

Dec 63
no. 57

THE POLAR TIMES

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In special deep-freeze clothing, Military Vicar Francis Cardinal Spellman, center, pauses at chilly landmark during Christmas visit to U. S. Servicemen in South Pole "Operation Deep Freeze." He is seen with Rear Admiral James R. Reedy, Commander U. S. Naval Support Force, Antarctica, and Rear Admiral Floyd Dreith, Chief of Navy Chaplains. (U. S. Navy Photo)

National Oceanic and Atmospheric Administration

The Polar Times

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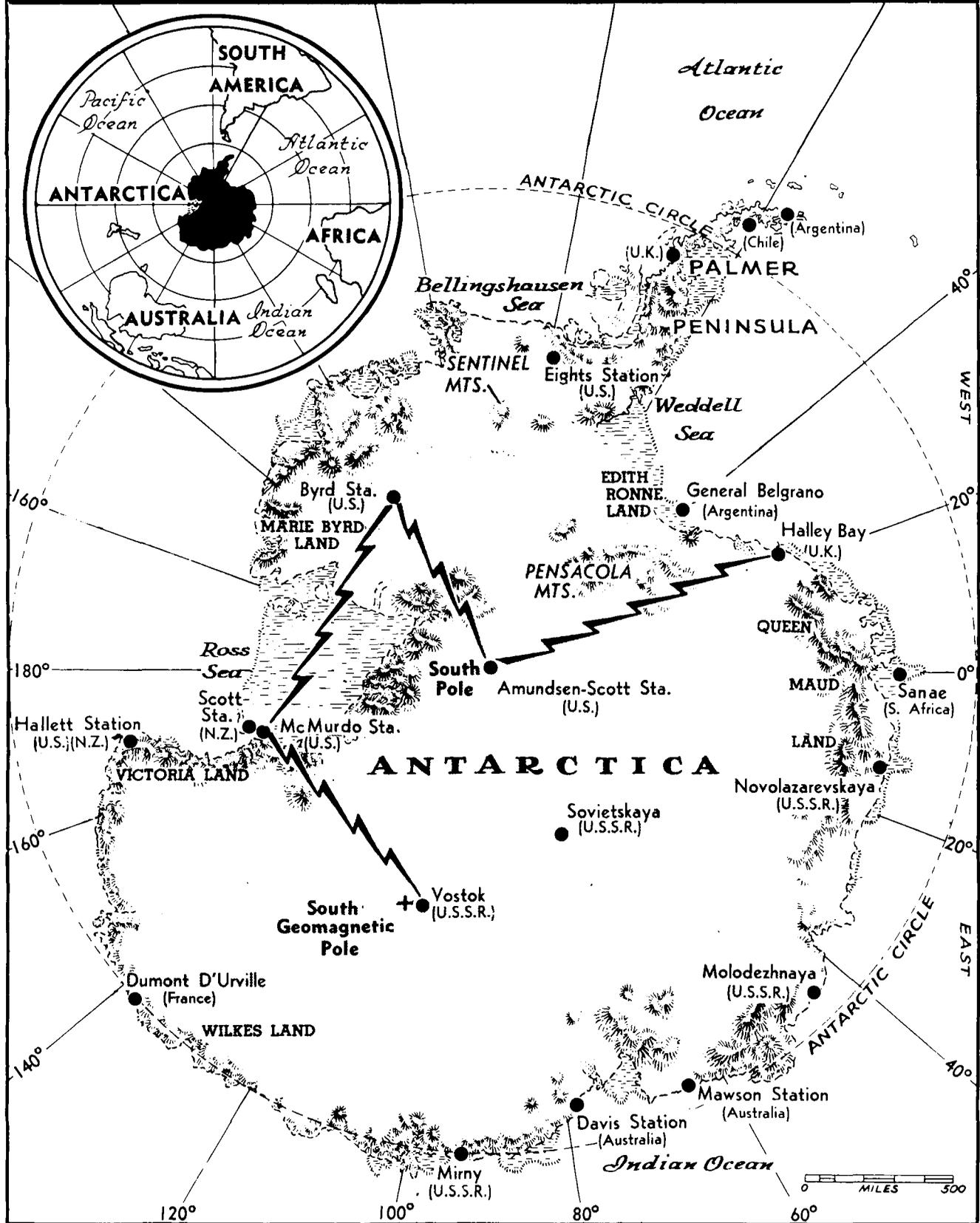
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THE ANTARCTIC—STUDIES FOR INTERNATIONAL YEAR OF QUIET SUN



American and Soviet scientists have started to arrive in Antarctica to begin their contribution there to the International Year of the Quiet Sun, a worldwide research project which will study the earth and its environment. The program will begin on Jan. 1 and last 18 months. The bases established on the continent for scientific study are shown on the map. All will take part in the international program. The U.S., Russia and Britain will work together on one of the most important Antarctic investigations of the Year of the Quiet

Sun—the effect of solar flares on radio transmission. The International Geophysical Year, a program which began on July 1, 1957, and lasted 18 months, studied the earth and its environment when the sun was at maximum activity. The Quiet Sun Year is a period of minimum solar activity. The three-nation study, to compare the two periods, will be conducted by the transmission of radio waves between the bases, as shown on the map. The radio waves will be bounced off ionosphere to observe effect of solar flares on ionosphere.

The Polar Times

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No. 57.

DECEMBER 1963.

U.S. SCIENTIST HEADS GROUP ON ANTARCTIC

The New York Times

CAPETOWN, Sept. 28 — The seventh international meeting of the Scientific Committee on Antarctic Research has concluded with the election of Dr. Laurence Gould of the United States as president for the next three years.

Dr. Gould is the chairman of the Committee on Polar Research of the National Academy of Sciences in Washington, and a former president of Carlton College in Minnesota.

During the first Antarctic expedition, led by Adm. Richard E. Byrd, Dr. Gould served as second in command and as senior scientist.

The outgoing president of the organization is Gen. G. R. la Clavère of France. Attending the meeting were delegates from the United States, France, Britain, Norway, Japan, Argentina, South Africa, Australia and New Zealand. The Soviet Union, Belgium and Chile did not send representatives.

In a final report the organization declared that the need for satellites in polar orbits was increasing.

Record Cold at South Pole

CHRISTCHURCH, New Zealand, July 15 (AP)—The United States Antarctic expedition's South Pole station recorded a record low temperature of 109.3 degrees below zero just before midnight last night. The previous record for the South Pole was 109.5 degrees below, recorded Sept. 13, 1959.

Will Visit Antarctic Reds

Christchurch, New Zealand, Dec. 30 (UPI)—The first visit by an American admiral to the Soviet Antarctic base at Mirny will be made Jan. 8.

Naval Support Force Commander Rear Adm. James R. Reedy will fly there on a U.S. Navy plane. Reedy was invited to visit the main Soviet Antarctic base after he made the pioneer flight from Capetown, South Africa, to the U.S. Antarctic outpost at McMurdo Sound last October.



Reedy

SOVIET BASES FACE ANTARCTIC CHECKS

U. S. Invoking Treaty That Permits Inspections

By United Press International

WASHINGTON, Sept. 14 — The United States announced today it would inspect bases of the Soviet Union and at least six other nations in the Antarctic to make sure they are engaging only in peaceful work.

Officials here said the action was not the result of any suspicion that the Russians had violated a treaty provision calling for only operations of a peaceful nature in the Antarctic.

The announcement came as the Senate was in the midst of debate on the nuclear test ban treaty. The debate has been punctuated with demands that the United States adopt safeguards against any possible Soviet "cheating."

The inspections will be carried out under terms of the Antarctic Treaty signed by 12 nations, including the Soviet Union and the United States, in 1959. The treaty gives signatories the right to conduct such inspections if they see fit.

The treaty stipulates that "Antarctica shall be used for peaceful purposes only."

The State Department said in announcing the inspection step that the action "is not based on any anticipation that there has been treaty violations by any signatory power."

Officials said the main purpose was to exercise the right of inspection in order to establish a precedent.

The State Department said special teams would conduct the inspections during the coming Antarctic summer season—from November through March.

Ten countries have active stations in the Antarctic—the United States, Australia, Argentina, Belgium, Chile, France, New Zealand, South Africa, the Soviet Union, and Britain.

Two other signatories to the treaty, Japan and Norway, have inactive stations.

Officials said the bases of "six or seven countries," including Russia, would be inspected. They said they would announce the full list later.

Officials said the United States would also welcome Soviet inspection of its Antarctic bases.



IN NEW ZEALAND, Cardinal Spellman is fitted out with Antarctic clothing by Navy storekeeper C. B. Gilbert of Staunton, Va. (U. S. Navy Photo)

Spellman Arrives at Antarctica To Say Mass for Servicemen

The New York Times

McMURDO STATION, Antarctica, Dec. 23—Cardinal Spellman, Military Vicar of the Armed Forces of the United States, and Rear Adm. Floyd Dreith, Chief of Navy Chaplains, arrived today with Rear Adm. James R. Reedy, commander of Naval Support Force Antarctica.

The party landed at Williams Field this morning in a Navy Air Development Squadron VX-6 ski-equipped Hercules aircraft. It was piloted by Maj. Joseph R. Dobbartz, of the Marine Corps, of Brighton, Mass.

Shortly after his arrival here, Cardinal Spellman celebrated a memorial mass for President Kennedy in the Chapel of the Snow.

Following the mass, Cardinal Spellman spoke informally to the crowd of Navy men and scientific personnel who attended. He said that he was proud to be able to make this visit to Antarctica over the holiday season and that he was happy to meet each man present and to know something about them.

As the men left the chapel, the Cardinal blessed each one and presented him with a religious medallion depicting Our Lady of the Snow that the Cardinal had struck in honor of his visit.

WELLINGTON, New Zealand, Dec. 25 (Reuters)—Cardinal Spellman of New York celebrated three Christmas Day services in the Antarctic, at the South Pole Station, McMurdo Station and Byrd Station. Accompanying the Cardinal to conduct Protestant services was the United States Navy Chief of Chaplains, Rear Adm. Floyd Dreith.

WELLINGTON, New Zealand, Saturday, Dec. 28 — Cardinal Spellman, Roman Catholic military vicar to the United States armed forces, arrived back in New Zealand this morning after his five-day visit to Antarctica. He was to leave later for Honolulu.

The Catholic News

BYRD STATION, Antarctica—Francis Cardinal Spellman celebrated two Christmas Days in the Antarctic snowland, offering Masses under the ice for U.S. Navy men and scientists at three different stations and another Mass on shipboard.

Because the International Dateline passes between Byrd Station and certain oth-

er American scientific bases in Antarctica, the Military Vicar of Catholics in the U.S. Armed Forces was able to mark December 25 a second time here. The Cardinal flew with the Chief of Navy Chaplains. Rear Adm. Floyd Dreith to widely separated points on this continent which is one-third larger than Europe. As Cardinal Spellman offered Mass at the various bases for Catholic personnel, Chaplain Dreith held Christmas services for the Protestants.

The 74-year-old Archbishop of New York was on his 13th Christmas visit to American servicemen overseas. He offered Christmas midnight Mass in a small dispensary at South Pole Station, man's southernmost outpost in the world. Adm. Dreith conducted Protestant candlelight services in the station's recreation room at the same time. Afterwards, the two churchmen flew back to McMurdo Station, main American base in Antarctica. There the Cardinal offered another Christmas Mass in McMurdo's Chapel of the Snows, and later joined Chaplain Dreith in having Christmas dinner with the men of McMurdo.

Cardinal Spellman in an informal talk after the McMurdo dinner said that his midnight Mass at the South Pole "was an important climax to my years of visiting the armed forces."

"You men here are helping to preserve America's peace by working in harmony with men of other nations," he continued. "It takes great time and effort."

He added: "I am a priest of God, and I want peace. No man wants peace more than I do."

The next day, the Cardinal and the Chief of Chaplains

The Polar Times

Published June and December by the
AMERICAN POLAR SOCIETY,
Care August Howard, Secretary,
98-20 62nd Drive (Apt. 7H),
Rego Park 74, New York.

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.

flew the 920 miles here to Byrd Station, where they were welcomed by the officer in charge, Lt. (j.g.) Melvin Chiogioji of Honolulu, and the base scientific leader, Ron Sefton of Stanford University, Palo Alto, Calif.

After a brief tour of the Byrd Station ice tunnel, the Cardinal heard confessions in the science building, which was converted into a chapel. After confessions, he again celebrated Mass.

He told the men: "Your work here has truly inspired me. I will return to our homeland to tell people of your accomplishments. I am reminded today of Admiral (Richard E.) Byrd, who was a personal friend and this station's namesake. This underground city is certainly a tribute to him. The man who designed it deserves to be recognized."

After the Catholic and Protestant services, the Cardinal and Chaplain Dreith were guests at Byrd's Christmas dinner.

In the course of the dinner, Chaplain Dreith remarked: "This is undoubtedly one of the best Christmas meals I have eaten, and I have never before celebrated Christmas as often as this year."

Cardinal Spellman told the men that this was the most memorable Christmas in all his 24 years as Military Vicar.

At South Pole Station the previous day, Cardinal Spellman, with the traditional scarlet cloth of his office showing through the heavy Arctic clothing given him by the Navy, joined Adm. Dreith in visiting the exact geographic south pole, about 1,000 yards from the main station building.

After his Mass, the Cardinal greeted each man personally and presented each with a special medallion struck for the occasion of his visit.

After the services, Cardinal Spellman, Adm. Dreith and Rear Admiral J. R. Reedy, commander, U.S. Naval Support Force, Antarctica, flew back to McMurdo Station, hub of the Navy's "Operation Deepfreeze."

There Cardinal Spellman and the party visited the Navy's largest ice breaker, the U.S.S. Glacier, on Christmas Day. Flown to the ship by helicopter, Cardinal Spellman first heard the confessions of Catholic personnel and then offered Mass.

U.S. and Soviet Scientists to Join In Antarctic Cosmic Ray Study

By JOHN W. FINNEY

The New York Times

WASHINGTON, Sept. 3 — American and Soviet scientists will collaborate in the Antarctic this year in an unusual investigation of cosmic rays.

Plans for the project were announced today by the National Science Foundation in describing a wide program of research to be conducted in the coming Antarctic summer.

The United States-Soviet project will study how cosmic rays, particularly those from the sun, vary in energy, time and location as they come into the earth's atmosphere.

At the Byrd, South Pole and McMurdo Sound stations operated by the United States, radio antenna towers ranging in height from 105 to 190 feet will be erected. Similar towers will be erected at one or two Soviet stations.

From one of the stations, powerful, very high frequency radio signals will be beamed at the ionosphere, the electrically charged layer in the upper atmosphere.

Some of the signals will be scattered downward by the ionosphere and recorded at another station, some 600 miles away.

By studying the changes in the reception of the radio signals, it will be possible to take indirect measurements of the cosmic rays.

As these high-energy particles hit the upper atmosphere, they generate a cascade of nuclear reaction, thus changing the composition of the ionosphere and its radio-reflective properties.

The Antarctic is particularly suited for such measurements because cosmic rays are guided by the earth's magnetic lines of force, which converge in the polar regions.

The cooperative project grew out of informal discussions between American and Soviet scientists at a European scientific meeting.

It received quick backing from the National Science Foundation, which noted that "such cooperation is in keeping with the spirit of the Antarctic treaty," establishing the principle of peaceful research on the Continent.

The research will be part of the International Years of the Quiet Sun in 1964 and 1965. Several other nations with bases in the Antarctic are reported to have expressed interest in

participating in the cosmic ray project.

In another cooperative effort with the Soviet Union, George H. Meyer of the University of Texas will spend a full year at Russia's Mirny station studying microbiology in the area. It is expected that a Russian scientist, in turn, will winter at one of the United States stations.

Some 150 American scientists from about forty institutions will be engaged in research in the Antarctica during the southern hemispheric summer which begins next month and ends in late February.

The National Science Foundation expects to spend about \$7,000,000 supporting the research program.

Among new research projects to be undertaken are two separate studies of Antarctic seals.

Dr. Carleton Ray of the New York Zoological Society will investigate the physiology and ecology of four species. The research will call for scuba diving in the ice-covered waters to depths of 200 feet to photograph the behavior of seals in their natural habitat.

A University of Arizona research will study the diving behavior and physiology of the Weddell seal, which has been known to dive to a depth of more than 1,000 feet.

Of particular interest to the physiologists is the seal's mechanism for surfacing from such depths without suffering from "the bends."

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Two Navy Planes Pioneer Route Over South Pole

Craft Take Off on Trip From South Africa to McMurdo

CAPETOWN, Sept. 30 (AP)—Two United States Navy C-130 aircraft took off from Capetown today on a 4,600-mile nonstop flight to McMurdo Sound in Antarctica.

The flight could blaze the way for commercial flights over the South Pole to Australia.

A South African Air Force plane, sent out from Capetown to check weather conditions on the way to Antarctica, reported by radio that conditions for the flight were ideal. The Americans earlier had a forecast from McMurdo indicating good conditions for their arrival.

Each plane carries a crew of 10 men. The estimated flying time is 15 hours 10 minutes.

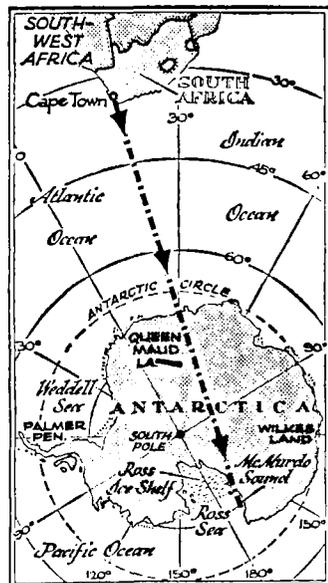
Preparations for Flight

By ALLYN BAUM

The New York Times

CAPETOWN, Sept. 29—Briefings, tune-ups, weather checks and radio communication tests have been held in the last week to prepare the two Lockheed Hercules aircraft for their polar flight from the D. F. Malan Field near here.

The flight is under the command of Rear Adm. James R.



The New York Times Oct. 1, 1963
Path of the flight shown

Reedy, commander of the United States Navy support forces in the Antarctic. During the last week he has attended meetings here of the Scientific Committee on Antarctic Research, of which he is a logistics committee member. The two participating planes are from Air Development Squadron 6.

A South African Navy frigate, the 3,000-ton Transvaal, under the command of Com. William Douglas Hogg, is sta-

tioned 1,200 miles south of Cape Town in the Antarctic Ocean at Lat. 18 degrees 30 minutes S., serving as a navigation marker, emergency radio point and rescue vessel.

Weather reports have been pouring in here from McMurdo Sound, points in South Africa and international bases along the Antarctic coast. They are being coordinated by the task force's chief meteorologist, Com. Kenneth Allison of Corsicana, Tex.

For a brief period there was a communications blackout between here and McMurdo that caused concern to Commander Allison, who needs the weather forecasts on almost a minute-to-minute basis. But communications were restored and there is now a steady stream of information being sent here from McMurdo by way of Christchurch, N. Z.

Atmospheric interference caused by an aurora belt between South Africa and McMurdo prevents direct communication. During the flight, this blackout is to be investigated.

The two craft carry 9,600 gallons of fuel each, enough for 17 hours of flying.

The pilot of the lead plane is George R. Kelly of El Dorado, Ill., and the plane commander is Lieut. Comdr. Richard Gordon Dickerson of Pocatello, Idaho.

The pilot for the wing plane is Lieut. Comdr. William B. Kurlak of New York, N. Y., and the plane commander is Lieut. Comdr. John D. Stich of New Orleans, La.

from 1964 to 1965.

Another is a program of cooperation in space exploration. Although somewhat limited in scope so far, it promises to include East-West cooperation in satellite observation of the earth's weather.

Some participating scientists voiced the hope today that the nuclear test-ban treaty would help clear the air for greater Soviet-American cooperation in study of the earth. Several Soviet delegates are attending this week's meetings.

Antarctica Asks for Ice
CHRISTCHURCH, New Zealand, Oct. 30 (UPI)—American scientists conducting research at McMurdo Sound in Antarctica sent an urgent request today for a shipment of ice. Officials here said the scientists needed dry ice for use in transporting six seals from McMurdo to a New York zoo.

Lichens Survive in Antarctic
Lichens are among the few simple plants able to survive Antarctica's freezing weather, winds and lack of fresh water and ice-free soil.

ANTARCTIC FLIGHT CALLED 'HISTORIC'

By ALLYN BAUM

The New York Times

McMURDO SOUND, Antarctic, Wednesday, Oct. 2—Two ski-equipped Navy transport planes ended today a pioneer 4,700-mile trip from Capetown, South Africa.

The Lockheed C-130 Hercules planes landed here at 12:31 A.M. after a nonstop flight of 14 hours 30 minutes.

Rear Adm. James R. Reedy, commander of Navy support forces in the Antarctic, conceived and led the flight. He called it "historic."

It was made in perfect weather, at altitudes of 25,000 to 31,000 feet, where the temperature outside was 79 degrees below zero.

The lead plane was flown by Comdr. George R. Kelly of El Dorado, Ill. Lieut. Comdr. William B. Kurlak of New York flew the wing plane.

Carrying 10,000 pounds more than their usual weight and fuel for 17 hours' flying, the two aircraft traveled a course due south from Capetown over the Antarctic Ocean. They covered 1,400 miles of the uncharted Antarctic Plateau to Pole Station at the South Pole.

From there it was an easy 750-mile run to McMurdo, site of the main United States base in the Antarctic.

The Antarctic coast first showed on the radar scope ten minutes after the planes had passed the point of no return, 7 hours 11 minutes out of Capetown.

