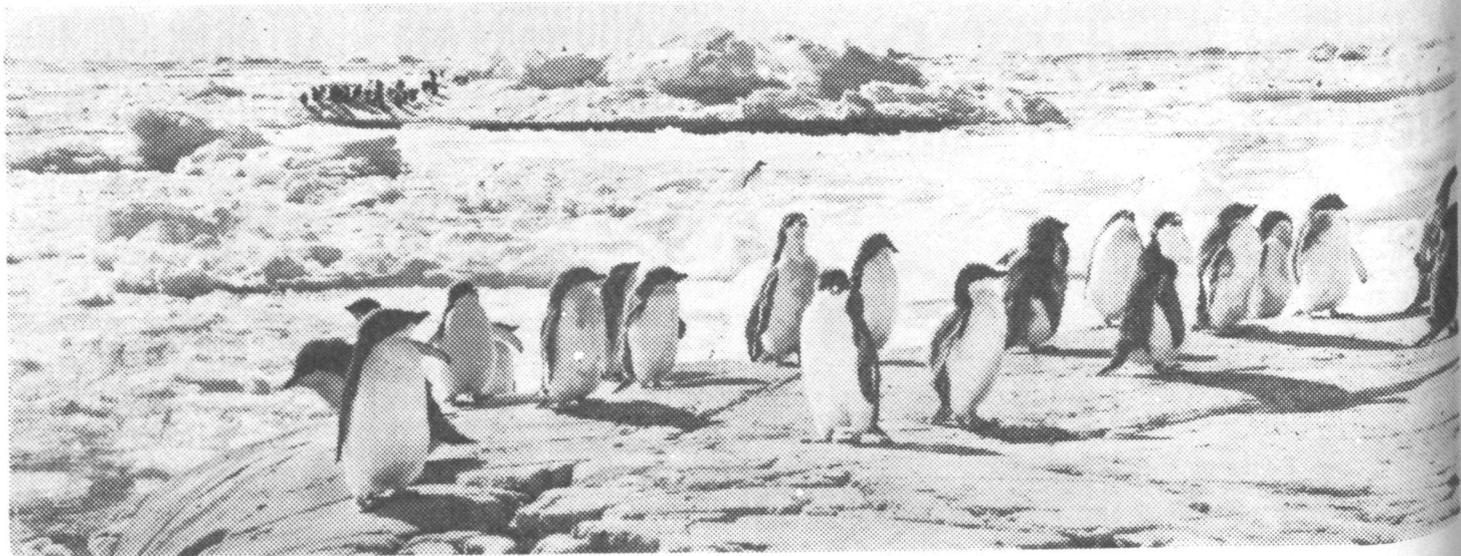
For work in the 1957 season, twelve ships, thirty-eight aircraft and 3,525 men were detailed. The second phase was to build the Pole and Marie Byrd Land stations, at least two more in the Knox Coast and Weddell Sea areas, and to resupply. The third phase, 1957-58, was to resupply all stations, and the fourth was to wind up the scientific program in 1958-59.

Admiral Byrd visited the Antarctic from Dec. 17, 1955, to Feb. 3, 1956. He flew over the Pole, as he had done in 1929 and 1947, on Jan. 8, 1956.

Admiral Byrd, at 68, was to have left Jan. 15, 1957, to rejoin his expedition. But he was obliged to cancel his plans by declining health and the need to support legislation on the Antarctic program.

Besides being in over-all command of the expedition, he was placed by President Eisenhower in charge of all Antarctic activities of the United States. He was also adviser to the Operations Coordinating Board of the National Security Council on the preparation and execution of Antarctic policy. In addition, he was to coordinate the activities of governmental departments participating in the establishment of a "permanent unit for Antarctic activity."

This was a victory for his policy, which was aimed to achieve permanent settlement of the continent.



Penguins were only welcoming committee for the expedition in Wilkes land, named for Rear Admiral Charles Wilkes. His discoveries in the early nineteenth century first suggested the outline for a continental coastline in the region.



The cargo ships Greenville Victory (foreground) and Arneb lay trapped by compressed floes of the Antarctic pack ice while en route to Vincennes Bay, in the Wilkes Land area of Antarctica, with supplies for Wilkes Station. This photo

was made from the navy's most powerful icebreaker, the Glacier, which freed the trapped ships. Wilkes Station is one of the most completely equipped outposts set up in the Antarctic for the International Geophysical Year 1957-58.