Admiral Reedy was greeted by 100 of the 224 men of McMurdo's winter party. He officially opened the base's summer-support season.

The flight capped 35 years of Antarctic aviation begun Nov. 16, 1928, by C. B. Eilsen and Sir Hubert Wilkins. It may be a pathfinder for commercial flights over the South Pole.

The use of the southern polar route could link Australia, South Africa and South America without the necessity of longer flights over the southern Atlantic and Pacific.

On board the planes were twenty crewmen and eight passengers. Commander Kelly is chief of Navy Air Development Squadron 6.

Two other C-130's had stood by on search-relief duty, but were not needed.

The flight was smooth and comfortable. Radio communications between the planes and the Pole station, extending up to 2,700 miles were called "phenomenally good."

SCIENTISTS STUDY RESULTS OF I. G. Y.

World Delegates Gather to Discuss Geophysical Year

By WALTER SULLIVAN

The New York Times

LOS ANGELES, Aug. 12—Scientists from all parts of this planet gathered here today to discuss their study of it.

Their task is to review the results of the International Geophysical Year of 1957-58 and its successor programs.

It was evident that the cooperative exploration of the earth and its environment, initiated by the I.G.Y., will continue for decades or even centuries.

The program will include observations at moon stations and from aboard vehicles penetrating all parts of the solar system.

Dr. Sydney Chapman of Britain, chairman of the committee that ran the I.G.Y., set as a prime goal the mapping of magnetic fields throughout the solar system. Changes that

occur as the sun goes through its 11-year sunspot cycle would be observed.

One of the successors to the I.G.Y. is a survey of the world's magnetic field.

The five-day conference, on the campus of the University of California at Los Angeles, is being sponsored by the National Academy of Sciences and the International Committee on Geophysics, successor to the I.G.Y. secretariat.

The meeting is part of the academy's centennial celebration. About 40 papers are being presented on the significance of I.G.Y. research in space, the atmosphere, the oceans and within the earth.

After five years, much of the I.G.Y. data has been analyzed. The conference thus seems timely, particularly because geophysicists are coming to California from all over the world to attend the General Assembly of the International Union of Geodesy and Geophysics in Berkeley later this month.

The I.G.Y., in addition to inaugurating the era of space exploration, has given birth to a wide range of international research programs. One, known as the International Years of the Quiet Sun, is designed to study earth-sun relationships at the low point in the sunspot cycle

POLAR BLACKOUTS ON RADIO 'READ'

Physicist in Antarctic Says
Solar Flares Are Cause

By **ALLYN BAUM**
The New York Times

McMURDO SOUND, Antarctica, Oct. 3—The prelude to the forthcoming International Year of the Quiet Sun, which officially opens Jan. 1, has been anything but quiet here this autumn.

Ernest Svaton, a 33-year-old physicist from Santa Monica, Calif., recorded last month three events in succession of polar cap absorption of such intensity that radio blackouts for extended periods of time isolated McMurdo Sound and other American stations in the Antarctic from their usual communication channels.

The last blackout was so severe it almost led to the delay of the pioneer Navy flight of two C-130 Hercules aircraft from Capetown, South Africa, over the Antarctic ocean and continent to McMurdo Sound on Sept. 30.

The polar cap absorptions were recorded on a riometer (relative ionospheric opacity meter) manned by Mr. Svaton for the last 12 months. The riometer is an ultrasensitive radio receiver that "reads" radio noises from beyond earth that reach its atmosphere.

Polar cap absorptions are caused by solar flares or tremendous gaseous explosions on the sun, which, in turn, cause particle streams from the sun to bombard the earth's iono-



The New York Times (by Allyn Baum)

CHECKING IONOSPHERIC PHENOMENON: Ernest Svaton, physicist from Santa Monica, Calif., with his equipment near McMurdo Sound in the Antarctic. The scientist is studying the ionosphere, layer of the earth's atmosphere, to determine the causes of periodic radio blackouts.

sphere 45 to 60 miles above its surface.

When these particles hit the ionosphere, they cause an increase in the ionization (altering of the electrically charged particles) of the ionosphere. This is usually accompanied by a radio blackout.

A polar cap absorption is an episode in which there is a blackout of radio waves that pass from one point on earth to another through one of the polar regions. It has been found that the episode results from the arrival of a stream of pro-

tons in the polar regions a few days after these sub-atomic particles have been discharged from the sun in some solar disturbance.

"That there should be three polar cap absorption phenomena in succession, and each of increasing magnitude, is hard to explain," Mr. Svaton said.

"The sun is now entering the period of its 11-year cycle when sunspots, solar storms and the like should be at a minimum."

Mr. Svaton is attached to the United States Antarctic Research Program. An employe of the Douglas Aircraft Company, he plans to spend 18 months more here during the peak season of the Year of the Quiet Sun.

"We must find out about the ionosphere," he declared. "We must learn what it is and the agents that cause the absorption of radio waves—radio blackouts."

"If we can get some notion about these solar particles, when they're due to arrive and the like, it will help immeasurably in the launching of manned space vehicles," he continued. "Our knowledge will not only help protect the lives of our astronauts, who would be badly hurt if exposed to these particles, but it can help in the manufacturing of the space capsules that carry the astronauts.

"By building lighter capsules, without heavy protective armor shieldings, we can pack in more instruments for scientific investigation and give the astronauts more room to work in.

EXPERT PRESENTS ANTARCTICA DATA

Tonnage of Ice Is Put at
Over 22 Quadrillion

LOS ANGELES, Aug. 17—(AP)—On a recent warm August day, an adventurous young scientist presented some cooling statistics about the antarctic the southern most continent. It is apparently covered by 22,000,000,000,000 tons of ice.

At the South Pole, a measurement by Soviet scientists found the ice to be about 9,000 feet thick.

Each year the mean fall of fresh snow is about 1½ feet over a total area of about 4,500,000 square miles.

The mean temperature year around is 67 degrees below zero Fahrenheit, in the middle. It is warmer near the seacoasts, but rarely does the thermometer rise above freezing.

The scientist is Dr. Charles R. Bentley, 33 years old of the University of Wisconsin's Geophysics and Polar Research Center.

Prof. Bentley qualifies as an expert, having spent 33 months there, 10 of them during the totally black winter months, and having traveled 4,000 miles across the continent's frozen face on heavy tractor-treaded vehicles that are prey to hidden crevasses.

Dr. Bentley described some of the latest findings about Antarctica to a scientific symposium summarizing results of the International Geophysical Year of 1957-58, and results since then from continuing cooperative efforts by scientists from many countries.

As one consequence, Antarctica has been declared off base for any activities smacking of military purpose or design by any nation.

In 1957, Antarctica was still largely unknown, Dr. Bentley remarked. The hardships and adventures of solving some of its mysteries of terrain, ice, weather and ocean currents have been shared by scientists from the United States, the Soviet Union, Britain, Australia, New Zealand, Japan, Belgium, Norway, France, Argentina and Chile.

Dr. Bentley told of problems of accurately determining altitudes above sea level, of measuring the exact thickness of the ice cap, measuring annual snow fall, or answering the question whether the Antarctic continent is really two land masses divided by some hidden trough, snaking between the Ross and Weddell Seas.

And, he said, it presents many unsolved mysteries still, such as whether the great ice cap is growing or shrinking.

ICE THAWS EARLY IN ANTARCTIC SEA

Aircraft Sight Open Water
North of McMurdo

The New York Times

McMURDO SOUND, Antarctica, Oct. 10—Flights over the Ross Sea, which usually is clogged with heavy ice at this time of year, have disclosed many cracks and leads in the ice, wide regions of thin ice and, here and there, stretches of open water.

It is one of the earliest sightings of open water and thin ice in the area in the memory of United States personnel stationed here the year around.

The area surveyed extends from McMurdo Sound to the American-New Zealand base at Halletts, 387 miles to the north

Just 27 miles north of McMurdo, at Cape Royds on the east side of Ross Island, and 37 miles to the west, at Cape Crozier, open water was sighted as early as a month ago.

Last year, ships carrying supplies arrived here three weeks late because of the extremely heavy ice encountered between Port Lyttleton, near Christchurch, New Zealand, and McMurdo.

The delay caused a serious shortage at this United States base, for the nuclear power plant that supplies its fuel had broken down earlier in the year.

After last year's experience, the Navy scheduled the supply ships to arrive here three weeks later, to avoid difficult ice conditions. It now appears to be too late to revise the schedule again to take advantage of this year's early thaw, however.

Accompanying the early melting of the ice, the weather has been moderate in general, with temperatures at McMurdo hovering around 5 degrees above zero.

MEN AT M'MURDO HAIL THE SUMMER

First Mail Plane Joyously
Greeted in the Antarctic

By ALLYN BAUM

The New York Times

McMURDO SOUND, Antarctica, Oct. 2—On a gray, overcast, somewhat forbidding Antarctic morning, with temperatures hovering near minus 25 degrees Fahrenheit, 200 men, nearly the entire wintering-over party of 224 men from McMurdo, stood in the vast plain of the frozen Ross Sea stamping about in their big, white, thermal "bunny boots" and flapping their arms in their overstuffed parkas to keep warm. Every once in a while, one man, then another, would peer north toward Mount Erebus, Antarctica's only known active volcano, looking for a speck in the sky that would announce that their seven-month isolation from the rest of the world was at an end.

The sun, it is true, rose on Aug. 20. The American flag was raised and then lowered as the sun peeked over the horizon, and then set. But no one at McMurdo saw the sunrise. Just a feeble glow of light was all that marked the event.

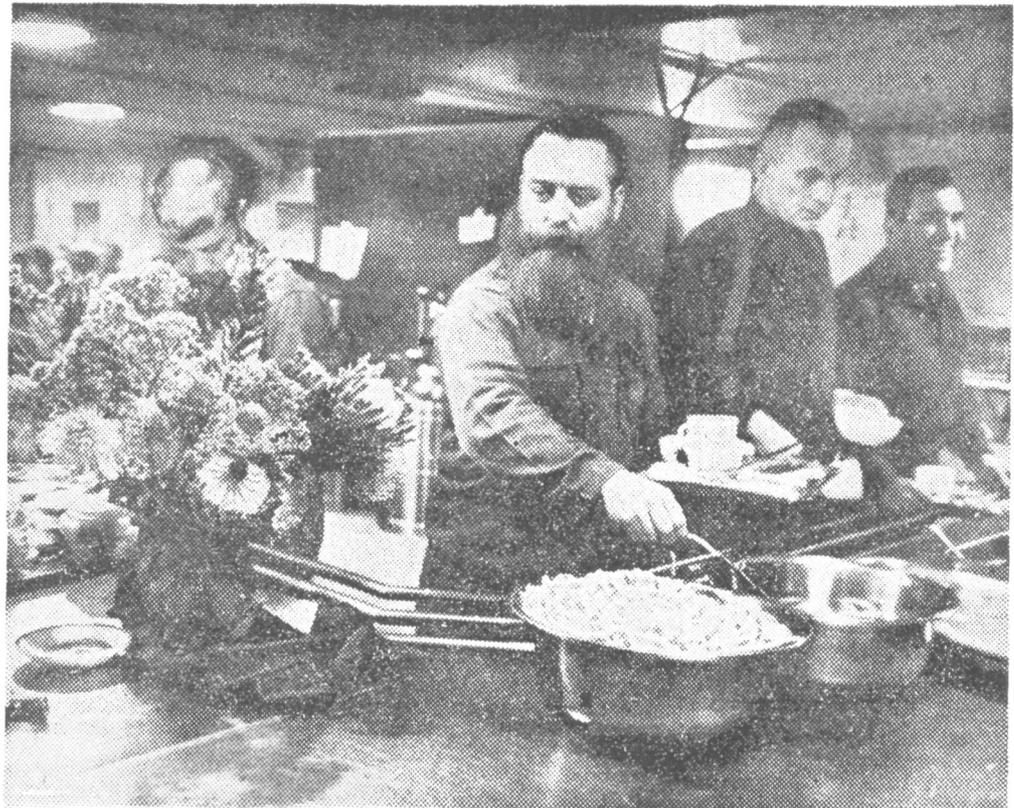
Overcast and blowing snow precluded sight of the sun. In fact, it was not until Aug. 27 that two United States Antarctic Research Program scientists climbed Observation Hill, 747 feet above McMurdo, and caught a glimpse of the sun as it broke momentarily through the snow and clouds.

But winter for the men does not really end here with sunrise. It is not until the first airplanes arrive with mail, relief personnel and news of the outside world that the wintering-over men know that summer is here.

The men had been standing around Williams Airfield, four-and-a-half miles from McMurdo since 3 A.M. They knew that two Lockheed Hercules C-130 aircraft had left Christchurch, N. Z., five hours earlier on Sept. 29, and that the flight to McMurdo usually took eight hours.

At 5:40 A.M., Sept. 30, one of the men spotted the lead Hercules in the distance. And a few minutes later the ungainly silver plane with its orange recognition patches swooped down on the field's 6,000-foot skiway and slid to a halt. It was 5:47 A.M., and winter, which began March 15, was over for McMurdo.

Quickly the men surrounded the plane. They shouted, pounded each other on the back, took pictures of each other, pointed to the plane and then to the sec-



The New York Times (by Allyn Baum)

DINING HALL BOUQUET: Arrangement of South African flowers brightens mess at McMurdo Sound in Antarctica. The flowers, a gift from the people of South Africa, were flown in from Capetown. The bouquets provided a welcome addition to ice-bound area.

ond Hercules making its final approach in the gusty winds.

Moments after the propellers stopped spinning, the door of the lead Hercules dropped open and Capt. Roy G. Shults, chief of staff of the Navy Support Forces in the Antarctic, stepped out. Before he had a chance to catch his breath, he found himself in a bear-hug embrace of McMurdo's commanding officer, Comdr. Robert Harvel, of Conway Center, N. H.

"Boy, are we glad to see you," Commander Marvel shouted to Captain Shults.

Then a hush fell, and there was a rush to the planes to begin unloading sack after sack of mail. The plane also carried emergency spare parts and 56 relief personnel. But all was ignored for the mail, which was quickly loaded into waiting helicopters that stood by to haul it to the base post office. There, volunteer mail clerks stood ready to sort and distribute it.

For a while McMurdo was a ghost city. The men had retired to their quarters to read the latest news from home.

The principal craving of the men during the winter, aside from mail and a glimpse of the sun, was for fresh fruit and "something, anything, green."

When the Capetown-McMurdo Sound flight arrived Oct. 1—after the relief flights landed—they brought with them bouquets of South African desert

flowers.

The flowers were taken to the mess halls where the men oohed and aahed over them. They took pictures of the flowers and posed for photographs with the bouquets.

Winter here this year was one of the stormiest, windiest and warmest in the base's history. The record low was recorded on Aug. 3 when the mercury dipped to minus 55. Peak wind gusts were recorded at 99 miles-an-hour June 14. And from Aug. 18 to Sept. 3, for 17 days, McMurdo suffered its longest blizzard, with gales whipping down Nooki Poo Drive, the main street, at 68 miles-an-hour.

Although McMurdo has been relieved, 66 Americans at Byrd and Eights Stations, 922 and 1,578 miles, respectively, from McMurdo, and at South Pole Station, 839 miles farther south, must wait until the cold moderates to get their mail and their relief.

To a new arrival in Antarctica, the men who wintered-over have a pasty, waxen complexion caused by the six-months' darkness that they have endured. Almost all have beards, some quite trim. Their manner is aloof, but friendly.

During the winter, there were three big parties—the sundown party on April 21, the day the sun set; then the midsummer party, on June 21, that marked the halfway point, and the sun-

up party Aug. 20. The festivities were marked by steak-frys, beer-busts, the "190 cocktail," fruit juice and grain alcohol.

Many of the men took classes in history, general science, physics and mathematics. The highlight was a Russian class taught by a Soviet exchange scientist, Dr. Gennady Tarakanov of Leningrad. Dr. Tarakanov is dean of meteorology of the Institute of Hydrometeorology of Leningrad.

Most of the Navy men's work consisted of securing the base for winter, shutting down more than half the 67 buildings at McMurdo and caulking them against the wind and snow. The rest of the winter was spent preparing McMurdo and its adjacent air base for summer operations.

Norway's Antarctic whale oil production has dropped from 35 per cent of the world's total output in 1961 to 14.9 per cent last season. Her competitors, the Soviet Union and Japan, have steadily increased their production over the same period. Russia's share of the world output rose from 26.6 per cent in 1961 to 47.9 per cent and Japan's jumped from 17.7 per cent to 31.4 last season.

U.S. Base in Antarctic Adopts Soviet Scientist as Its Mascot

By ALLYN BAUM
The New York Times

McMURDO SOUND, Antarctica, Oct. 4 — The mascot of McMurdo is a shy, pot-bellied, avuncular Russian with twinkling blue eyes behind gold-rimmed glasses.

When Dr. Gennadi Tarakanov, an exchange scientist, arrived here from Leningrad, where he is dean of meteorology at the Institute of Hydro-meteorology, a school for meteorological and hydrological engineers, his vocabulary in English was limited to one word, heavily accented—"please."

Six months of daily joshing, American movies, rock 'n roll music, political banter, and a class he conducted in Russian for the wintering-over party at McMurdo have made him proficient in American vernacular. His favorite expression is, "Not bad."

"It has been necessary for me to talk by radio with Mirny [the Soviet Antarctic base 1,800 miles away] just to keep my hand in my native Russian," he said. "I have already forgotten several words. I've had to go back to my dictionary to look them up."

Dr. Tarakanov had been somewhat apprehensive about his reception at this American base. However, he was soon put at ease by the commanding officer, Comdr. Robert Marvel, and taken in tow by the scientists of the United States Antarctic Research Program. He was immediately nicknamed "Gin."

"What kind of name is this for a scientist?" he declared. "What does it mean? But then everyone begins calling me Gin so, alright, I'm Gin."

ANTARCTIC NOTES: CIVIC SPIRIT HIGH

But, Alas, Local Boosters
Find Nothing to Boost

By ALLYN BAUM
The New York Times

McMURDO SOUND, Antarctica, Oct. 5—Some random jottings from a correspondent's notebook in the Antarctic.

Piled high outside the Mess Hall, drifted over with snow, in 22-degree-below-zero temperatures, are rows upon rows of boxes, all carrying the legend, "Foodstuffs—do not freeze."

Remembering Things Past

Pinups in McMurdo are referred to by the wintering-over

Dr. Tarakanov, a veteran of the Battle of Stalingrad, is 39 years old. Married, he has two children, Sergei, 12, and Mariya, 6.

When Dr. Tarakanov arrived here, he wore a Russian polar outfit—wool shirt and underclothes, leather jacket, trousers and felt boots lined in shearling.

He has since taken to wearing Navy issue clothing—"one doesn't like to be a white crow"—although while working over his charts, he often wears a tubeteika, a small skullcap that is part of the national dress of Tashkent in Uzbekistan.

Dr. Tarakanov's hobbies have included playing the piano and photography.

The high point of his stay came on May Day, a few weeks after the Antarctic darkness had really set in. American personnel gave a party for him that was, as he described it, "a helluva smash." He was given a movie camera and a four-tiered cake, trimmed in red and inscribed in Russian.

Dr. Tarakanov has developed some opinions, too.

He dislikes Western movies—"too violent." He loves bourbon—"warms the gullet." He swoons over cheeseburgers—"they're like our cosmonaut—out of this world."

He also thinks Americans are wonderful—"a warm, warm people"—finds the Antarctic weather intriguing—"it's so unpredictable"—and would like to visit McMurdo again—"I've had a magnificent time."

party as "Memory Aids."

These old hands, pale, bearded and glazed of eye, have begun sporting orange and black buttons marked "Visitor." In a roundabout way, they are informing newly arrived replacements that they are about to depart these cold, isolated climes.

Chamber Nonplused

Once, during the long winter, some of McMurdo's best citizens decided to set up their own Chamber of Commerce. Unfortunately, at the first meeting, it was resolved that there was really nothing here to promote. The committee adjourned after five minutes.

The Good Life

The only female at McMurdo took the winter in stride. Lucky, a 3-year-old huskie of dubious descent (some say a cross between Scots Terrier, Dachshund and wolf) lives here like some-



The New York Times (by Allyn Baum)

GENIAL METEOROLOGIST: Dr. Gennadi Tarakanov, of Leningrad, is popular with Americans at McMurdo Sound.

thing straight out of a Hulot movie. Neither the snarling of Sno-Cat tractor engines nor the howling of the 50 mile-an-hour winds disturbs the tranquil lethargy of the friendly dog.

Navy personnel. The course wound through the windblown streets of McMurdo. The race was won by the men.

Problems of the Hams

The only contact with the outside world for the men who spend the winter in the Antarctic is through radio. And the McMurdo ham shack is perhaps the most popular spot on the base.

Radio operators get in touch with fellow hams in the United States, who in turn arrange "phone patches," or telephone contacts between friends and relatives of the men here.

These contacts are often very poor, sometimes fading out in mid-sentence. A notice in the ham shack reads:

"The following reason the phone patch has been poor and faded between McMurdo and your hometown and loved ones is because the ionosphere was interpolated by anti-icepherics, which was hypochlorused to the quadstar, resulting, naturally, in regent tamarind. This, unfortunately, leads to absolute muez-zin. We're sorry. Have courage and try us again."

The Fourth Estate

Summer has come. The McMurdo newspaper, a sheaf of stapled mimeographed news briefs, has changed its name once more. As the last ship left McMurdo in March, the newspaper proudly called itself The McMurdo Longtimer. As the winter deepened, the paper became "The McMurdo Sometimer," news then being rather sparse. But, as the first relief planes arrived on Sept. 30 with mail, new faces, news of home and elephant jokes, the paper took on the brisk new title of The McMurdo Shorttimer.

Man Beats Machine

The highlight of the 1962-63 winter, at the peak of the Antarctic darkness, was the holding of the first annual McMurdo Memorial Day "500," a race of 500 yards. The contest pitted 18 vehicles, including 10-ton Nodwells, nimble Sno-Cats and versatile Weasels, against 18 United States scientists and

ANTARCTIC RADIO IS KEY TO MORALE

On Calls to Home, Men Ask First About Their Cars

By ALLYN BAUM

McMURDO SOUND, Antarctica, Oct. 8 — At McMurdo Sound Petty Officer Walter R. Jones of New Preston, Conn., is known as the "morale man." To the world of ham radio operators with whom he is in contact 10, 12 and 18 hours a day, he is known as "The Old Man of the Ice."

Petty Officer Jones is a Navy man of 16 years. He has been a ham operator for five of those years. During the seven-month winter here he was assigned the seven-day-a-week job of establishing contact with ham operators in the United States so that telephone links might be made between the men of McMurdo and their families all over the world.

Petty Officer Jones makes about 60 radio contacts every day. Since October, 1962, he has supervised some 1,750 phone "patches" between McMurdo men and their homes. His family is living at Quonset Point, R. I., Mr. Jones' home base.

To McMurdo personnel, including the Soviet exchange scientist, Dr. Gennady Taranov, for whom Mr. Jones has tried to get a "patch" to his wife, the ham operator is known as Walt. And his ham shack, whose call letters are KC4USV, has become a sort of country store where the men pick up the latest news.

"Why we had the score of the last Dodger-Yankee game four minutes after play ended," the petty officer said.

Mr. Jones says the calls "are as much a morale factor for the wives, sweethearts and mothers of the men at home as they are for the men down here."

"I can't tell you what it means to the men to be cut off from the rest of the world, have no mail, no newspapers, no news from home and then out of the darkness we make a radio contact with a ham who puts through a phone call and there you are, talking with your loved one."

What do the men talk about? "Well first of all," Mr. Jones said, "they usually ask about their cars." "Then they ask about the kids, the finances, and then the health of everyone—and just about in that order. Don't ask me why they always ask about cars first."

Last winter, Mr. Jones had contact with the Air Force base at Thule, Greenland.



The New York Times (by Allyn Baum)

Walter R. Jones, a Navy petty officer, at his post.

"We were both so surprised," he said, "I think we both almost fell out of our chairs. We talked about the weather and then I mentioned I was located about 830 miles north of the South Pole and the ham at Thule replied, 'Isn't that a coincidence, we're about 830 miles south of the North Pole.'" "Then we talked about the nuclear power plants at both bases, which were supplying us with power for our units, and sort of signed off."

Petty Officer Jones makes contact with more than 165 hams in the United States willing to make "patches" for the men of the Antarctic. He completes about 14 "patches" daily for the men here.

Because of bad contacts between the Byrd and South Pole Stations and the United States during the winter, Mr. Jones ran the "patches" from McMurdo by way of a relay.

The men at Byrd or Pole would call him to arrange the "patch" in the United States. Then the ham in the United States would beam his signal to Byrd and/or the South Pole Station.

The men at these stations would give Mr. Jones the message, which he would pass directly to the wife, or relative, or friend of the man at Pole or Byrd and that person would reply directly to the man at the outpost stations.

"In this way, you see," Mr. Jones said, "though the men didn't actually talk with their loved ones—I did that—they would at least hear their voices."

The McMurdo ham shack is decorated with ham radio contact cards called "QSL's," which

CREW OF 3 RUNS ANTARCTIC BASE

Smallest U.S. Post in Region Provides Weather Data

By ALLYN BAUM

The New York Times

BEARDMORE STATION, Antarctica, Oct. 14 — Here on the Ross Sea Ice Shelf, 493 miles north of the South Pole, three men are settling down to a 30-day tour of duty at the smallest United States installation in the Antarctic.

The installation sits atop 210 feet of ice at the foot of the mightiest river of ice in the world, the 160-mile long, 60-mile wide Beardmore Glacier. Open water is 800 miles away to the north.

To the south, 26 miles away, tower the 10,700-foot peaks of the Queen Alexander and Commonwealth Mountain ranges, rising abruptly and majestically from the ice shelf itself.

The installation, a vital weather station and air navigation-checkpoint, is made up of a small hut, two 8-foot-by-8-foot plywood shacks and a prefabricated communications unit that looks like a small transformer on skis.

Despite its size, the station demanded a sizable problem in logistics—six months of planning, charts of sunrise and sunsets, tables of temperatures and wind, a 13-man construction team, four plane-loads of supplies and a concentrated effort by the main base at McMurdo Sound.

In all, 70,702 pounds of supplies were airlifted to Beardmore, including dehydrated garlic and popcorn kernels, a Monopoly set, five pounds of screws and four folding chairs.

The Beardmore Glacier, grinding endlessly and inexorably toward the sea at the rate of six feet a month, once served Scott, Shackleton and other explorers

are sent from one operator to another to confirm radio contact. Petty Officer Jones tries to acknowledge every contact made.

Conversations between the men and their family and friends are usually held in a private booth or over the ham operator's desk. Mr. Jones must monitor every conversation, but the contents of the calls are kept in confidence.

"I've been party to some might touching things," the petty officer commented, "sickness, 'dear Johns,' death . . . and some mighty happy things like hearing of the birth of one of our men's babies 40 minutes after it took place and arranging a 'patch' 8 hours later so the man could talk to his wife in the hospital.

and adventurers as the path to the South Pole in the heroic days of the Antarctic.

Today it is the home of three Navy men—Petty Officers Second Class Thomas Newbill of Willimira, Ore., and Wayne Durbin of Taylorsville, Ind., and Petty Officer First Class Otto Szanto of Quonset Point, R. I.

The men, all volunteers, steadily grind out weather reports to the McMurdo meteorological station. The information provides "interior" observations from midway between the 800 miles separating McMurdo and the South Pole.

Little Rockford, a 10-man base similar to Beardmore, has also been established. Little Rockford is 350 miles east of McMurdo and also operates as a weather bureau and air navigation marker for flights between McMurdo and Byrd Station.

Despite the isolation, life for the three men at Beardmore station will be cozy. An oil heater keeps their hut pleasantly warm. A small generator, which runs the radio transmitter and receivers, also provides electricity for lights and—if the men care to use them—electric razors.

Thirty feature-length movies, a chess set, a dart board and 50 books also have been cached away.

Temperatures at Beardmore during the summer months—October to February—average about minus 19 degrees, though drops to minus 42 degrees have been registered. The winds snap through the camp at 30 miles an hour and sudden gusts and storms rocket the winds to 70 mile-an-hour gusts.

There has been a Beardmore Station every year since 1957 but each year the camp must be relocated, re-established and rebuilt. Winters on the Ross Sea dump some 20 feet of snow on previous sites, crushing and burying food and equipment left from the preceding summer.

Putting up the camp is a grueling business. The 13-man construction team worked night and day in temperatures of minus-20 degrees completing the job in four days, exactly as planned and scheduled.

The first three-man team arrived with the last supply plane. The C-130 remained only an hour, long enough to unload the last of the supplies and to pick up the construction crew returning to McMurdo. The next plane is scheduled to land at Beardmore Station on Nov. 15, bringing in a new relief team, mail, fresh food, and perhaps another cache of movies.

Then it will be the same routine and the same silence, save for the whine of the wind through the antennas, the hum of generators, the static of the radio, and the occasional sharp crack, like pistol shots, from the direction of Beardmore Glacier as the mass of ice shoves forward another few inches into the Ross Sea.

ANTARCTIC ASTIR OVER THE PENGUIN

Men Despise the Birds, Yet
Are Fascinated by Them

By ALLYN BAUM

The New York Times

HALLETT STATION, Antarctica, Oct. 18—There's a club in the Antarctic to which all personnel of this station are members. The club is known as the I Hate Penguins Association. The reason for membership is that they live in the middle of a vast Adelie penguin rookery.

"Penguins are stupid" is perhaps the one phrase heard most often around Hallett. But despite professing vociferously their dislike of the two-foot high, black-backed, white-fronted, flightless bird, virtually every man at Hallett devotes all his spare time to penguin watching.

Staring at the first few birds to arrive this year, Francis Jennings Wiley 3d of Catonsville, Md., an ozone physicist who wintered over this last year said:

"I simply hate those birds. I can't stand them. They're stupid. They don't make sense. But here I am looking at them again just like last year. They hold almost a fatal fascination for me. What can I do? We've been here all winter and exhausted everything there was to talk about except, yes—penguins, and penguin stories. Maybe it's a force of habit."

Penguin watching, the men of this base will have you know, is a very refined art. It takes days to learn and hours to develop. Those who use binoculars are frowned upon as not true observers. To Douglas Suter of Wellington, N. Z., the New Zealand scientific representative at this joint United States - New Zealand station, the men who use binoculars as against those who observe close up "simply lack finesse."

How does one become a first-class penguin watcher in the accepted Hallett Station sense? "First," said Elwood Barnes, a cosmic ray scientist from Taneytown, Md., "you must learn how to get near the bird so that he won't run away, honk at you, or take a bite out of your pants leg. You must learn to approach the penguin so that he thinks you're another bird. And that's how stupid they are.

"You get close to them and just stand staring at them while they stand around staring at you. It's all very interesting except the Adelie's attention span is limited and within a few minutes the bird will either nod off to sleep, start singing to its mate, pecking at passers-by, or go off waddling around

Navy Acts in Penguin Emergency



The New York Times (by Allyn Baum)

Penguins at one of the threatened Antarctic rookeries

The New York Times

McMURDO SOUND, Antarctica, Oct. 15—A marked drop in the penguin population has led the Navy to order a reduction in flights around known penguin rookeries in the Antarctic.

Pilots have been ordered to refrain from flying below 2,000 feet or within a 300-yard radius of rookeries except where runways are situated.

for no particular purpose whatsoever."

One of the most important precautions here is the securing of doors to all buildings during the summer months. Lieut. Eldon Fitch of Newhill, Okla., the base doctor, tells this story of a frightening Sunday afternoon:

"I was asleep and then for some reason I began to feel uneasy. I awoke with a start and saw seven smelly Adelies standing, one beside the other, the length of my bed staring at me. I must have been snoring and attracted them.

"Anyway, they looked at me with that blank expression of theirs which somehow seemed to say, 'What's he doing in our nest?' I think they decided my room would make a good roost.

"What a time we had getting them out of the building. I called for help and four of us took an hour to round up the

The declining number of penguins is causing concern among the signatories of the Antarctic Treaty. At the Cape Royds rookery, 27 miles north of McMurdo, the drop in the Adelie penguin population has been so severe that it is feared the rookery will be extinct in 10 years.

It has been said that plane noises frighten the birds when they are nesting.

seven birds. They went skittering hither and thither, croaking and pecking at everything and everybody. The whole building was a mess."

For the men here, the summer is a cacophony of constant gurgling and squabbling among the 150,000 birds in the colony. "They'll be quiet for a few minutes," noted Harry Freimanis, an auroral physicist. "then a mass hysteria will sweep the rookery and the crazy birds go wild, screaming and pecking, at one another and running willy-nilly around the rocks. And just as fast as the hysteria started, it ends. I'm an old penguin watcher, but I never figured that one out."

Fish Metabolism Studied

The New York Times

McMURDO SOUND, Antarctica, Oct. 13, 1963—Dr. Donald Wohlschlag, of Stanford Uni-

Damage to Picket Ship Halts Antarctic Flights

The New York Times

McMURDO SOUND, Antarctica, Oct. 10—A crack in the keel of a United States Navy radar picket ship was discovered today and the vessel immediately headed for New Zealand for repairs.

The ship, the *Hissem*, has been stationed between New Zealand and Antarctica. She has been serving as a weather ship, navigation marker and emergency rescue vessel for flights between Christchurch, N. Z., and the United States base at McMurdo.

Another ship, the *Rotoiti*, is on her way to the *Hissem's* position. Until she does, flights between Christchurch and McMurdo are halted.

Antarctic Flights Resume

The New York Times

McMURDO SOUND, Antarctica, Oct. 12—Antarctic flights resumed today between Christchurch, N. Z., and McMurdo after a 36-hour delay. The *Rotoiti* has arrived at the picket station to relieve the disabled *Hissem*, thus permitting the resumption of overwater flights.

versity, head of the McMurdo Biological Laboratories, said today he had found that male fish of the *trematomus bernacchii*, a species common only in Antarctic waters, had a higher metabolism rate than females of the same species.

The studies, which took two years, showed the males grew more slowly than the females and lived shorter lives.

Dr. Wohlschlag intends to determine whether the male fish's higher metabolism is a result of expending so much energy in striving to exist in frigid waters. The male expends half again as much energy to maintain itself as the female.

It is believed that the higher metabolism recorded for the male is the reason he is smaller than the female—he does not have enough energy left over for growth.

Dr. Wohlschlag also intends to determine whether the male *trematomus bernacchii* will function better in waters a few degrees warmer than his natural habitat.

Dr. Wohlschlag also discovered that if 50 to 60 *trematomus bernacchii* formed a school, the oxygen consumption for each fish decreased to less than when the fish swam separately.

"The reason for this phenomenon," Dr. Wohlschlag said, "is social facilitation, which means simply that it takes less effort to live collectively than to live separately."

ANTARCTIC NOTES: ZIP CODE 96648

It Can Take a Long Time
but Mail Gets There

By **ALLYN BAUM**

The New York Times

McMURDO SOUND, Antarctica, Oct. 26—Further random jottings from a correspondent's notebook in the Antarctic, notebook in the Antarctic, where United States Navy support forces are stationed for another southern summer of research:

A sign at the McMurdo Post Office reads, "Attention all hands—your ZIP code is 96648." Everyone here is bewildered. They've never heard of the ZIP code. They also, upon being appraised, wonder if it really matters down here.

* * *

The 30-Pound 'Look'

The well-dressed Antarctic resident, when fully attired for a cold blow, is dressed in five layers of clothing. This includes waffleweave underwear, wool shirt, wool trousers and a wool sweater with a wool scarf for the neck.

Topping these are a fur-lined, wind-resistant parka with wool liner and a many-pocketed wind-resistant pair of trail pants, also wool lined and with drawstrings at the ankles.

For the head, the Navy provides a balaclava hat, face mask and special sunglasses to avoid snow glare. Two pair of socks and huge, white "Mickey Mouse" thermal boots take care of the feet.

For the hands there are five sets of gloves — cotton, wool, leather, leather mittens and bulky trail mittens.

Altogether the clothing issue comes to about 30 pounds.

* * *

A Tree Grows in M'Murdo

The pride of the Antarctic Research Program biological laboratory is a rubber tree brought here in 1959 by Dr. Donald Wohlschlag of Stanford University. It sprouted three new branches this winter, now has four in all.

* * *

Beards Stir Controversy

A popular saying here is "Short men with long beards make good napkins." The beards, incidentally, come in all sizes, shapes and colors.

Some men contend their beards protect them against wind and cold. Others, however, aver that breath condensation, which freezes on the beards, make them troublesome.

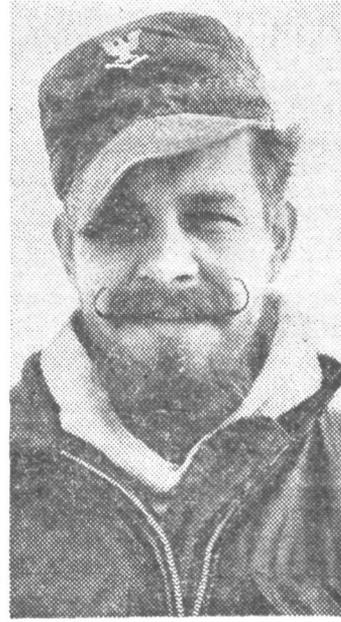
Beards in Antarctica Are Protective and Decorative



Edward Saylor's growth is a spade-shaped model.



Clarence Bennett sports a sort of Genghis Khan beard.



The New York Times (by Allyn Baum)
Elton Moore has his own variation on the Vandyke.

Scientists on Insect Hunt in Antarctic

By **ALLYN BAUM**

The New York Times

LAKE PENNY, The Royal Society Mountains, Antarctica, Nov. 14 — Four scientists are searching under the snow and rocks of this imposing mountain range for Springtail (collembola) insects and Acarina mites.

The scientists want to find out where these insects originated and how they survive the Antarctic winter.

So far, about 20 free-living and 18 parasitical species of insects have been found in the Antarctic. The most numerous are the Springtails and the mites, which have been found in the comparatively temperate climates of the Palmer Peninsula and McMurdo Sound.

Some, however, have also been found in the Beardmore Glacier area, 400 miles north of the South Pole.

This has led the entomolo-

gists of the Bernice Bishop Museum in Honolulu to look for insect life in the lofty, isolated Pensacola Mountains far inland on the South Pole plateau. These mountains, it is known through geological findings, were once in subtropical climates.

Natural Distribution

According to Kelly Rennell, of Napier, New Zealand, a member of the Bishop Museum group, one of the objects of the expedition is to determine the natural distribution of the Springtails and mites in the Antarctic. He explained it this way:

"The insects are minute, at most a millimeter in length, and almost as light as a piece of spider web. It is easily feasible that the bugs have been moved about the Antarctic by the winds, perhaps even introduced to the continent from other lands by way

of the winds. That's what we're going to try to find out."

Insect life has been known to exist in the Antarctic since 1897, when a Belgian expedition first discovered a colony of mites under a rock on the Antarctic coast. Springtails were found near McMurdo Sound in 1908.

Springtails and mites live under rocks and boulders during the summer. During the winter, the insects burrow into the permafrost and, as the cold increases, fall into a state similar to suspended animation, neither dead nor alive.

They remain in this state until the temperatures rise. As summer comes, the heat revives them and the insects take up their life as before.

According to Keith Wise, the leader of the expedition, the Springtails and mites seek out areas protected from winds with maximum exposure to the sun.

Some think beards are practical, saving on razor blades. Others are just lazy. Some raised beards because they're bored with their looks, others for lack of something better to do.

The prescribed lotion for a full, luxuriant beard is olive oil.

* * *

Some Even Made Sense

With the first relief flight that reached McMurdo, new movies also arrived. The cache of 400 old films had been shown so often that the men ran them

backward and supplied their own dialogue.

* * *

A Sight to Befuddle

Visibility last month got so bad that a man driving a 10-ton Nodwell Traverse tractor, which is about 15 feet long and 8 feet high, got out to see if he could spot one of the road markers between Williams airfield and McMurdo base. He spent the next two hours trying to find the Nodwell, which he could hear running nearby — a dozen feet away, in fact.

* * *

Yankee Ingenuity

After the last ship departed McMurdo in March, it was discovered that no shipment had been made of perforating tape used to punch out messages for automatic teletype transmission. Lieut. Neil Brown of Chicago, the communications officer, however, found dozens of rolls of 36-inch-wide brown paper.

He had a machinist's mate cut the paper into widths of eleven-sixteenths of an inch on a lathe. More than 350 miles of brown paper tape were cut.

BASE IN ANTARCTIC PROUD OF ITS COOK

As Toast of a Continent, He Uses 850 Basic Recipes

By ALLYN BAUM

The New York Times

HALLETT STATION, Antarctica, Oct. 17—First Class Petty Officer Theodore J. Miller, known throughout the Antarctic as "TJ," is a chef who insists upon being called a cook.

During the last year he has been part of the 18-man, wintering-over party of Americans and New Zealanders who run this station, which has both the most beautiful scenery and most accomplished cook on the continent.

Hallett is situated in the middle of a vast Adelie penguin rookery on the west coast of the Ross Sea, about 380 miles north of McMurdo Sound and 1,250 miles north of the South Pole.

In the year that Petty Officer Miller has been in charge of the one-man kitchen here, he has served 19,710 meals, baked 1,189 2½-pound loaves of bread and 642 cakes and pastries from peach cobbler to baked Alaska.

"I rely on about 850 basic recipes," he says, "but its what I add to them that counts. Of course I've got a couple of hundred other recipes I carry around in my head. I try them out on the men here whenever I get the urge to give them something different."

Mr. Miller, 35 years old, has been in the Navy 18 years and worked as a cook and baker on every kind of ship. But it was not until the winter of 1959 and 1960, when he was at the South Pole Station, that the legend of his cuisine spread around the continent.

Mr. Miller, who constantly whistles while he works, wears a blue baseball cap, a red shirt with rolled sleeves, faded blue jeans, and heavy G.I. shoes as he pads about his kitchen. He is distinguished by magnificent tattoos on his forearms and biceps.

Discussing the eating habits of the New Zealanders and the Americans, he said:

"They both like and dislike the same foods. The favorite meal is my steak dinner, which I serve once a week. Both the Americans and the Kiwi's won't eat liver and fish, but I think it's good for them so I serve it whenever I think they ought to have it.

"Of course the New Zealanders love lamb and mutton and the Americans don't, but I get around that by spicing the lamb up a bit and both groups are then satisfied."

Desserts are Mr. Miller's forte. "Everyone likes my pies," he said, "especially my French

apple pie a la mode." "But I've stopped serving it a la mode because I think the ice cream detracts from the flavor of the pie."

Each meal, other than breakfast, is a five-course affair, with two different meats, potatoes and vegetables.

"I try to give each man 4,500 calories daily. Meals include three loaves of bread per sitting and 21 ounces of meat per man per day for the 18 of us stationed here," Mr. Miller says.

The men of Hallett describe TJ as the most important man on the base. "We have to see him twice-a-day regardless and his mood—the mood of any cook at a small station like this—sets our mood and the mood of the base for the day," one said.

Mr. Miller prefers Hallett to his old South Pole base. "That high altitude [1,000 feet above sea level] at Pole Station got me," he says. "I just couldn't do anything right. I was always tired. It took hours for water to boil. And my bread, well, I couldn't get it to rise right no matter how I fiddled with the leavening."

The only remaining long-haul United States mail dog team operates on St. Lawrence Island in the Bering Sea. The mail is hauled 50 miles, from Gambell to Savoonga.

ANTARCTIC STORM STAGGERS U.S. BASE

Outlying Weather Stations Warn McMurdo of Winds

By ALLYN BAUM

The New York Times

McMURDO SOUND, Antarctica, Oct. 28 — McMurdo is digging out today from under a 14-hour blizzard in which gusts of 83 miles an hour shook the station's buildings much as a dog worrying a bone.

It began on a windless, dull, lead-colored day. The grayness of the sky contrasted sharply with the white surface of the snow and ice stretching south over the frozen Ross Sea.

Weathermen at McMurdo had been alerted that a storm was on the way. Shortly before noon, 18 hours after the storm had passed Little Rockford Weather Station on the Ross Sea 539 miles southeast of here, a white wall, like a sheet suspended from the sky, appeared on the horizon to the south about 60 miles away.

Swiftly the curtain moved forward, obscuring the mountains that surround McMurdo Sound. There was an ominous rolling appearance about the

6,000-foot-high wall of snow. The top of the snow front was crested with a feathery spume, like an ocean wave with a white cap.

The men scurried about, securing loose crates and material. Windows in the quarters were taped about the edges to keep out the wind. Tractors and other automotive equipment were covered with tarpaulins their engines left running to prevent freezing. And at Williams Air Field, four and a half miles away, the planes, which had been grounded on news of the storm's approach, were anchored with extra ropes and cables.

Here and there men gathered to watch the blizzard race at 56 miles an hour toward the station. It is rare in the Antarctic that a storm can be watched as it overtakes an installation or a party in the field.

When the storm struck it was with a rush, like air filling a vacuum. The men caught outside joined hands, bent over nearly double, and edged their way toward the nearest buildings.

Hour after hour the storm tore at the station. Operations were at a standstill. Despite all the amenities the men of McMurdo were at one with the early Antarctic explorers in their frustration with this continent. The weather brought life to a standstill. They could do nothing but wait out nature's protest.

But this at least was a storm for which McMurdo was prepared, thanks to a growing number of weather stations being developed and installed by the Antarctic Treaty nations on this continent. Most times the overpowering Antarctic blizzard strikes without warning.

From the meteorologist's point of view, weather forecasting in the Antarctic is all but hopeless. Comdr. Kenneth Allison of Corsicana, Tex., chief meteorologist of Deep Freeze '64, said:

"The best we can do, with a little luck, is forecast that a plane can get off the ground, fly safely for a few hours and return—or it can't go. Meteorologists in the Antarctic are observers, not forecasters. Even so, the weather here is so unpredictable that 95 per cent of our observations turn out to be meaningless."

Meanwhile, another Antarctic blizzard has passed. The skies over McMurdo are sparkling blue, the snow gleaming white, visibility unlimited and the temperature a mild 5 degrees below zero. Here and there, small groups of men are busy picking up debris tossed by the wild winds.

In the quarters, fatigue parties are busy sweeping out the snow and tidying up. And overhead, the planes are flying again on their resupply missions throughout the Antarctic.



The New York Times (by Allyn Baum)

THE BEST COOK ON THE CONTINENT: Petty Officer CS/1 Theodore J. Miller, left, gets some of his own food at the Hallett Station in Antarctica. Mr. Miller relies on 850 basic recipes to feed 18 men at the base.

ANTARCTIC POST FULLY PORTABLE

Newest U.S. Base Can Be
Reassembled in Days

By ALLYN BAUM

The New York Times

EIGHTS STATION, Antarctica, Nov. 4—Though this station is the newest, smallest and most remote American installation in Antarctica, it is probably the prototype for scientific bases that the United States may build here in the future.

It looks more like an automobile trailer camp than a major scientific station. Indeed, Eights is a trailer camp. It consists of eight weatherproof, prefabricated, air-transportable units mounted on runners and so constructed that each unit, measuring 8 by 8 by 27 feet, just fits snugly into the fuselage of the Navy's VX6-C-130 Hercules aircraft.

These planes ferried the units to this site last year from McMurdo, 1,578 miles to the west.

Once delivered, the eight trailer units were lined up, Pullman-car fashion, in two parallel rows of four units each. Between the rows, which were spaced eight feet apart, a floor

and ceiling were laid and, using the sides of the trailers as walls, a 127-foot hallway was realized.

Refrigerator doors were placed at both ends of the hallway, and there was Eights Station, completely erected and ready to be lived in less than 20 days after the last of 45 flights had finished bringing in the buildings, provisions, supplies and personnel.

Completely portable, the whole camp is designed to be disassembled, dragged unit by unit to a new site and reassembled in a matter of days.

This portability makes Eights and similar stations in the future comparatively cheap and easy to install and simple to maintain. It also avoids the expense involved in elaborate under-the-ice construction and maintenance, such as the case at Byrd and Pole Stations, which are built deep in tunnels dug under the polar cap.

Newly established, Eights Station serves as an upper atmosphere research station. It is owned by the National Science Foundation and operated by the foundation and the Navy. It is named for James Eights of Albany, N. Y., who, in 1830, became the first American scientist to work in the Antarctic.

During the last winter the station had a complement of six Navy support personnel and five scientists working in aurora and air glow, ionospheric research, very low frequency noise and geomagnetism.

Eights is probably the most

ANTARCTIC STUDY TESTS RADIO NOISE

VLF Transmissions Found
Sensitive to Whistlers

By ALLYN BAUM

The New York Times

EIGHTS STATION, Antarctica, Nov. 5—Curiosity on the part of Michael Trimpi of Palo Alto, Calif., has led to what may be an important discovery in the field of very low frequency noise reception.

This winter Mr. Trimpi studied the daily variation of VLF Navy transmissions from Annapolis, Md., on a very low frequency

comfortable station on the continent. Small, compact, warm and cozy, it is decorated in orange and cream. Each unit has two windows facing outside, but the windows are completely blocked by 12-foot drifts of snow that have piled up to the roof of the camp.

After each storm, all hands at the station pitch in shoveling snow off the roof to prevent the base from being swallowed in drifts. Some days, after particularly heavy blows, it is necessary for the men to dig their way out of Eights, piling the accumulated snow in the corridor of the station until they get to the top of the drift.

emission audio radio receiver. He noted that whistlers, an ionospheric phenomenon caused by the electric discharge of lightning, caused fluctuations upon the reception of the Navy signals.

It has previously been known that solar storms and flares affected VLF reception, but until Mr. Trimpi's find, whistlers never had been considered as a possible disturbing factor.

This discovery, which will need further investigation and confirmation, raises the problem of just why VLF reception should fluctuate violently because of the introduction of electromagnetic energy into the ionosphere.

Mr. Trimpi, 27 years old, who studied at Princeton University, first observed the change in VLF reception on Oct. 13. His graph material accumulated over the winter shows at least 100 marked changes in VLF reception attributed to the whistler phenomenon.

Mr. Trimpi said, "I don't know what or where this will lead. But it is certainly apparent we must now take another look at the whistler phenomenon as it affects VLF and get more events for study and comparison. This is going to entail greater work in the VLF field."

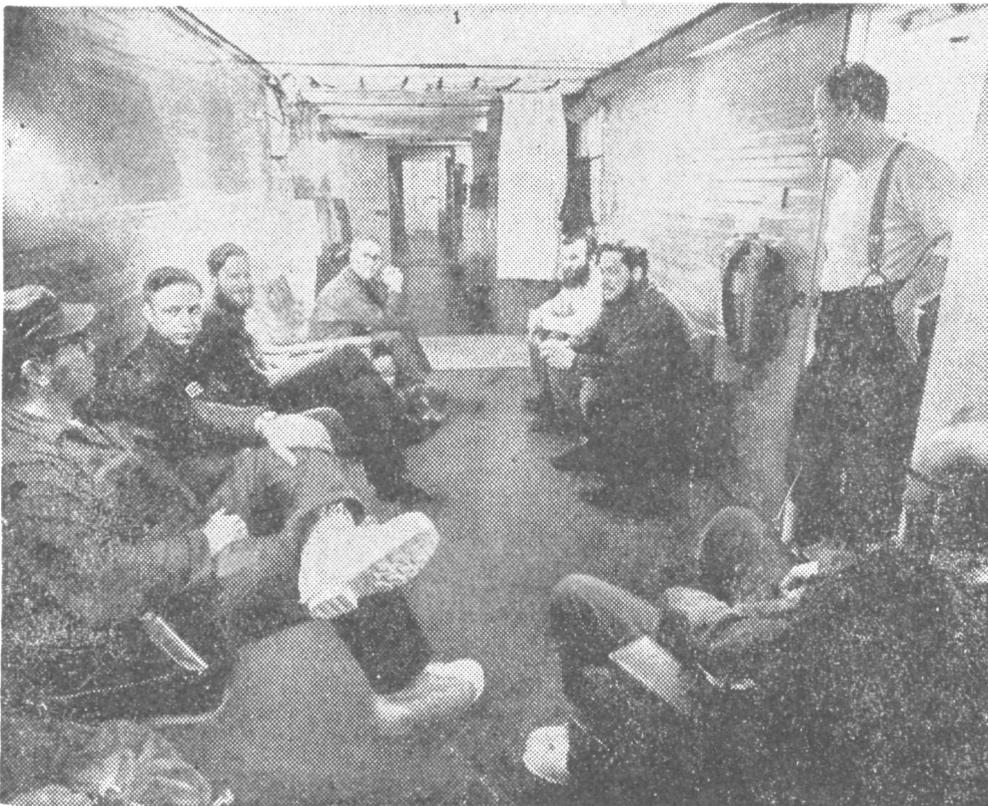
"In one of my charts, for instance," he said, "I have one whistler affecting two VLF receptions in completely opposite manners. On one frequency, the VLF reception increased, simultaneously, the other frequency decreased."

"I think," he went on, "it is going to be necessary for us to go over all the VLF records of Byrd Station as well as those of our conjugate point, Parc de Laurentides, 100 miles north of Quebec, as to whistler effects on VLF. There is no doubt in my mind that this finding must lead to further studies of whistlers."

Eights Station, where Mr. Trimpi has been conducting his studies, is on a direct magnetic line with a conjugate point at Parc de Laurentides. Simultaneous studies at these two stations examine VLF noises and signals that are generated in the ionosphere during the same periods of time each day.

The studies seek to determine how these noises travel on magnetic lines and why they are affected by the time of the day and the disturbances caused by solar flares and magnetic storms.

This is the first time an effort has been made in conjugate point studies with proper equipment in the Antarctic. The study is one reason isolated Eights Station was established.



The New York Times (by Allyn Baum)

View of interior shows corridor linking trailer units. Corridor serves as recreation area.

FIRST INSPECTION OF ANTARCTIC SET

2 U.S. Teams to Check Bases Under Terms of Treaty

By **WALTER SULLIVAN**

The New York Times

Dec. 8

Probably within about ten days, two or more teams of carefully picked and trained specialists are to head for various parts of Antarctica to exercise this country's inspection rights under the 12-nation Antarctic treaty.

It will be the first such inspection since the start of the cold war. The seven inspectors—officially known as observers—and their two alternates will seek to demonstrate that such a procedure can be businesslike while not treading on the toes of national pride.

Some hope their performance will help persuade Moscow that the inspection essential to any general disarmament program is not necessarily objectionable.

The observers are undergoing two weeks of briefings by authorities in many fields of science and foreign affairs. Shortly after these end, next Friday, they will fly to Antarctica. It is understood that they will be grouped into at least two teams.

One will go to the Antarctic Peninsula, known also as the Palmer Peninsula. Until signature of the treaty, in 1959, this 1,000-mile arm of land was the scene of bitter national rivalry between Argentina, Britain and Chile.

Another team will obviously visit at least one Soviet base, probably in the sector where the Russians and Australians are both active.

The inspectors are, in general, leading specialists in their fields. Three have served in the Advanced Research Projects Agency (ARPA) of the Defense Department, one as director and another as deputy director. The agency is responsible for devising new means for detecting nuclear explosions.

One provision of the Antarctic treaty outlaws nuclear explosions in the Antarctic and forbids the dumping of radioactive wastes in that area. The signatories include the Soviet Union and such Western powers as Britain, France and the United States. It is the first East-West treaty that provides for inspection.

Two of the observers are expert in Soviet-American relations.

One, John C. Guthrie, is director of the Office of Soviet Union Affairs in the State Department. The other, Frank G. Siscoe, speaks Russian, has served in Moscow, and is now

director of the Soviet and-Eastern European Exchanges Staff of the department.

Two others have had general Foreign Service experience. They are Richard H. Hawkins Jr., who has served in a number of posts abroad and was recently chief of the Division of Foreign Service Administration. Michel Ivy, born in Siberia in 1918, became a United States citizen in 1942 and has been in the Foreign Service since 1950.

Finally there are two specialists in polar wildlife. One of the stated goals of the treaty is "preservation and conservation of living resources in Antarctica."

Dr. Victor B. Scheffer is an authority on fur seals and other sea mammals of the northern Pacific and has also studied migratory wildfowl. He is with the Bureau of Commercial Fisheries of the Interior Department.

Dr. John L. Buckley was, until recently, director of the Wildlife Research Laboratory of the Bureau of Sport Fisheries and Wildlife in Laurel, Md. He has had extensive experience with wildlife in the Arctic and sub-Arctic.

The three men from ARPA are:

Dr. Jack P. Ruina, who until last July was its director and is now professor of electrical engineering at the Massachusetts Institute of Technology; Dr. George W. Rathjens, who has been deputy director of ARPA and is now with the Arms Control and Disarmament Agency, and Dr. Charles C. Bates, who is a supervisory geophysicist at ARPA.

Dr. Bates was once deputy director of the Division of Oceanography in the Navy's Hydrographic Office.

One requirement for the seven observers and their two alternates is that they know enough about scientific research in the Antarctic to enable them to spot activities not related to legitimate research.

They are expected to travel in ships and planes already in the area for normal operations, rather than in special aircraft. There are some 50 stations active in the Antarctic during the current southern summer.

The number is so large that only a sampling of the stations can be visited.

American officials want, however, to exercise the right of inspection, rather than let it become obsolete.

The treaty, which came into force on June 23, 1961, was signed by Argentina, Australia, Belgium, Britain, Chile, France, Japan, New Zealand, Norway, South Africa, the Soviet Union and the United States.

It permits any of the original signatories to send inspectors anywhere in the area that it sees fit.

Traffic Problem in Antarctic: No Parking Rules for Bicycles

By **ALLYN BAUM**

The New York Times

Press Rivalry

SOUTH POLE STATION, Antarctica, Oct. 25—The following are jottings from a correspondent's notebook in the Antarctic.

*
Long-Run Film

At the movies here the other evening, the men sat in rapt attention as a sports newsreel unwound, revealing the "Mile of The Century" as James Landy and Ron Delaney raced a four-minute mile neck and neck. Then someone realized that the "recent" sports newsreel was six years old.

*
Height of Irony

At the New Zealand station of Scott Base, at Pram Point, a few miles from McMurdo, the scientists at their aurora radar installation stop wind-blown, snow-encrusted Crater Hill have a sign cautioning visitors: "Please do not park bicycles against the building."

*
Sundays Run Together

Chaplains down here enjoy a two-Sunday-week nearly every week of the six-month summer, weather permitting. Usually, following Sunday morning services at McMurdo, the chaplain catches a flight 847 miles east to Byrd Station, which is a day behind McMurdo because the International Date Line runs between the two stations. Thus although he leaves McMurdo on Sunday he arrives at Byrd Saturday evening. The chaplain has supper and turns in, to wake up the next morning, Sunday at Byrd, to hold church services. Then back to McMurdo the same day, but Monday there.

*
'Beno Parties'

To enlisted men, staff conferences of officers throughout the Antarctic, are referred to as "beno parties"—there will be no this and there will be no that, etc.

*
Moving Invitation

At the entrance to the Hallett Station galley hangs a sign reading: "If you're unhappy with the food here we recommend Ah Fong's Restaurant—Oriental delicacies—just next door." Next door, for Hallett, is McMurdo 350 miles further south.

*
Superservice

It was bound to happen. The supermarket has finally arrived in Antarctica. McMurdo's minuscule Ship's Store, which in the past has specialized in 7-month-old, dried-out cigars, lighter fluid for hand warmers, and cloth patches advertising "Antarctic Ski Club," has gone self-service.

Hallett Station now has a daily newspaper. It is called The Hallett Hang-Over. Of course the 387 mile distance between Hallett and McMurdo precludes a circulation war between The Hallett Hang-Over, and McMurdo Sound's daily, The McMurdo Some-timer, but the appearance of a second daily on the continent forced the McMurdo publisher to delete the paper's slogan, "The only Daily Newspaper on the Antarctic Continent."

*
Radio Chess

At Eights Station during the winter, RM/1 Harry Davis of Washington played a six-month chess match by radio with a fellow communications man at McMurdo.

"We played one move a day," he said. Asked the name of his opponent, who won the match, the petty officer looked startled and said: "I forgot to ask."

*
Popular Raffle

The long arm of the United Fund has reached into the frozen wastes of the Antarctic. The Navy VX 6 Air Squadron is conducting a raffle to raise money to be turned over to the Navy collection being raised at its home base at Quonset Point, R.I. The cost of each raffle ticket is \$2. The prize is \$25 and a round trip to Christchurch, N.Z. for five days. Practically every man at McMurdo has a raffle ticket.

*
Keen Competition

Every society has its status symbol, and in the Antarctic it is a hunting or survival knife. All the men carry hunting knives and during lags in conversation compare their blades, keenness of edge and quality of steel.

*
Milky Way

Pilots flying in a "white-out," a condition in which the sky and ground merge because lightwaves bouncing back and forth between clouds and snow prevent depth perception, refer to the problem as "Flying in a milk bottle."

*
Air of Relief

Plans are afoot at Pole Station this year to provide summer visitors who drop in for an hour or so on sundry resupply flights with portable oxygen respirators. Pole Station is so high—10,000 feet—and so cold—temperatures hovering in the minus 30's—that visitors have difficulty breathing and moving about the station.

RARE SEALS LAND FROM ANTARCTICA

By JOHN P. SHANLEY
The New York Times

Three seals named Elsie, Mac and Murdo, travel-weary after a three-day, 12,000-mile flight from Antarctica, arrived at the New York Aquarium in Coney Island Nov. 15. Known as Weddell seals, they are believed to be the first of their species to survive after leaving the Antarctic, according to Christopher W. Coates, director of the aquarium. An hour after they were liberated from the wooden crates in which they had made the journey, they swam, dived, snorted and barked in one of the aquarium's outdoor pools. They were the survivors of a shipment of six seals captured during the last month in the McMurdo Sound area of the Antarctic. The three others perished on the trip because of the heat and were buried at sea. The seals were transported by a plane whose cabins were kept just under 60 degrees, but when the plane made its regular refueling stops the outside warm air apparently affected them. The Navy said that two of the seals died of the heat in Pago Pago, American Samoa. The third, a 3-week-old pup, died near Christchurch, N. Z.

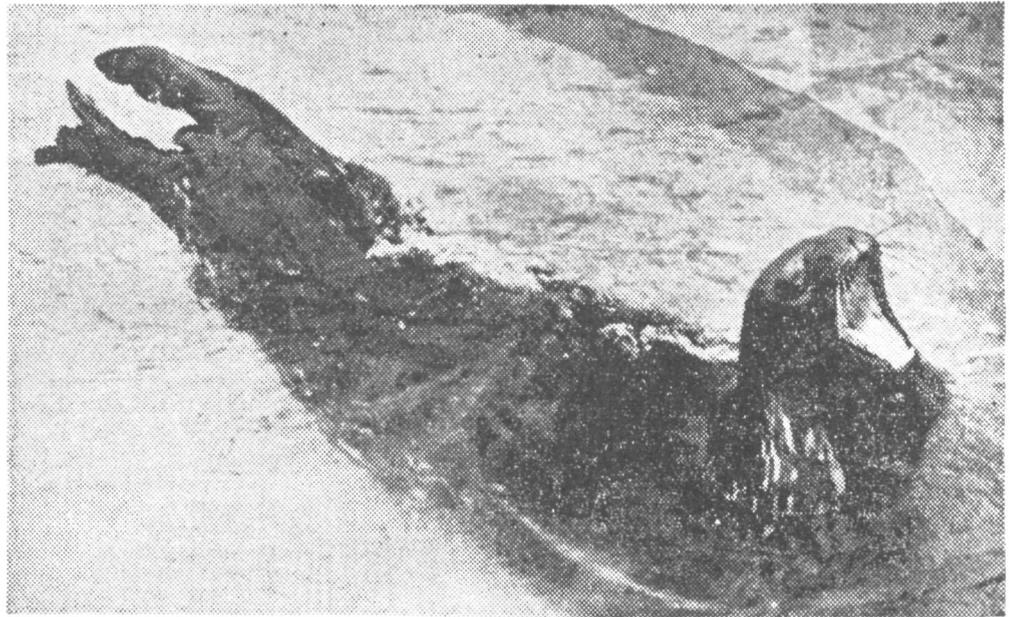
Mr. Coates said that the seals would have no problem surviving in the aquarium in the summer heat. The water they will be in, he said, will be at 53 degrees, which will be cool enough, even though it is about twice as warm as the water in the Antarctic.

One of the seals that died was the mother of Mac, the youngest survivor, who is less than a month old. When the truck carrying Mac and his two companions rolled up to the aquarium entrance, the baby seal was behaving like any other youngster who had endured a tiresome trip in a confining play pen.

He peered through the bars of his crate and wailed. When he was freed from the crate by aquarium attendants, and led to the pool, he hesitated. Mac had been captured on the ice when he was only a few days old; he had never tried swimming before.

After the first plunge, however, he seemed a happy pinniped. He and his two companions are "in wonderful health" according to Mr. Coates. Elsie weighs 750 pounds; Murdo, 250, and Mac, 150.

Weddell seals are named for



One of three Weddell seals gives the equivalent of a chortle in pool at the Aquarium

3 Seals From Antarctic Thriving in Aquarium

Rare Mammals Mew Like Kittens as Mercury Dips

By JOHN C. DEVLIN

As the temperature and then the rains came down Dec. 2, the spirits of three of the city's newest animal celebrities went up.

Mac, Murdo and Elsie, the rare Weddell seals from the Antarctic, "baa-a-ed" like sheep, mewed strangely like kittens, and tried to climb out of their pool at the Coney Island Aquarium.

"They are thriving," declared Christopher W. Coates, director of the aquarium. "They are also pretty good actors, because they liked our recent Indian summer weather, too. That tank water is a constant 53 degrees—enough to kill a man in 20 to 30 minutes—but they would climb out of it and bask in the sun. When they got cooked on one side, they would roll over and cook the other side."

The Weddell seal, rarely seen by man because of its geographic isolation, "lives in the coldest environment of any mammal, including the penguin," according to the aquarium. It spends much of its time under thick ice packs, coming up through crevasses and

James Weddell, a 19th-century explorer and naturalist.

The seals arrived on the Navy Super-Constellation at Floyd Bennett Field. With them was Dr. Carleton Ray, who has been conducting studies on them. The trip was made possible by a \$76,000 National Science Foundation grant to the New York Zoological Society.

other openings for air. Because of a lack of land predators, it is found "tame and fearless" among men.

In the Bay of Whales, in Antarctica, near where the seals were captured, the seawater temperature is 28.5 degrees usually. The aquarium's water temperature remains at 53 degrees summer and winter because it is drawn from the sea bottom off Coney Island, where the bottom temperature never changes, according to Mr. Coates.

Mr. Coates said that the seals, which arrived here Nov. 15 after a three-day, 12,000-mile trip by aircraft, were "slow and poky eaters" after they first arrived, as with all new acquisitions. They are believed to be the only Weddell seals in captivity.

Then the two smaller ones,

Mac, Murdo and Elsie Also Adapt to Indian Summer

followed by the biggest, started wolfing down live killies (minnow-like fish). They have since learned to eat frozen smelts and herrings, which are first thawed so as not to chill their gizzards.

Mac arrived weighing 146 pounds; Murdo, 246, and Elsie, 734. They will be reweighed today. Ultimately they will all weigh about 800 pounds and be eight feet long.

Paul L. Montreuil, curator of the aquarium, said all three had temporarily lost some weight immediately after arriving from the Antarctic "just like newly born babies when they first are taken home from the hospital—then they start gaining."

The hope ultimately is to mate them.

Bodies of Old Seals Found Mummified in Antarctic

MELBOURNE, Australia (AP)—Australian Antarctic explorers have reported finding the mummified bodies of two seals on the ice, 600 feet above sea level, and four miles from the open sea.

Seals normally stay close to the coast because it is difficult for them to move across ice or land on their flippers.

The Australian Antarctic Division of the Australian Department of External Affairs reported that the seals had probably died hundreds of years ago.

The bodies were perfectly preserved by dehydration in the cold air. Why they headed inland was not determined.

Decrease in Whaling Quota Is Approved by 16 Nations

LONDON, July 6—A one-third reduction on the number of large whales that can be killed was announced today at the close of the International Whaling Commission's 15th annual meeting.

R. C. Brooman-White, Parliamentary Under Secretary of State for Scotland, told the commission there was "world-wide concern" lest whales be exterminated.

The 16 countries represented at the talks agreed to new restrictions under which only 10,000 blue-whale units can be caught instead of the previous quota of 15,000.

SCIENTISTS CHASE ANTARCTIC SEALS

Pursuit on the Ross Sea Ice
Aims at Study of Species

By ALLYN BAUM

The New York Times

McMURDO SOUND, Antarctica, Oct. 23—Dr. Carleton Ray, of the New York Zoological Society and New York Aquarium, and two assistants began today an intensive field study into the physiology, microbiology and ecology of Antarctic seals.

For three weeks the three scientists will brave marrow-chilling winds and minus-35 temperatures on the vast expanse of the frozen Ross Sea, chasing Weddell seals for close examination.

"Any number of studies have been conducted on seals in captivity, it is true," Dr. Ray said, "but few studies have been made on wild seals in their native habitat."

Dr. Ray, who is here under auspices of the United States Antarctic Research Program, hopes to come up with an explanation of how the seals survive in the Antarctic environment.

Aiding Dr. Ray are Elmer T. Feltz, chief of the virus laboratory of the Arctic Health Research Center, Anchorage, Alaska, and Lieut. David Lavallee of the Navy, from New York City, who will study the behavior, diving and feeding habits of the seals underwater.

Aided by Navy helicopters, Dr. Ray and his assistants took to the Ross Sea pack ice soon after arriving at McMurdo. A reconnaissance of seal breeding grounds was carried out, and areas in which the scientists planned to work were established.

A large herd of whelping Weddell seals, one of the four species of seals in the Antarctic, was found 10 miles north of McMurdo, near Inaccessible Island, off Cape Evans.

Studies of the three other species—the more abundant Crabeater, the rarely seen Ross seal and the vicious Leopard seal—will be held in abeyance because of difficulty in finding and working with these animals, which live in the pack ice between the fast ice near the continent and the open seas.

Today, using a helicopter, the three scientists landed near the herd of sunning seals and crept up on an eight-foot, 800-pound female.

Slowly, they maneuvered it away from the herd.

While it wriggled, rolled, barked and snapped, Dr. Ray gently stroked the animal to soothe it. Mr. Feltz and Dr. Ray took swabbings and placed them

South Pole Test Flight Made by Supply Plane

CHRISTCHURCH, New Zealand, Dec. 4 (UPI)—A United States Military Air Transport service C-130E Hercules plane made a nonstop, 3,800-mile trip to the South Pole and back to New Zealand in 13 hours today.

The plane is attached to the 1501 Air Transport Wing at Travis Air Force Base, Calif.

Brig. Gen. J. W. Chapman, the wing commander, piloted the plane over the Pole station. The plane flew from the American Antarctic base at McMurdo Station to the Pole and then to Christchurch.

Planes of the M.A.T.S. will handle the Antarctic supply mission next season, and General Chapman and his staff have been here and at McMurdo on a familiarization visit.

in sterilized containers. The action was recorded on film and tape by Lieutenant Lavallee.

The intestinal and throat swabbings will be divided into two sets. One will be forwarded to Beth Israel Hospital in New York for laboratory studies in microbiology, histology and enzymology. The other set will be studied by Mr. Feltz at McMurdo. The findings of Beth Israel and the McMurdo laboratories will be compared by Mr. Feltz.

"For many years," Dr. Ray said, "scientists have felt that seals living in polar areas are free of germs due to the cold environment in which they live. Within the first few hours of our work down here, we've already discovered that this is not the case—certainly at least not the case within the environs of McMurdo Sound. The seals we've sampled have bacteria and germs."

After taking swab specimens from 30 Weddell seals, Dr. Ray and his assistants will attempt to capture a number of seals, airlift them to McMurdo and carry out studies on metabolism, nutrition and growth.

Dr. Ray hopes to take three Weddell females and three pups back to the United States for further studies and observations.

Skin-Divers Dig Through Ice

By ALLYN BAUM

The New York Times

McMURDO SOUND, Antarctica, Nov. 9—Perhaps the most incongruous sight in the Antarctic these days is two scientists from the New York Zoological Society, and a Navy lieutenant, dressed in skin-diving gear, trudging about the frozen Ross Sea seeking holes in the ice into

WINTER ISOLATION ENDS IN ANTARCTIC

Navy Relief Plane Touches
Down at 5 U.S. Bases

By ALLYN BAUM

The New York Times

SOUTH POLE STATION, Antarctica, Oct. 24—Nearly eight months of winter isolation ended here today with the earliest South Pole relief flight in Navy history. A C-130 Hercules, carrying 870 pounds of mail, touched down despite 21-mile-an-hour winds.

The landing, made in minus-55-degree temperature, was the coldest ever attempted by the Navy in Antarctica. All 22 men at the station turned out to cheer the plane, which carried Rear Adm. James R. Reedy, commander of the Antarctic Naval support forces.

The station reported a record low temperature—minus 109.8 degrees—for July 14.

Today's landing completes the winter relief of all United States stations in the Antarctic—McMurdo, Hallett, Byrd, Eight and the South Pole.

which they jump looking for seals.

Dr. Carleton Ray and Lieut. David Lavallee of New York and Elmer Feltz of Anchorage, Alaska, have been conducting studies on the physiology and ecology of Weddell seals in the

McMurdo area. They have not only studied seals on top of the ice, but have dived in 28.6-degree water with tape recorders, lights and movie cameras to record the sounds seals make underwater and film them in their native habitat.

In addition, Lieutenant Lavallee is testing new skin-diving gear for the Navy, and undergoing physiological tests to show the effects of prolonged immersion in extremely cold water.

Lieutenant Lavallee is "on loan" to the New York Zoological Society from the Navy. However, he is also performing assignments for the Navy, one of which is to record the sounds seals emit for navigation and communication.

Asked why the Navy was so interested in this field, Lieutenant Lavallee said:

"They're interested in building smaller, more compact and more efficient and effective underwater sonar navigation units. At present, our systems are too bulky.

"Many people in the Office of Naval Research feel that by studying the sonar mechanisms of underwater mammals and fish they can learn to devise a system similar to theirs."

The Navy officer has gone

down 130 feet. In his physiological tests, he remains motionless underwater for 25 minutes, while Dr. Ray and Mr. Feltz take electrocardiograms and record temperature and respiration data.

Initial findings indicate that Lieutenant Lavallee's surface chest temperature drops exactly in half, from 33.7 degrees Centigrade to 16.5 degrees Centigrade, within two minutes of his entering the water.

After 10 minutes, his surface chest temperature rises to about 28.1 degrees Centigrade and levels off at that point.

Navy Icebreaker Damaged

CHRISTCHURCH, N. Z., Dec. 2 (AP)—The icebreaker Atka lost a propeller and shaft while cutting a channel through McMurdo sound in the Antarctic, the United States Navy said today. The Atka will leave tomorrow for New Zealand under her own power. The icebreakers Glacier and Burton Island will cut the last three miles of the channel for cargo ships on McMurdo Sound.

INSPECTORS LEAVING FOR THE ANTARCTIC

WASHINGTON, Dec. 25 (UPI)—The first contingent of a United States team will leave tomorrow to inspect Antarctic bases of the Soviet Union and other countries.

The Soviet Union has raised no objection.

The United States announced in September that it would invoke the 12-nation treaty of 1959 that reserves the Antarctic for peaceful purposes and provides that any of the 12 nations, on its own initiative, can inspect Antarctic bases of the others.

The State Department said it had no evidence of any violations but wanted to exercise the inspection right to establish a precedent.

The United States inspectors include experts on nuclear testing, which is banned in the Antarctic under the treaty, and biologists to check on the conservation of penguins and seals.

The inspection will take about a month.

New Zealand, one of the 12 signatories to the treaty, recently inspected three United States bases in the Antarctic, including one at the South Pole. Britain and Australia have announced they also plan inspections.

Antarctic Inspection Set

WASHINGTON, Dec. 26 (AP)—The United States inspectors appointed to look at foreign bases in the Antarctic will begin work the first part of January, a State Department spokesman said today. They are expected to complete their task by March 1.

BELGIANS AND DUTCH JOIN IN POLAR STUDY

The New York Times

BRUSSELS, Nov. 30—A polar expedition by 10 Belgians and 4 Dutchmen is scheduled to leave here next Friday for 15 months of scientific observations in Antarctica.

The expedition is to depart from Antwerp Dec. 8 on the Danish icebreaker Magga Dan and is due to reach Antarctica Jan. 21.

The Magga Dan is expected to reach the camp site, about 2,400 miles from Cape Town, South Africa, at the height of the polar summer. The ship must then depart within two weeks or it will be frozen in for the next year.

The site, named for King Baudouin, was built during the First International Geophysical Year in 1957-58. At present it is buried under about 24 feet of ice and snow.

However, if the new expedition can uncover it, the members will have enough prefabricated equipment to erect seven new residential and laboratory buildings in the same area.

The leader of the expedition is Luc Cabes, chief engineer of Bell Telephone's Belgian subsidiary whose headquarters is in Antwerp.

Mr. Cabes accompanied the Belgian expedition in 1957-58. His specialty is geomathematics.

For the other expedition members, the trip will be the first visit to Antarctica. They are to accumulate and report data on terrestrial magnetism, ionospheric disturbances, the antipodal equivalent of the aurora borealis and atmospheric nuclear radiation.

The expedition is the first to have joint Belgian and Dutch sponsorship. The costs will be defrayed by scientific foundations in both countries, with the Dutch sharing one-third of the estimated \$5 million in total expenses.

The Belgians are old Antarctica hands. In 1899 Baron de Gerlache led a party of his countrymen on one of the earliest explorations there.

His son, Baron de Gerlache de Gomery, was the leader of the expedition in 1957-58 and another in 1959-60.

New Zealand to Check Bases

The New York Times

AUCKLAND, New Zealand, Nov. 20—Officials in Wellington indicated today that New Zealand was likely to follow the United States in appointing inspectors to visit bases of other nations in Antarctica. This followed the announcement that the United States had nominated a team of nine to inspect bases to insure that no defense installations or atomic weapon sites had been built.

Soviet Jets Fly Scientists to Antarctic

By THEODORE SHABAD

The New York Times

MOSCOW, Nov. 20—Two airliners left Moscow today for the Antarctic to start the Soviet Union's contribution to the International Year of Quiet Sun, a worldwide research project.

The planes, which are scheduled to cover the 15,000 miles to the Soviet base of Mirny in 47 flying hours, carry an advance party of 70 of 400 members of the Soviet Antarctic expedition. It is the ninth since Moscow first took an active interest in Antarctic research.

Most of the supplies and other scientists and technicians will arrive in the Antarctic early in January aboard the ships Estonia and Ob, which have been used as expedition vessels in the past.

The Soviet experts aboard two planes are following a route first reconnoitered by Soviet aviators two years ago. The route goes by way of Tashkent, New Delhi, Rangoon, Jakarta, Darwin, Sydney, Christchurch, and then to Mirny. The planes are piloted by Aleksandr S. Pllaykov, who made the first trip in 1961, and by Mikhail P. Stupishin.

The four permanent Soviet Antarctic stations—Mirny, Vostok, Novolazarevskaya and Molodezhnaya—will be joined in the Quiet Sun project by a seasonal station at Komsomolskaya.

This post will operate only during the Antarctic summer of 1963-64 to insure radio communications in the interior of the continent with two tractor trains and with planes flying on aerial surveys and supply trips.

The most spectacular overland journey is to be a 2,000-mile traverse from Vostok to the Pole of Relative Inaccessibility to Lat. 78 degrees S., Long. 25 degrees E., in the heart of the unexplored section of Antarctica.

A five-man party headed by Andrei P. Kapitsa and traveling with one tractor and two snowmobiles expects to reach the coast near Molodezhnaya Station. This station, in Enderby Land and now staffed with eight men, is to be expanded.

The Kapitsa party hopes to locate a small hut with fuel supplies left by a Soviet group in 1958 in what is regarded as one of the few unexplored remaining "white spots" of the continent.

A second overland party, consisting of nine vehicles, is now under way from Mirny to Vostok with supplies for the inland station. Instead of returning empty as in the past, the tractor



The New York Times

Nov. 21, 1963

Russians will operate four stations (black dots) in the Antarctic. Broken line traces planned overland journey.

train will be used for scientific research along the route back to Mirny. French scientists headed by Albert Bauer are joining this survey.

Russians Land in Sydney

SYDNEY, Australia, Nov. 25 (AP)—Two Soviet Ilyushin transports landed at Sydney airport today with 67 scientists, technicians and journalists on their way to the Antarctic.

Soviet Planes at U. S. Base

LONDON, Nov. 30 (Reuters)—Two Soviet Ilyushin-18 transport planes making a pioneer 15,000 mile flight from Moscow to the Russian Antarctic base of Mirny have arrived at the United States base at McMurdo Sound. The Russian press agency, Tass, reported today.

Solar Flare Station Opened

SANTA MONICA, Calif., Aug. 27 (AP)—The opening of a solar flare research station in the Arctic—a twin of a similar outpost in the Antarctic was announced today by Douglas Aircraft Company, which operates both the Canadian site at Shepherd Bay and the Arctic site at McMurdo Sound for the National Science Foundation.

Soviet-French Expedition To Study Ice at Antarctic

The New York Times

PARIS, Dec. 7—A joint Soviet-French expedition left Le Havre today for Antarctica to determine whether the ice mass at the pole was increasing or decreasing.

Five French scientists joined 15 Soviet glaciologists aboard the Soviet ship Estonia for the journey to the Soviet Antarctic base of Mirny, where they expect to arrive early next month.

The two-month expedition will study the movements of the ice covering the Antarctic region as a method of determining changes in the ice's volume.

Thar She Blows!

Whales do not spout fountains of water from their nostrils. What appears to be a stream of water is moisture from the whale's breath condensing as it meets the cooler, outside air.

Sled-Train Ends Trek

Leningrad, Dec. 26 (AP).—Tass says a radio announcement received in Leningrad from Russia's Antarctica expedition announced that a tractor-drawn sled train has completed a 1,250-mile trek from Mirny observatory to Vostok station. The trip took a month and a half.

New Zealanders Explore Antarctic

By Albert E. Norman

Australia-New Zealand Correspondent of
The Christian Science Monitor

Wellington, N.Z.

Six New Zealanders and 36 dogs have been landed in Oates Land, one of the toughest regions of the Antarctic Continent, to make a two-pronged exploration among a tangle of ice-clad mountains.

One group will concentrate on geological research, and the other will make a topographical survey. The New Zealanders will be in the field for three months, about the maximum of the so-called antarctic summer, when temperatures can fall a long way below zero.

During this traverse in Oates Land, the New Zealand party will sledge about 700 miles and map 25,000 square miles of territory.

This expedition will about complete the New Zealand mapping program for the Ross Dependency, that large slice of the polar continent officially claimed by New Zealand.

The United States and some other countries do not recognize claims to Antarctica. Under the force of the Antarctic Treaty, now four years old, the trend has been to international cooperation in Antarctica—one of the principal objects of this 12-nation pact.

Under the treaty, the southern continent is the only internationally recognized nuclear-

free zone in the world. This year, the United States served notice that it planned to conduct "inspections" of stations in the antarctic, as expressly permitted by the treaty.

This move would give formal expression to an "inspection" pattern which has been in existence for several years. For example, Soviet natural scientists have worked for long periods, at United States invitation, in American stations, where they could have ample opportunity to study the entire work programs.

Similarly, New Zealanders and Americans have been working together in one another's stations. In fact, Hallett Station is a joint United States-New Zealand station. This station will play a key part in the work of the present New Zealand expedition in Oates Land.

This region, which lies between Victoria Land and Wilkes Land, marks the approximate point where the Pacific and Indian Oceans meet in the far south. It has long been of interest to geographers since Prof. T. W. E. David of the Shackleton expedition located the South Magnetic Pole there in January, 1909.

Unlike the geographic South Pole, the South Magnetic Pole

does not stay put. Magnetic compasses at the South Pole, about 1,500 miles away, will point to the South Magnetic Pole in the Oates Land region but when close to it they swing sluggishly.

The South Magnetic Pole's line of approximate movement traces a dog-leg between Victoria Land and Wilkes Land. Accordingly, it is necessary every few years to replot the South Magnetic Pole's position. In 1960 a United States survey placed this mobile pole about 400 miles nearer Wilkes Land from the point where Professor David fixed it with precision in 1909.

The New Zealand work in Oates Land will add to the knowledge gained in the general region by previous expeditions—American, Australian, and Soviet—though the New Zealanders expect to break ground never before traversed.

At the southern end of the Arctic Institute Range, which forms a spine through Oates Land, the work of American explorers is marked by Mt. XV-6, probably the only one in Antarctica named by a symbol. The peak is named for the task group Air Development Squadron Six, part of the United States Antarctic Support Force under Rear Admiral

James R. Reedy.

Since 1957 New Zealand parties have mapped more than 70,000 square miles of the Ross Dependency, and 14 maps of the area have been issued.

From time to time the value of this large slice of polar territory is questioned by New Zealanders, and this was mentioned by N. W. Markham, superintendent of the New Zealand Antarctic Division when addressing members of this year's field parties.

"We must get away from the attitude of mind which asks what it is to New Zealand," said Mr. Markham.

"We are in Antarctica to gather data to be used by all nations and enlarge the horizons of man's knowledge in many fields."

HOME FOR ANTARCTIC SENT 10,000 MILES

PERTH, Scotland (AP)—Parts of a new home for Capt. Donald J. Coleman, 10,000 miles away on the Antarctic island of South Georgia, are being assembled in 1,500 packages here.

The packages, with their 270 tons of building materials, will leave London by ship for South Georgia, where Captain Coleman is the British-governed island's senior administrator.

Sailing with the materials will be eight men who will erect the new house, which will have six rooms, central heating and means of melting the snow on the roof before it becomes too crushing a weight.

Every item for the house has to be shipped from here, including wall-to-wall carpeting and curtains. Mrs. Coleman chose the drapes and the rugs on a recent visit to Perth. The Colemans have lived on South Georgia since 1959.

The nearest civilization to the house, which is to replace a ramshackle dwelling, is nearly 700 miles away, in the Falkland Islands off Argentina. Three whaling fleets use South Georgia—Japanese, Argentine and Norwegian.

British Planning Antarctic Lab

United Press International

LONDON, Oct. 3 — A British expedition to Antarctica will include experiments with a new biological laboratory, it was announced yesterday.

The research ship Shackleton is en route to McMurdo Sound with equipment.

Swiss Research Team To Trek Across Antarctic

The Christian Science Monitor

Geneva

Switzerland's first antarctic expedition, comprising an international team of 20 members, hand-picked from more than 300 candidates, is scheduled to make a 2,000-mile trek across unexplored antarctic territory, both to Komsomolskaya, a Soviet base, and Mawson, an Australian base.

The expedition is the only one in the world to be privately financed. Every village and city in Switzerland is being asked to contribute to the million-dollar project. The United States, Australia, and other European countries are also giving assistance. All other world polar missions have been financed by governments.

Members of the team will include 13 Swiss, 3 Englishmen, 2 Frenchmen, 1 German, and 1 Greek. They are scheduled to reach the antarctic coast at Port Martin by Jan. 5. Once a base is established, 10 members will temporarily return to Switzerland to corral more materials for the 2,000-mile expedition.

Multiple scientific research programs to be carried out by

the international team include reconnaissance and exploratory flights by two Pilatus Porter Swiss planes, a study of winds and meteorologic situations, food problems, and polar temperature effects on motors and airplanes. The latest mechanical equipment will be tested.

The 400 tons of equipment needed for the expedition's first phase mainly comprise 2 airplanes, 21 Greenland Husky dogs, snow sleds, scientific and technical equipment, and food-stuffs.

The 10 members in Switzerland will rejoin team members in October, 1964, with eight American crawler tractors, four special trailers, more dog sleds and technical equipment, and 40 pneumatic gas tanks with a total capacity of 250,000 gallons.

If sections of antarctic coastal regions are too rocky, the explorers will cross iced mountains at altitudes of more than 12,000 feet. During the trek, the team will cross the antarctic's coldest areas and the South Magnetic Pole. The entire exploratory expedition will last until 1966.

NEW ZEALAND LINK TO ANTARCTIC SEEN

ABERDEEN, Scotland (Reuters)—An eminent Dutch botanist believes there was once an enlarged Antarctic continent joined to New Zealand and Tasmania in the South Pacific.

Prof. C. G. van Steenis of Leyden University, recently told delegates at the annual meeting of the British Association for the Advancement of Science that he had found evidence of the existence of such a land during research into the origin of island flora.

"As far as the Pacific is involved, there must have been an ancient land in the south, an enlarged Antarctic continent joining Fuegia to New Zealand and Tasmania," he said.

"There must also have been a land bridge in the tropical Pacific to explain not only the island flora but also the remarkable botanical affinity between the Malayan and American continental tropics.

"These connections are assumed to have existed in the mesozoic epoch," he said. This is the geological period in which mammals and birds came into existence.

Army Makes Tests In Polar Icebox

By John Allan Long
The Christian Science Monitor

Hanover, N.H.

The shortest route to the polar regions these days is through Hanover, where temperatures occasionally are dropped to minus 58 degrees Fahrenheit.

Simulating such frigid environments is the work of the United States Army's Cold Regions Research and Engineering Laboratory (CRREL) located on an 18-acre tract of land north of Dartmouth College.

What are the unique problems of construction of airfields and military structures in parts of the United States, Canada, or Greenland?

Techniques Studied

Can snow and ice mixed with soil be used as building materials in the permanently snow-covered Arctic and Antarctic regions?

How can local engineers best resolve the problems of seasonal frost with construction of buildings and roads in temperate zones, where the effects of snow and ice are not an everyday consideration?

It is toward improved engineering techniques in these spheres that scientists here are carrying on both applied and basic research into properties of snow, ice, and frozen ground and their effect upon military operations.

CRREL headquarters, which officially opened recently, has grown out of numerous cold regions laboratories conducted since World War II when the United States became faced with engineering problems in building bases in the cold regions of the world.

Permacrete Tested

Staffed by two military officers and some 200 civilian and enlisted scientists and technicians CRREL capabilities cross a wide spectrum of technical studies utilizing 24 "cold" rooms in which temperatures down to minus 58 degrees can be maintained.

Studies are currently being conducted in both the laboratory and in Greenland on artificially frozen soil-water

mixtures (so-called permacrete) with the idea of using this material for polar construction.

Permacrete in the forms of experimental blocks, beams, fuel storage wells, tables and chairs "have demonstrated rather surprising strengths of certain mixtures" when placed under tension, say CRREL scientists.

Scale tests on snowdrift control under natural conditions are adding to the Army's knowledge of the most effective design and placement of fencing for state highway departments.

CRREL scientists are studying the thickness and strength of ice surface layers, making climatological studies, and investigating the problems of visibility in a snow-covered environment.

When snow extends to all points of the horizon there are no visible points of reference suitable for estimating visibility range. A condition known as whiteout, caused by a continuous cloud cover or a fog above an unbroken snow surface, attenuates visibility.

Frost Heave Eyed

Among other subjects being studied here is the oscillating effect of frost-heave, which plays an integral role in road and airstrip construction particularly in polar regions.

Frost-heaving is due to layers of clear ice forming within the soil.

In the increasing subsurface exploration in the Arctic regions, CRREL is currently designing a thermal drill capable of eventually piercing continental ice sheets and glaciers to a depth of more than two miles to permit recovery of essentially undisturbed samples of snow and ice.

Recent samples obtained in Greenland and Antarctica at depths of 1000 feet have been estimated to be 10,000 years old and thus give the scientist a record of existing atmospheric conditions at that time.

10 Tons of Ice Leave Illinois On Trip to New Hampshire

CHICAGO, Nov. 4 (UPI)—Twenty Thousand pounds of valuable ice cubes left here by van today for Hanover, N. H. The ice, some of it 10,000 years old, is valued at \$1 million.

It was collected, along with accompanying samples of snow and permafrost (frozen earth), in Greenland and Alaska and at the North and South poles by the Army's Cold Regions Research and Engineering Laboratory.

The ice has been stored in a Chicago warehouse since the laboratory was moved from its former site in Wilmette, Ill.



By Norman Matheny

The Christian Science Monitor

Ice-Cutting Techniques Given Test

A 'thermo-drill,' which has a heating mechanism inside, burrows down—with the aid of a technician—melting the ice as it goes. The water is shifted upward as it melts to a storage tank at the top of the drill.

Say North Pole Once in Arabia

SALISBURY, Southern Rhodesia, Aug. 8.—A team of scientists at Rhodesia's University College say the North Pole used to be somewhere in Saudi Arabia. The scientists express belief that the earth has tilted during its ages of existence because of the drift of continents which were once in quite different positions from their present-day locations. They contend that the poles have moved accordingly.

The scientists, working on a project attempting to prove the theory of continental drift, are measuring the magnetism in rock which was fixed when the earth cooled 200 million years ago.

They use an instrument a million times more sensitive than the ordinary magnetic compass to determine the "di-

rection" of magnetism in rock. They say their findings show the magnetic pole must have moved thousands of miles from its original position.

An American on the team, Dr. N. Opdyke, a Graduate of Columbia University, said rocks of the same age when measured showed different magnetic "directions," appearing to indicate movement of the poles.

The study, he says, should help geologists work out where oil, for instance, can be found.

"If we know what happened to rock formations and why, we may be able to take a lot of the guesswork out of oil prospecting, which is done almost intuitively at the moment," Opdyke said.

Frost Found at 1,620 Feet

RESOLUTE BAY, Northwest Territory, July 28 (Canadian Press)—A record depth of permafrost for the North American Arctic, 1,620 feet, has been found on Melville Island, Northwest Territory.

ALASKA WILL PUSH ARCTIC RESEARCH

Work on \$44 Million Center to Start Next Spring

The New York Times

COLLEGE, Alaska, Nov. 9 —On a magnificent hilltop site four miles outside of Fairbanks, the University of Alaska is preparing to begin construction of the first unit of a proposed \$44 million Arctic Research Center.

As viewed by its planners and put into words by Elmer Rasmuson, an Anchorage banker who heads the university's board of regents, "the University of Alaska will become the center of Arctic and sub-Arctic research for a free world."

The concept is similar to the one that led to the creation of the Soviet Union's great research center, with a heavy concentration of scientific talent, at Novosibirsk on the Trans-Siberian Railroad.

The university's officials point to continued emphasis on research in Antarctica by this country, but they hold that American efforts in the Arctic and the sub-Arctic "have been less satisfactory."

They note that the Russians have taken a different view. Both the Soviet Union and Canada, in their opinion, show greater realization of the importance of their northern regions than the United States has exhibited toward its own, despite Alaska's vast potential.

Dr. William R. Wood, the university's president, enthusiastically pointed out the site this week, on the 2,250-acre campus, of a biographical sciences research building. Alaskans last fall approved a \$3.5 million issue of general obligation bonds for it. Construction is scheduled to start next spring.

The site for the center is 100 miles south of the Arctic Circle.

This week, in zero weather, with the sun setting at around 3 P.M. on a snow-blanketed landscape, the aurora borealis, or northern lights, offered a spectacular evening show in the Fairbanks area. It emphasized the university's superior location for the study of aurora phenomena involving charged particles ejected from the sun.

According to Dr. Victor Hessler, whose color photographs of aurora have attracted worldwide attention among scientists, more work has been done on optical aurora studies here than elsewhere on the North American continent.

The university in one of 11 world data centers for observations made during the International Geophysical Year,

1957-58.

The aurora studies, along with those of magnetic storms, polar blackouts and glaciology, plus a rocket program, have been pursued by the university's Geophysical Institute established by Congress in 1949.

Keith B. Mather, an Australian physicist recently appointed head of the institute by joint action of the university and the National Academy of Sciences, said activities were being initiated in the fields of seismology and volcanology.

"At a later stage," he added, "we may go into oceanography. We can do unusual things up here because of the complete cover of Arctic ice. And the Navy is extremely interested in the Arctic for submarine activities."

Dr. Kenneth M. Rae, vice president of the university for research and advanced study, a Scottish-born oceanographer who has directed the university's Institute of Marine Science since its creation by the state legislature in 1961, said the \$44 million figure advanced for the Arctic Research Center would cover buildings and "modest logistic support" during a seven-year period.

The Federal Government is counted upon for a considerable part of the funds, especially since Federal agencies such as the Public Health Service plan buildings in the center area.

The Arctic Research Laboratory at Point Barrow, directed by Dr. Max Brewer, is operated by the university for the Office of Naval Research.

A new Institute of Arctic Biology has been set up, under the direction of Dr. Laurence Irving, an early director of the Barrow laboratory, to study how man and animals adapt to meet the rigors of the Arctic environment.

The university's research activities also embrace those in an Institute of Economics and Government.

Alaska Cold Found Older Than Thought

United Press International

LAFAYETTE, Ind., Nov. 11. —Alaska has been cold a lot longer than most people believe, a Rutgers University professor said today.

Prof. J. C. Tedrow told the International Conference on Permafrost at Purdue University that frozen organic matter from decayed vegetation has been found at depths of 15 to 50 inches.

This organic matter, Tedrow said, is "below the maximum depth of seasonal thaw and must be a relic of a warmer episode." He said the northern warm period occurred 8000 to 11,000 years ago instead of 5000 to 6000 years ago,

ALASKANS PRESS BIG DAM PROJECT

Seek Congress's Backing of 1.2 Billion Yukon Plan

The New York Times

ANCHORAGE, Alaska, Sept. 14—Alaskans who see Rampart Dam as an opportunity bigger than any gold rush have begun a drive for Congressional authorization of the \$1,200,000,000 project.

The huge hydroelectric project, only a few miles south of the Arctic Circle, would produce 5,000,000 kilowatts from the Yukon River's now untamed flow.

At a meeting last week in the McKinley Park Hotel, a resort midway between Anchorage and Fairbanks, 110 persons drew up articles of incorporation for an organization that will work to make Rampart Dam a reality. They named it the Yukon Corporation for Power for America.

Ivan Bloch, an industrial consultant, stated the theme:

"The emphasis of the campaign to obtain authorization, funds and the construction of the Rampart project should be concentrated on the significant low-unit-cost contribution which this project will make to the economic progress and security of the nation and Alaska.

"Rampart's output will be urgently required by the nation to help meet the electric power needs of the nineteen seventies, and thereafter together with other hydro, coal, oil, natural gas and nuclear energy."

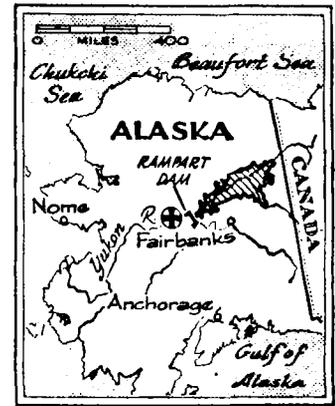
To carry out its program of selling the Rampart project to Congress when an anticipated favorable recommendation from the Army Engineers comes through later this year, the Yukon Corporation set up subgroups of Alaskan community, civic and state organizations.

"We are going to have to do a tremendous selling job," Mayor Darrell Brewington of Fairbanks said, "but this energy is bound to be needed and we hope to see Rampart authorization a reality within a year."

Mayor George Sharrock of Anchorage declared, "The political climate is favorable now for the project. I feel that if it is not built now, it probably will not be built."

It is envisioned that production of aluminum, magnesium, titanium and other electro-process metals would use the bulk of the Rampart Dam output.

The Yukon promoters are preparing to counter opposition



The New York Times Sept. 13, 1963

POWER PROJECT: Cross marks site of new dam.

from private power interests, from conservationists who object to the project because it would open up now undeveloped areas, and from the National Coal Association, which is expected to argue that electro-process industries could be located more advantageously in the eastern United States and supplied by coal-burning electric plants.

The Alaskans will reply to this argument by citing the prospective 3-mills-a-kilowatt cost of Rampart Dam power.

They will also argue that, in any event, by 1975 all sources of energy, including Alaska's vast undeveloped coal resources, will be required to meet national needs.

Rampart Dam would have a construction cost of \$240 to \$260 per kilowatt of installed capacity. Its backers say that this is far cheaper than is possible at any other prospective dam site in the United States.

Rampart's very remoteness helps in this respect, because no expensive rail and highway relocations are needed in the Yukon.

Ask Alaska to End Poisoning Wolves

ANCHORAGE, Alaska, Dec. 27 (AP).—Representatives of sportsmen's groups have asked Gov. William A. Egan to halt the poisoning of wolves in the Kotzebue, Alaska, area.

The U. S. Fish and Wildlife Service has been setting out poison at the request of the Bureau of Indian Affairs to control wolves believed to be preying on reindeer herds. Sportsmen said the poison baits also kill birds and other animals.

Alaskan Population 230,000

There are 33 incorporated cities in Alaska, 10 independent school districts with an enrollment of 57,000 pupils, and two universities. The population now totals 230,000.

ESKIMOS EXPOSED TO HIGH FALLOUT

Survey of 7 Villages Finds
an Excess of Cesium 137

The New York Times

WASHINGTON, Aug. 22 —

Some Eskimos in Alaska are receiving fallout radiation doses exceeding the permissible exposure levels proposed for general populations, it was reported to Congress today.

Radiation surveys of seven Alaskan villages have shown that the Eskimos have far more cesium 137 in their bodies than the rest of the American population. Preliminary results indicate that the level of the radioactive substance is still rising, and one radiation expert suggested that it might become necessary to take measures to protect the Eskimos.

The report was presented to a Joint Congressional Atomic Energy subcommittee by Dr. H. M. Parker, manager of the Atomic Energy Commission's Hanford Laboratories in Washington.

During the last year, Hanford scientists have gone to Alaska with a portable "whole-body counter" to measure the radioactivity in the bodies of Eskimos. The original purpose of the survey was to determine what might happen if atomic explosives were used to excavate a harbor on the Alaska coast—a project that has since been deferred, partly because of the radiation problem.

The survey discovered that the Eskimos were receiving surprisingly high amounts of fallout radiation from atomic tests. Presumably, much of the fallout resulted from Soviet tests in the Arctic.

Over 700 Eskimos in seven villages were examined by the portable body counter, which measures the gamma radiation being emitted by radioactive materials in the body. In the village of Anaktuvuk Pass, the average adult was found to have 450 nanocuries of cesium 137 in his body and one individual had as much as 790 nanocuries. A nanocurie is a billionth of a curie. A curie in turn is equal to the radiation from one gram of radium.

One of the long-lived radioactive substances produced in an atomic explosion, cesium 137 is chemically similar to potassium. Once taken into the body, the substance accumulates in the muscles, where in sufficient quantity it can present a genetic hazard.

The Federal Radiation Council has not established guidelines on how much cesium 137 should be permitted in bodies of the general population. But

the International Committee on Radiation Protection, an unofficial committee of scientists, has proposed that 300 nanocuries of cesium 137 be the permissible average for groups in the general population and that 1,000 nanocuries be the accepted limit for a single individual.

The reason for the unusually high concentration of cesium 137 in the Eskimos arises from the special food chain in the Arctic region. The lichens, as Dr. Parker put it, act as a "blotting paper" to pick up the radioactive fallout. Caribou thrive on the lichen, and the Eskimos in turn depend on the caribou for meat.

In the village of Anaktuvuk, the cesium 137 concentrations were 100 times greater than those observed in individuals in the rest of the United States.

Dr. Parker reported that preliminary examinations had shown that cesium 137 levels in the Eskimos were rising above those recorded last year.

It is "very likely," he told the subcommittee, that the levels in some Eskimos will rise this year to 1,000 to 1,200 nanocuries.

The prediction prompted Representative Mel Price of Illinois, the subcommittee chairman, to raise the question of whether the radiation was reaching "dangerous levels."

Dr. Parker replied that there was "no real danger in the normal sense of the word." He pointed out that workers in atomic plants are permitted to accumulate 30,000 nanocuries of cesium 137 in their bodies.

7 Harvard Men Going Home After Mount McKinley Climb

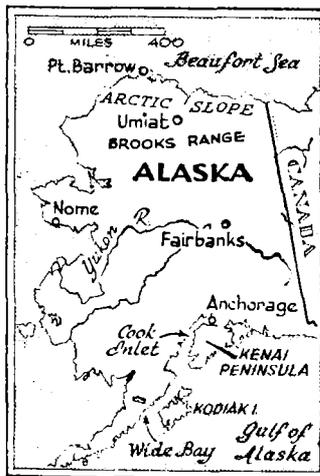
ANCHORAGE, Alaska, July 25 (UPI)—A seven-man Harvard mountaineering team, feared lost on Mount McKinley nearly two weeks ago, is down from the mountain.

Paul Crews Sr., leader of the Alaska rescue group that took part in the search for the climbers, said today that all seven men had reached the twin north and south peaks at the top of the 20,320-foot mountain.

Mr. Crews said that Henry Abrons, leader of the party, called him from McKinley Park last night and told him of the party's success. Mr. Abrons said they were leaving the park to drive down the Alaska Highway on their way home.

All of the climbers are in good condition, Mrs. Crews said.

Included in the party are Mr. Abrons, 22 years old, Scarsdale, N. Y.; David Roberts, 20, Boulder, Colo.; Peter Carman, 21, Nashville, Tenn.; Christopher Goetze, 23, Randolph, N.H.; John Graham, 21, Tacoma, Wash.; Richard G. Milliken, 21, Kensington, Calif., and Donald C. Jeensen, 20, Walnut Creek, Calif.



The New York Times Oct. 31, 1963
Arrows indicate oil sites

OIL EXPLORATION PUSHED IN ALASKA

By LAWRENCE E. DAVIES

The New York Times

ANCHORAGE, Alaska, Oct. 30 — Alaska and the oil industry are showing the mutual faithfulness of a devoted affianced couple.

Petroleum concerns have courted the 49th state with lavish expenditures for exploration, drilling and production. Alaska has been liberal in its incentive royalty rates for a 10-year development period following the drilling of discovery wells.

Companies have poured in money at a rate undreamed of when the first strike was made six years ago by the Richfield Oil Corporation on the Kenai Peninsula below Anchorage.

Discovery last month of a new field 60 miles southwest of here in Cook Inlet by the Shell Oil Company last month has spurred excitement among Alaska officials, residents and oil explorers. And the prospect of finding oil on the Arctic Slope 1,000 miles above these south-central fields, in quantities that some petroleum men dare hope may rival vast reserves of the Middle East, has added to the determination of competing companies to continue to sink millions into Alaska exploration.

To date, Alaskan official estimate, the oil companies have spent \$280,000,000 in the 49th state for leases, exploration, drilling and production. The state Government's cash return has been some \$65,000,000, including some \$54,000,000 in bonus payments from the industry for the right to drill wildcat wells, several of which have been worthless dry holes.

Excited interest now is riveted on the Arctic Slope where

the Navy's war-time exploration led to discovery of an oil field at Umiat, with estimates reserves up to 125,000,000 barrels.

STORM LASHES ALASKAN TOWN

80-mile Winds Wreck
20 Homes in Barrow

Oct. 4

FAIRBANKS, Alaska (AP) — A storm packing winds of better than 80 miles an hour wrecked homes and fuel supplies at Barrow, the most northern settlement in North America late yesterday. However, only one man was reported injured and he was released after treatment.

State Sen. Eben Hopson, Barrow's Eskimo legislator, told Gov. William A. Egan the loss would exceed \$250,000. Others indicated it would run much higher.

At least 20 homes were destroyed and a number of military and civilian aircraft were wrecked.

Alaska Public Safety Commissioner Martin Underwood, said he was notified the military airfield had been washed away and a civilian field was unuseable after being under water swept in from the Arctic Ocean on 15-foot waves.

Many persons were evacuated to higher ground.

The Red Cross planned to fly relief supplies and personnel into Barrow today.

A 150,000-gallon fuel tank of the Central Construction Co. broke during the storm and the fuel spewed out into the streets causing a fire hazard.

At Juneau, Egan ordered state agencies to give the community of 1,350 persons all aid possible.

Late last night, the storm was moving northward from Barrow but the temperature had dropped to 28 degrees, a sharp reminder that winter is rapidly approaching the area.

Volcanoes Erupt in Alaska

ANCHORAGE, Alaska, Nov. 18 (UPI) — Two volcanoes in the region known as the "Firecracker of the world" erupted last night, jarring the fishing village of Karluk on Kodiak Island and nearly blowing a light plane out of the sky. Reports from the scene today indicated that the volcanoes, Mount Augustine and Mount Trident, were quiet.

North Pole Hard to Mark

No physical marker can remain long at the North Pole, because the surface at the earth's northern axis frequently changes as the Arctic Ocean's pack ice drifts across it.

ALIEN WAYS PERIL ESKIMO CULTURE

Crime and Alcohol Become
a Problem as Civilization
of White Man Moves In

By WALTER SULLIVAN
The New York Times

Sept 30-

Although the Eskimo has been to the world a model of industry, fortitude and ingenuity, the prognosis for survival of his culture is poor.

This was the view expressed by a number of Arctic specialists who recently took part in a symposium organized in Montreal by McGill University and the Arctic Institute of North America.

Dr. Jacques Rousseau, a leading authority on the North, cited changes that have already taken place in the Far North. In a voice charged with shock and indignation he said:

"I am told there is a jail at Frobisher Bay, filled all the time with drunks and other offenders."

Frobisher Bay is on Baffin Island, deep within the realm of the Eskimo. Until a few years ago, jails were unknown at such outposts.

Other speakers told of drunkenness, minor crime, juvenile delinquency and even prostitution springing up from Alaska, across the Arctic to Greenland. The Eskimos were depicted as fighting an almost hopeless battle against the northward march of the white man's civilization.

Dr. Rousseau, who has devoted much of his life to studying the plants and people of northern Quebec, said with passion:

"I hope we will not have to deplore the cultural genocide of the Eskimo people."

What emerged from the symposium was a picture of the ancient, simple, and in many respects noble, Eskimo way of life in inescapable confrontation with the way of the white man.

Tribute was paid to the walrus hunter and igloo builder, a jovial companion on the blizzard-swept trail. But it was felt his way could not survive in an age of jet planes, television and air conditioning. We cannot, said Dr. Rousseau, put the Eskimo in a "zoological preserve."

Dr. Jacob Fried, anthropologist at McGill University, and others told how white men who went north once lived off the land like the natives and hence were close to them. They tended to remain there many years, if not for a lifetime, as trappers or pioneers.

Eskimos Go to School in Flying Bus

INUVIK, N.W.T., Sept. 5 (CP)—A two-week airlift has brought 200 Eskimo children from the far corners of the central and western Arctic to school in this community 1200 miles northwest of Edmonton. The airlift started two weeks ago when Arctic bush pilots searched out Eskimo families throughout the Northwest Territories and passed on the word that the school bus—a

Pacific Western Airlines four-engined DC-4—was on the way. The children's parents headed for two major pickup points—Cambridge Bay, 1100 miles north of Edmonton, and Cape Parry, 750 miles east of Inuvik. The DC-4 picked up the children at Cape Parry and Cambridge Bay and flew them to Inuvik, where for 10 months they will attend classes, living in Anglican and Roman Catholic hostels.

Now the white man brings his environment with him, serves out his contracted tour of duty at a radar site, mine, or native settlement, then returns to his native habitat in the south.

The early-warning radar sites, with their taped television shows, stateside menus and synthetic climate, are an extreme example of the "canned urbanism" transported to the North.

One speaker told of meeting a man at such a site who had been there six months. "He went for a walk the first day, but apparently the weather was not to his liking and he had not been out since."

Thus the gulf between the Eskimo and his new neighbors has grown to vast dimensions. According to Margaret Lantis, United States anthropologist, Alaskan Eskimos have traditionally been their own bosses. Now they are trying to fit into a complex civilization where they work fixed hours, earn wages and have to become "good consumers."

Many, unfortunately, have only learned to consume alcoholic beverages. This problem, however, is limited chiefly to larger settlements, populated by hundreds, that are economically tied to the outside world. Many other Eskimos still live in remote, family-sized communities, much like their ancestors.

The Eskimos have never been numerous. The Canadian Eskimo "working force" of males between 15 and 35 years of age is estimated at less than 2,000. Hence they are highly vulnerable to absorption by other races.

Dr. Helge Larsen, head of the Department of Ethnology at the Danish National Museum and a veteran of eight field seasons in Greenland, said that there were practically no pure Eskimos left in the ice-covered land.

They consider themselves "Greenlanders," he said, although they still speak their own brand of Eskimo and only 5 per cent speak Danish. While drunkenness and minor crimes have been a problem, the rate, he said, has declined in the last few years.

There was wide agreement that the inability of many officials to speak Eskimo made it even more difficult for the in-

habitants to live by a code they did not understand and was not of their own making.

One of the chief manifestations of the gulf between the Eskimos and their administrators has centered on the Dog Ordinance, which requires Eskimos to keep their huskies tethered.

Dr. Frank G. Vallee, a sociologist of McMaster University in Hamilton, Ont., who has been living at Povungnituk on the northeast shore of Hudson Bay, told of efforts to curb an outbreak of rabies in that region. Not until the Eskimos were told that any loose dogs would be shot did they tether dogs, and then only with considerable resentment.

It was evident, Dr. Vallee said, that the Eskimos did not accept the white man's concept of contagion. It was not until later that the Eskimo concept became known to the administrators, namely that there is a fixed amount of disease in the environment.

According to this theory, Dr. Vallee said, "If the dogs are sick, the people are not sick." Unfortunately, he added, after the dogs were tethered, influenza broke out among the Eskimos, which did not help persuade them that their theory was wrong.

Most of Aurora Borealis Found Hidden to Naked Eye

BOULDER, Colo. (Science Service)—Most of the glowing curtain of northern lights is invisible to the naked eye.

This was discovered when a polar-orbiting satellite looked down on auroras over the Northern Hemisphere last May. Dr. Richard Sharp of Lockheed Missiles and Space Company has reported. He told an American Geophysical Union meeting that the apparently thin sheets of shimmering light were actually several hundred miles thick.

Dr. Sharp said the satellite observations also confirmed that the auroral light is produced mainly by electrons and that protons play only a small part. Collaborating with Dr. Sharp in the study were Dr. J. E. Evans, Dr. R. G. Johnson and Dr. J. B. Reagan.

CANADA IS EXPLORING ARCTIC ARCHIPELAGO

OTTAWA, July 27, (Canadian Press)—A comprehensive scientific assault on the unknowns of the Canadian Arctic has been set in motion under the \$1,500,000 Polar Continental Shelf project.

More than 70 scientists and engineers from the Department of Mines and Technical Surveys have fanned out from Isachsen on Ellef Ringnes Island, 900 miles from the North Pole, into the Arctic archipelago, Canada's last unexplored frontier.

The project's scientific teams this year are using improved equipment to map this northern area for future exploitation.

The scientists will move from one area to another in aircraft, special tracked vehicles and dog sleds.

This year's operation, the fifth since the project was begun, will involve hydrographic, topographic, gravity, seismic, geological and oceanographic studies.

The polar shelf is an area below the Arctic Ocean 1,600 miles in length and extending 100 miles out to sea from the Arctic Islands.

One 10-man survey party has already completed a 500-mile trek over Arctic ice to learn more about the oil-bearing potential of a section of the shelf near the center of the archipelago.

Canada Plans Installations In Arctic to Balk Submarines

OTTAWA, July 9 (AP)—The chief of Canada's Navy, Vice Adm. Herbert Rayner, said today that plans had been made to set up antisubmarine installations in the Arctic.

He said they would serve as a shield against underwater penetration as the United States DEW (Distant Early Warning) line does against incursions by air.

Admiral Rayner did not indicate whether the United States would take part in the anti-submarine program. His report which included no details, was made to the Defense Committee of the House of Commons.

Hudson Bay Study Planned

DARTMOUTH, N. S. (UPI)—The new Canadian oceanographic research vessel Hudson will visit Hudson Bay next summer in one of her first scientific expeditions. Officials at the Bedford Oceanographic Institute said major studies would be made to obtain geological and oceanographic information. The Hudson Bay area is one of the few inland bays that have not been extensively studied.

Massive Source of Iron Ore Found on Arctic Island

By **WALTER SULLIVAN**

The New York Times

Sept. 22

A group of mining companies that teamed up three years ago to prospect among the northernmost islands of the world has discovered a massive and extremely rich body of iron ore.

Despite its remote location on the glacier-draped coast of northern Baffin Island in the Arctic Ocean, preparations are proceeding for its exploitation.

Farther north, on Bathurst and Cornwallis Islands, four test wells are being drilled into what some suspect is one of the world's major oil fields.

A few years ago such finds would have been dismissed as hopelessly inaccessible, but a growing reservoir of experience has changed both attitudes and economics so far as the North is concerned.

These changes were the theme of a two-day symposium held in Montreal last week by McGill University and the Arctic Institute of North America.

The Baffin Island iron discoveries are near Pond Inlet. Of the ore bodies discovered so



The New York Times Sept. 23, 1963

Gas has been found on Melville Island (1), oil on Bathurst (2) and Cornwallis (3), and iron ore at Pond Inlet (4). Northern Quebec (5) is rich in asbestos.

far, the largest crops out from a 1,500-foot hill in an exposure 10,000 feet long and 350 feet thick.

The average iron content of samples from these bodies is about 69 per cent, according to

geologists taking part in the project.

By contrast ores extracted from the Mesabi Range in Minnesota early in this century contained only 55 per cent iron. These are now greatly depleted.

Pond Inlet is accessible to ships in summer, so the ore will presumably have to be stockpiled until then. The chief outcrop lies some 40 air miles from tidewater. Company geologists are talking in terms of an annual production of 1,000,000 or 1,500,000 tons.

The chief value of the ore will probably be for use in open-hearth furnaces. It is so dense that it can be used, in heavy chunks, to break the crust that forms on top of the molten material.

The find was made last summer by Murray Watts of British Ungava Explorations, Ltd., but its extent has only become evident recently. Next summer probes by diamond drills should provide further information on the ore bodies, and engineering work is to begin on roads and an air strip.

The joint company is known as Baffinland Iron Mines. The largest stockholder is reported to be the Anglo-American Corporation of South Africa.

The four oil wells are being drilled by Round Valley Oil, a subsidiary of Burmah Oil Company, Ltd., of Britain. One of them on Cornwallis Island, begun a couple of weeks ago, is already down several thousand feet; the goal is 7,000 feet.

Some 40 geological structures of oil-bearing type have been identified in the area. A well sunk earlier to 4,000 feet at Winter Harbor on Melville Island produced natural gas, although its purpose was chiefly to obtain a cross section of the rock structure.

During the symposium Dr. Robert Bergeron, geologist at the Center for Northern Studies at Laval University in Montreal, cited the great asbestos deposits at Asbestos Hill at the northern tip of Quebec. He said they may produce as much as 50,000,000 tons.

As an example of the subsidizing expenses of Arctic operations, Dr. Bergeron said that 10 years ago it cost \$1 to ship a pound of supplies from Quebec City to Fort Chimo on Ungava Bay, in northern Quebec. The price is now 20 cents, he said.

This trend was reported by others. William M. Gilchrist, president of Eldorado Mining and Refining, Ltd., said that in the early days of mining at Great Slave Lake it cost \$1 a pound to move supplies there, whereas the cost has dropped to less than 4 cents. The lake is now reached both by rail

and highway.

P. D. McTaggart-Cowan, director of the Meteorological Branch of the Canadian Department of Transport, told how Arctic weather stations have for years been supplied with fuel in drums.

It has recently been found, however, that the fuel can be delivered, as in other parts of the world, by tanker, he said.

The symposium participants did not ignore the problems presented by weather, by ice-choked seas and by the reluctance of needed personnel to endure the rigors of northern life. Their argument, however, was that where economically attractive, these problems could be overcome.

LAYER OF SEA WATER FOUND IN FRESH LAKE

OTTAWA (Canadian Press)

—A layer of sea water has been found in a fresh-water lake on Ellesmere Island, Canada's most northern territory.

The discovery was made by a Canadian Defense Board glaciologist, Dr. Geoffrey Hattersley-Smith, who returned recently from a four-month stay on the island.

This was Dr. Hattersley-Smith's ninth expedition to Ellesmere, where, among other things, he did oceanographic work in Tanquary Fjord and Antoinette Bay in north-central Ellesmere.

Dr. Hattersley-Smith said the layer of sea water was 180-feet deep in a fresh-water lake that was 40 feet above sea level. The lake is near the eastern end of Antoinette Bay.

He said he believed the sea water was trapped by a glacier thousands of years ago—"perhaps 5,000 years ago but that's only a guess." Dr. Hattersley-Smith said the continental ice-sheet off northern Ellesmere was gradually breaking up because of slightly warmer temperatures in the last few decades. About 200 square miles of ice have already broken off the shelf, leaving about 800 square miles.

Altogether, 24 scientists spent all or part of the summer with the Ellesmere expedition.

Quake Hits Baffin Bay Area

PASADENA, Calif., Sept. 4

(AP)—A strong earthquake occurred today at remote Baffin Bay between Canada and Greenland. Dr. Charles Richter of the California Institute of Technology called it the first shock of consequence in the sparsely populated Arctic area since a somewhat larger quake in 1933.

Arctic Exploration Excites Oilmen

By the Associated Press

Edmonton, Alberta

Arctic exploration activity has been one of the most exciting developments this summer in the Canadian petroleum industry.

While geologists and geophysicists are evaluating initial information from the north, preparations have started for further exploratory programs on Bathurst, Cornwallis, and Melville Islands.

Drilling rigs, portable homes, and other equipment have already been shipped to the area from Montreal.

Parker Drilling Company of Canada, under contract by Lobitos Oil Fields (Canada), Ltd., to drill on Cornwallis, has shipped 28 carloads of equipment. Commonwealth Drilling Company, Ltd., has moved 25 carloads to Bathurst Island, where it will sink a hole for Dominion Explorers group of Toronto.

The Lobitos venture is extensively backed by British interests, and drilling will begin in September with first results expected early next year.

Dr. J. C. Sproule, a consulting geophysicist from Calgary, has been engaged by a large group

of companies to continue with exploratory work in the north.

Oil companies hold exploration permits on 57.4 million acres of Arctic land, including Cornwallis, Exel-Heinberg, Ellesmere, Devon, Bathurst, Melville, Prince Patrick, and Bank Island. There also is considerable off-shore reserve interest.

And while the Arctic islands have yet to produce their first barrel of crude, one company already has started an exhaustive feasibility and economic study into submarine tanker transport in the area.

S. Donald Moore, president of Phoenix Canada Oil Company, which is behind the study, said it already has been concluded that wellhead prices for Arctic crude will not be significantly penalized by transportation costs.

Lower royalties and a more economic spacing of units will help make the wellhead price profitable, he said. The firm has interests in almost 6,000,000 acres in the area and is involved in the Cornwallis and Bathurst Island drilling scheduled to begin this fall.

CANADIANS HOPEFUL ON POLAR OIL ROUTES

OTTAWA (Canadian Press) —The most remote of the Parry Islands in the northwestern Arctic, which are potential sources of oil, might be reached by ships with the aid of ice-breakers during most summer seasons.

Dr. E. F. Roots, coordinator of the Polar Continental Shelf Project, says hydrographic surveys of a preliminary nature show that access to the islands by water may not be as formidable as previously thought. The survey represents several years of work by the Canadian Department of Mines and Technical Surveys.

A number of sea routes may make it possible in most years to move oil from Borden, Mackenzie, Prince Patrick and Brock Islands by sea. These islands are at the northern end of the Parry Islands, 1,000 miles from the North Pole. The most southerly island in the group is Melville Island, where the first Arctic wildcat oil well was drilled in 1961 and 1962.

Dr. Roots emphasized that the studies to date were preliminary and that surveys over the next few years would give a more complete picture of water access routes.

However, it appears now that special tankers accompanied by icebreakers should be able to reach the southern coast of Prince Patrick and Brock Islands, the northwestern coast of Mackenzie Island and the southern coast of Borden Island in most years.

Device Towed by Airplane Helps Find Deposits of Ore

MACKAY LAKE, Northwest Territories (Canadian Press) — A strange device is flying across northern Canada and mining people are watching it closely, for it may show the way to new mineral developments.

The device is part of a magnetometer used in the \$18,000,000, 12-year aeromagnetic survey being conducted jointly by the Canadian Department of Mines and Technical Surveys and the provincial mines departments.

With airborne magnetometers the governments hope to map out areas favorable for mineral deposits or at least eliminate those regions not worth close study.

The device is towed behind an aircraft and connected by cable to other of the magnetometer inside the plane.

The magnetometer records the intensity of the earth's magnetic field which varies with different ground formations.

Ice Island That Plugged Channel Points to Polar Climate Control

Kane Basin Near Greenland Warmed by Barricade to Floes and Cold Water

By WALTER SULLIVAN

An iceberg, or ice island, twice the size of Manhattan has provided a dramatic demonstration of polar climate control.

Last February it drifted from the Arctic Ocean into Kennedy Channel, separating Greenland from Ellesmere Island, and plugged it like a cork.

This, according to a study described Oct. 31, blocked the drift of ice floes and cold surface water through the channel into Kane Basin, an inland sea 100 miles wide that lies farther south.

As a result, the ice that habitually covers this basin almost melted entirely. Strangest of all, the melting began at the north end and worked south.

About July 22 some upheaval, such as an earthquake or an unusual tide, dislodged the ice island. It pushed north, counter to normal drift in the channel, then did a quarter turn, like a gigantic ocean liner, and sailed back unimpeded down the channel into Kane Basin.

Behind it came a horde of ice floes that, for almost half a year, had been struggling to escape from the Arctic Ocean. Now the island has broken into several parts, the largest of which has been tagged with a radio beacon. It was last reported entering Baffin Bay, off the southern end of Ellesmere Island.

The effect produced by this ice island is reminiscent of various proposals for climate control such as the building of a dam across Bering Strait. The studies of the island, which are continuing, were described in a telephone interview by David C. Nutt of Dartmouth College in Hanover, N. H.

Ever since the nineteen thirties he has been intermittently studying the waters of the Greenland area. He said that two winters ago a 200-square-mile section of the Ward Hunt Ice Shelf broke loose and drifted into the Arctic Ocean.

The shelf is a floating apron of semi-permanent ice attached to the northern shore of Ellesmere Island.

The huge platter that broke loose two winters ago fragmented into five primary pieces, four of which were caught in the circumpolar westward drift that carries such ice over to the Soviet side of the North Pole. The fifth rebelliously drifted east and, last Feb. 24, was sighted invading Kennedy Channel by a Navy plane.



The New York Times, Nov. 1, 1963

An ice island blocked Kennedy Channel (1) early this year, halting the drift of ice and cold water from the Arctic Ocean into Kane Basin. The drifting island broke from Ward Hunt Ice Shelf (2) and its largest fragment is now nearing Baffin Bay (3).

Navy flights crisscross the Arctic Ocean between Greenland, Norway and Alaska, plotting the distribution of ice floes. A flight on Feb. 28 again saw the ice island, but this time it was stuck in the channel with one end against Ellesmere Island and the other against Hans Island, off the Greenland shore.

Sea ice between Hans Island and Greenland blocked the rest of the channel, although to a lesser depth. Mr. Nutt estimated the depth of the channel at 1,000 feet or more, whereas the ice island drew only about 150 feet of water. Hence, although it blocked the flow of cold surface water, it permitted warmer, deeper water to flow in from the Arctic Ocean and heat the surface near the north end of Kane Basin.

This, Mr. Nutt believes, may account for the start of the melting in the north. When the polar ice swept in, once the gates were opened in late July, it spread over Kane Basin and

then vanished almost overnight. "It was the most fantastic thing I ever saw," Mr. Nutt commented. Presumably the ice had been melted by the unusual warmth of the water in Kane Basin. The latter is the world's northernmost large body of water enclosed by land.

It normally remains ice-covered all summer. Its warming may, at least in part, have occurred, Mr. Nutt believes, because the ice island kept out polar floes and thus gave sunlight more of a chance to get at the water.

Mr. Nutt spent the summer in the area and revisited it a few weeks ago. His study of the ice island, known as WH-5, has been sponsored by the Arctic Institute of North America with Navy and Coast Guard support and the collaboration of other agencies.

DEW LINE TO DROP 28 RADAR STATIONS

WASHINGTON, July 15 (AP) —The United States and Canada announced an agreement today to make "certain adjustments" in radar equipment that would permit the closing of 28 smaller stations along the Distant Early Warning line in Northern Canada and Alaska.

The announcement said these adjustments might be made "and still provide acceptable early warning" against aircraft attack over the polar cap from Russia.

The dropping of the 28 stations—20 in Canada and eight in Alaska—will leave 48 radar posts along a 5,000-mile line in the Far North. It was understood that the 28 stations being closed filled gaps between the larger rotating antennas on the DEW line.

The changes in the equipment will reportedly be intended to give the remaining radar sets a greater capability for detecting low-flying aircraft.

The DEW line was completed in 1957 at a cost of \$393,000,000. It is one of four radar warning nets spread across Canada and Alaska.

Eskimo Birth Rate High, But So Is Infant Mortality

INUVIK, N. W. T. (Canadian Press)—Eskimos in the Northwest Territories are reproducing at twice the rate of other ethnic groups in Canada but their infant mortality rate is seven times that of other Canadians. Dr. Gordon Butler, the Territories chief medical officer, said recently.

He told the Northwest Territories Council, in summer session here, that the high birth and death rates were comparable to those of other underdeveloped countries.

PERIL TO ESKIMOS FOUND IN RELIEF

Bishop in Canada Decries
Drop in Self-Reliance

TORONTO (Canadian Press) — Canada's Eskimos are in danger of losing their self-respect and initiative, says the Right Rev. Donald B. Marsh, Bishop of the Arctic.

Bishop Marsh, whose 37-year ministry with the Anglican Church has been served in the North, returned from an air tour of his vast diocese disquietened by the difficulty the Eskimo is having adapting to a changing world.

"Many Eskimos today are living on relief," he says. "There is no economy for them — their economy was hunting but if you gather them into the settlements they can't hunt."

Some work for the Government at good wages but their neighbors may be on relief, he says.

The once self-reliant hunters are today gathered into Government-sponsored settlements for schooling.

"I won't call it education — they used to get education from their parents. The Eskimo children take exactly the same schooling as children down south. It is good for a child if he is going to live outside but what use is it to him in his country?"

"There may be a time, when the mines come into the North, that this schooling may be useful but at present it is creating bums.

"It is no use talking about 20 to 30 years from now. When a child comes home from school he also goes on relief as his parents expect him to live like a white man and he can't at present.

"Because you put a pair of pants and a shirt on him, you can't expect him to be a white man, not until you change his thinking."

Asked what the answer to this problem is, the stocky, churchman replied:

"If we had it we'd be working it.

"All we can do is help the individual retain his self-respect and feel that he has a part to play in a life that is worthwhile.

"This is the work of the church. Once he loses self-respect he is finished. This is why we won't build a church for the Eskimo. They must build it themselves and they are glad and proud of it."

Bishop Marsh says Eskimos now regard relief as their right. They used to regard it as a welcome gift. "It's the acceptance by the Eskimo of the white man's modern outlook," he said. They have come to depend on

City Aide Is 'Husband' Of Vessel in Museum

VANCOUVER (Canadian Press) — Why are ships considered females? Ron Thompson, the city clerk, thinks it is because they have husbands.

Mr. Thompson was recently notified by the Federal Department of Transport that he had become "ship's husband" of the St. Roch, a famous Royal Canadian Mounted Police vessel that is now in a museum here.

"They tell me it simply means I'm the official representative of the owner — the city," said Mr. Thompson.

relief. You can't take it back now."

Missionaries are trying to make the Eskimo feel he is part of the church at large and in the settlements Eskimos now build, manage and look after their own churches.

The diocese has three ordained Eskimo deacons and four schools are training lay preachers.

"The main answer to the Eskimo's problems is to have him do the work himself," the bishop said.

"He is capable and we let him take the lead, and show him we trust him."

Today the missions are manned by ordained men who learn the language and the ways of the north in the diocese. Most of the missionaries are from Britain.

"Canadians don't seem interested in going there, Bishop Marsh, said.

"The Government has this problem too and most of the health and welfare staff there are from Europe.

"If you want a good teacher what can you offer him in the North that he can't get in the south? Only the dedicated will go and that is what we want, men who are interested in what they can put in and not take out."

Soviet Starts a Quoddy Study

MOSCOW, Aug. 23 (AP) — A Soviet scientific expedition left for the White Sea today to determine how best to build a tidal hydroelectric station — Russia's version of the proposed United States Passamaquoddy project — on that arm of the Arctic Ocean. Officials said that the expedition would calculate the maximum and minimum power of the waves and decide whether or not winter storm waves would damage the station.

New Eskimo Spelling Devised

OTTAWA (AP) — Roman Catholic missionaries assigned to the Arctic have devised a new Eskimo spelling system. The system, still subject to approval by church authorities, would overcome difficulties caused by various dialects.

TERRITORIAL SHIELDS DEvised IN CANADA

INUVIK, N. W. T. (Canadian Press) — Bow-legged caribou, three-toed polar bears and cross-eyed white foxes were discussed by the Northwest Territories Council recently.

The animals were incorporated into the design of the coats of arms for the proposed new territories of Mackenzie and Nunassiq.

The coat of arms were designed by Alan Beddoe, a Canadian heraldic expert. But the nine-member council wondered whether Mr. Beddoe had done justice to the animals selected to symbolize the north.

The new crest for Mackenzie, shows a caribou standing on a wreath of mountain avens, the territorial floral emblem, and the new Nunassiq shield, shows a polar bear standing against a background of gold stars.

Knute Lang, member for the Mackenzie delta, said he approved of the Mackenzie crest but was puzzled because the polar bear was shown with only three toes.

"All the ones I've ever seen had four toes," he said.

I. Norman Smith was concerned about the features of the white fox on Nunassiq's crest. "Are white foxes really such a fierce, cross-eyed animal?" he asked.

E. J. Gall, member for Mackenzie north, said the Caribou on the Mackenzie crest appeared to be bow-legged.

The council agreed to recommend that the design be altered to straighten the animals' legs.

The coats of arms, with changes recommended by the council, were then approved.

Eskimo at Anglican Parley Makes Report for Arctic

TORONTO (Canadian Press) — Eskimos will get a report in their own language of the Anglican Congress.

George Innotik, a patient in a Toronto tuberculosis hospital, attended a rally in Maple Leaf Gardens recently and recorded his impressions.

The Right Rev. Donald Marsh, Bishop of the Arctic, had suggested the recording to personalize the congress for the natives of his diocese.

An Eskimo delegate was to have come to the congress but he became ill at the last minute and the money that was to have paid his expenses was given to an African delegate.

"It was something they decided to do themselves," Bishop Marsh said. "We had nothing to do with it. Despite the distances and scarcity of money, they managed to raise \$1,000."

3 LAKES IN CANADA LAI'D TO METEORITES

TOLEDO, Ohio (AP) — A professor at the University of Pittsburgh says an expedition has found evidence that three large lakes in northern Canada are meteorite craters.

Dr. Alvin J. Cohen said that if the theory were true, Manicougan Lake, 600 miles north of Montreal, would be the largest meteorite crater in North America and the second largest in the world. It is more than 45 miles in diameter.

The group also studied Lac Couture, 600 miles northwest of Manicougan and Clearwater Lake near the east coast of Hudson Bay. Clearwater Lake, according to Dr. Cohen, is contained in two joined craters. One is 18 miles in diameter and the other 13 miles across.

Dr. Cohen said that a meteorite a mile in diameter would make a crater 45 miles across in striking the earth. He said the meteorite theory was based on the shape of the lakes.

The curvature of the shoreline suggests the existence of a crater more than 250 miles across, he added.

Big Gain in Scientific Study Of Spitsbergen Reported

Scientific expeditions had a rewarding summer in Spitsbergen, Tore Gjelsvik, director of the Norwegian Polar Institute reports, according to News of Norway.

With the assistance of helicopters and snow scooters, researchers were able to carry out far more work than in any preceding summer. The institute had fifteen expeditions in the field, including seven geological parties.

Arctic Canals Envisaged

MOSCOW, July 16 (AP) — Prof. Ivan Pesghansky said today he has discovered a way to cut canals in Arctic ice by using the rays of the sun and coal dust. He told the Press Agency Tas that planes could scatter the coal dust mixed with sand along the projected canal route to increase the effect of the sun's rays. As the area melts, the sand cuts a channel through the ice, he said.

Alaskan Bishop Flies Plane

The Right Rev. W. J. Gordon, Episcopal Bishop of Alaska, travels about 50,000 miles a year to cover his diocese. "Everybody flies out there," he said recently. "We're used to it." He had landed at Toronto after flying his own plane 3,300 miles from Fairbanks to attend the Anglican World Congress, The Associated Press reports.

POLAR BALLOONS TO STUDY SPACE

Cosmic Rays and Northern
Lights to Be Observed

The New York Times

WASHINGTON, Dec. 10 — Twenty or more large balloons carrying scientific instruments will circle the North Pole in the next two years and observe cosmic rays from space and the northern lights that illuminate the polar atmosphere.

The National Science Foundation announced today the award of a \$393,000 grant to the University of Minnesota to finance the novel polar project. The project, called POCIBO, for polar circling balloon observatory, will be directed by Dr. John R. Winckler, a space physicist and a cosmic ray expert.

The project will be part of the United States contribution to the International Years of the Quiet Sun, a cooperative program to conduct geophysical studies during the next two years, when solar activity will be at a minimum.

The balloons, each with a volume of 1.5 million cubic feet, will be launched from the Arctic research laboratory in Point Barrow, Alaska, and fly at an altitude of about 100,000 feet.

The balloons will be carried along by the circling air currents discovered in the polar region during the International Geophysical Year. They will travel, sometimes as fast as 200 miles an hour, in a 5,000-mile circle around the North Pole. Each flight is expected to last a week.

Suspended from each balloon will be a 45-pound payload of instruments, some of which are expected to be supplied by foreign scientists.

The equipment will measure cosmic rays entering the upper atmosphere from outer space, the earth's magnetic field, the aurora borealis and the Van Allen radiation belts, which dip low near the earth in the polar regions.

Traveling above most of the earth's atmosphere, the balloons will move through the region where the aurora borealis is formed, thus permitting direct observations of this spectacular phenomenon.

The aurora borealis, or northern lights, is believed to be caused by the "dumping" of energetic particles from the Van Allen belts into the upper atmosphere.

The instruments will also measure the intensity and energy of particles in the Van Allen belt as they spiral along the magnetic field into the polar region.

The temperature and inten-

sity of heat radiation in the upper atmosphere also will be examined. An attempt, for example, will be made to understand the sudden, explosive warmings that sometimes occur in the Arctic upper atmosphere during the winter.

Taking advantage of the sun's quiet state, one experiment will measure the lower-energy cosmic rays from the milky way. These are normally deflected from the solar system when the sun is active with solar storms and sun spots.

The balloons will be tracked by two radio stations, one at Point Barrow, the other at the Arliss II meteorological station. The Arliss station is maintained by the Navy on an ice island drifting through the Arctic ocean. The island is now within 1 degree latitude of the North Pole.

Other nations, presumably including the Soviet Union, will also be invited to cooperate in tracking the balloons.

Suspended from each balloon will be a 6,000-foot-long radio antenna, which will be let out as the balloon ascends. The antenna is needed to transmit on the low frequency of 70 kilocycles that will carry the radio signals over the curve of the earth.

The launchings will be carried out by a team from Raven Industries, Inc. of Sioux Falls, S. D., which will build the plastic balloons. The first launching is scheduled for January.

BUILDERS IN ARCTIC CHIDED FOR WASTE

MONTREAL (Canadian Press) — Builders in the Arctic waste money by paying too little attention to available knowledge of climatic conditions, an expert says.

Dr. George Jacobsen, a specialist in Arctic construction, said that both Government and private builders often did not bother to make proper inspections of the sites. They also neglect to find out whether information about the site, its soil, its climate, and its suitability for building is available, he added.

Dr. Jacobsen suggested at a symposium sponsored by the Arctic Institute of North America that an Arctic information center be set up for builders and governments. Private concerns that have made Arctic surveys could be paid royalties for the use of their information by others, he suggested.

Dr. Jacobsen said important buildings were often built on sites picked from aerial photographs, without ground inspection.

If there was a search, it was generally assumed by the builder that nothing was known and surveys were often repeated, he said.

TORONTO TO TEACH ARCTIC BUILDING

University Adding Graduate
Course in Architecture

TORONTO (Canadian Press) — Architects faced with the problems of building in the far north will soon have somewhere to turn with their difficulties. The University of Toronto's School of Architecture has appointed a young Australian to organize a new graduate course on architecture in extreme environments.

Even before the course has been organized the United States National Aeronautics and Space Administration and Canada's Northern Affairs Department have expressed interest.

Heading the program will be Assistant Professor John Andrews, 29 years old, who was a finalist in the international competition in 1958 for a design for Toronto's new city hall.

Although first prize went to the Finnish architect Viljo Rehell, Mr. Andrews came to Toronto to work on the final designs.

The aim of the course will be to study what man needs so he can live in extreme environments such as the Arctic, Professor Andrews said in an interview.

Social scientists of all kinds will be needed in the course because the end product of the architect's plans must be suitable for reasonably comfortable living.

"We might find that southern man is incapable of standing the strain of northern Arctic conditions," Professor Andrews said. "The Eskimos can do it, but it might take generations for us to adapt. Perhaps we shouldn't build in the Arctic at all. We have to begin from scratch. We have to build for the Arctic, and not simply transfer old ideas north."

Professor Andrews noted that Frobisher Bay, Northwest Territories, has underground tunnels connecting its buildings, but he suggested that self-enclosed bubble cities might be more agreeable for inhabitants.

Fruit and vegetables could be grown by "soilless" agriculture. Garbage and waste would be a problem, but probably could be burned for heat.

The bubble's design would have to offer minimum resistance to constant Arctic winds, he said, but at the same time catch and hold the snow for its insulating properties.

The architectural course begins this year but some work was done last year on the subject by Peter Favot, a final-year student who subsequently received a scholarship to study cold-climate building in Sweden.

LENIENT PENAL CODE WORRIES GREENLAND

GODTHAAB, Greenland (Reuters) — The Greenland criminal code of 1954, often described by penologists as the most modern in the world, is too modern, in the view of some of the men who enforce it.

Greenland's rapid development toward a modern industrial community has out-dated the criminal code in many ways. Joergen Hertling, the public prosecutor, said.

Prisons are unknown. The heaviest local punishment would be to send an offender to work in Godthaab, where he would live at a detention home whose doors are locked at 6 P.M. on weekdays and 9 P.M. on Sunday. In extreme cases criminals are sent to Denmark.

Drawn up by a group of sociologists, the Greenland criminal code was built up on the basis of court decisions reached in the preceding 25 years.

Greenlanders were asked by the sociologists for their views on crime and punishment.

But a changing outlook in a changing Greenland has resulted in friction, and "a more old-fashioned approach now seems desirable" Mr. Hertling added.

Mr. Hertling would like to retain the avenues for corrective treatment provided by the 1954 legislation. But he also advocates one or more work camps in isolated places, managed on the lines of open prisons.

Pair Fly Over Pole In One-Engine Plane

BODOE, Norway (AP).

Navigator Einar Pedersen and his pilot wife Ingrid have carried out their North Pole crossing in a single-engine plane. A spokesman for the Bodo flight information center said the couple passed Prince Carl's Foreland at Spitsbergen at 3 p. m. GMT (10 a. m. EST) July 31 in their white-and-red Cessna.

They took off Monday from Fairbanks, Alaska, and made a stop at Greenland Tuesday.

Geographer Depicts Pear-Shaped Earth

By the Associated Press

Denver

The earth, of course, is not flat, but neither is it exactly round.

It is a trifle pear-shaped, a speaker said recently at a meeting of the Association of American Geographers.

Toshio Hoshide of the United States Army Corps of Engineers map service, said, "The North Pole is about 15 yards farther from the center of the earth than the South Pole."



National Film Board of Canada

Mary Panegoosho Edits 'Inuktitut' (The Eskimo Way)

From Arctic to Africa

By Robert Moon
The Christian Science Monitor
Ottawa

Mary Panegoosho, a young woman from the Canadian Arctic, has returned from being the first Eskimo ever to put foot on African soil.

She says she found the experience of an eight-week tour of Ghana and Nigeria "extremely interesting." The reports coming back from those two countries indicate that she was just as interesting to the Africans.

"From her arrival at the airport in Accra, she has aroused the admiration of the local people as few other visitors have done," wrote one Ghanaian resident in a letter printed in an Ottawa newspaper.

Miss Panegoosho is a self-assured young woman, fashionably dressed and well educated, who edits Canada's only Eskimo-language magazine, as a staff member of the federal Department of Northern Affairs.

Her trip went on the planning board two years ago when she first met the High Commissioner for Ghana to Canada, C. T. Nylander. He asked her about her work with the department's welfare services linguistic division. It is in these duties that she is editor of "Inuktitut" (The Eskimo Way). The idea of an inter-cultural visit to Ghana emerged, and ultimately he escorted her there

as a guest of his government. She made her base at the home of the Canadian High Commissioner in Accra, but her tour took in various parts of the country, including the Volta River damsite.

Wherever she went she visited the schools—on one morning it was six—and talked to the children about the Far North of Canada and the people who live there.

"The children in Ghana asked me better questions than Canadian children ask me about Africa," she says. "They know as much about our North as Canadians."

Miss Panegoosho found the people very interested in the way of life of everyone in North America. Her job, of course, was to tell them especially about the Eskimo people.

To that end, she took with her slides, Eskimo carvings, and Eskimo prints, which she showed in exhibitions in the Accra library and later in the Nigerian Museum in Lagos. Six weeks of her tour was in Ghana and two weeks in Nigeria.

Mary Panegoosho has been used to temperatures of 65° below zero at her Pond Inlet home in the Arctic. When African temperatures rose to tropical heights, she found it like a "steam bath."

But she was fascinated all the same. When Ghanaian school children sang and danced a

welcome to her, tears came to her eyes. At the Accra Press Club, where she was guest of honor, she sang Eskimo folk songs and danced the African "High Life."

The social life was strenuous and she found the food "hot." The people were very friendly to her and they all seemed to have "wide smiles that came from their hearts."

Some of the Africans thought she would be about three feet tall. After all, wasn't that about the size of the entranceways to the Arctic igloos? Actually, she is five foot, one.

Miss Panegoosho even met Canadian teachers on her tour who had never seen an Eskimo. She thought that was humorous.

She had a visit with President Kwame Nkrumah of Ghana, who gave her a gold necklace, bracelets, a carved elephant tusk, records, and Kente cloth.

"He was the most friendly man I ever met," she says.

The gifts came from many directions during her weeks abroad. They were so numerous she had to have them sent home by government shipment.

People asked her about the Eskimo methods of travel, what they eat, and the animals of the North. They wanted to know whether an Eskimo is the same as a Canadian. (He is.) She wrote back home to her

mother and father, six brothers, and three sisters at Pond Inlet while on tour. Her own people wanted to know about the same kind of things the Africans wanted to know about them.

On her way home she visited in London, and went to Portsmouth to see the HMS Eskimo, a Royal Navy frigate.

She is back now at her editor's desk in a modern office building in downtown Ottawa. She has begun writing about her African experiences for her Eskimo readers of the Far North. For Mary Panegoosho, it is inter-cultural, indeed.

SLOW ELIMINATION OF HUDSON BAY SEEN

WINNIPEG (Canadian Press)—Hudson Bay will disappear in several thousand years, according to a geology professor.

Dr. Bruce Wilson of the University of Manitoba said recently that the earth surface of the area was rising as a result of the disappearance of a mile-deep sheet of ice that covered much of North America during the last ice age.

Hudson Bay was formed by a weakness in the earth's crust at the junction of two ancient mountain ranges, he declared, adding: "During the glacial period this area was depressed more than the rest of the continent."

Hudson Bay is a massive body of salt water touching the Northwest territories and northern Manitoba, Quebec and Ontario.

Dr. Wilson said in an interview that the Hudson Bay area had risen about 500 feet in 7,000 years, but that now it was rising faster.

He predicted that it would rise 800 feet more in the next few thousand years, draining the water back into the Atlantic Ocean.

"This is a very short period of time, considering the magnitude of what is happening," he said.

He added that the bay's water level was 60 feet below the Atlantic sea level.

Sourdough Leaves Yukon To See East After 60 Years

EDMONTON, Alberta (Canadian Press)—A grey-bearded, 88-year-old sourdough has left the Yukon after 60 years.

Herbert Cluett of Mile 1093 Alaska Highway, left recently for Kingston, Ont., where he planned to look up some people "still living that I used to know."

Mr. Cluett went north in 1900 during the Klondike gold rush. He cut wood for steamboats, tended bar, worked on the highway and prospected for gold. But he never struck it rich.

He says he enjoyed his life on the northern frontier, but lately "it's been a little monotonous."

ARMY TO DRILL ICE FOR AIR SAMPLES

Mile-Deep Probe Expected
to Show Climate Changes

By WALTER SULLIVAN

The New York Times

LOS ANGELES, Aug. 16 — After five years of preparation, Army scientists plan in October to drill more than a mile into the Greenland ice sheet.

The fruits of the project should include samples of air breathed by primitive man as well as a continuous record of climate back into the last ice age.

The drilling should also provide data on the fallout of dust from earth and from space over the last 15,000 years.

The drill cuts by means of an electrically heated copper ring that melts its way downward. A core of ice is left intact inside the ring, sections of which are periodically hoisted out for study.

The drill, a huge, self-contained rig, is ultimately to be hauled to the South Pole to bore 7,200 feet into the ice there. According to Dr. Henri Bader of the University of Miami, this should result in ice samples once snow 75,000 years ago.

Trapped in this ice are bubbles of air captured when the snow fell and was compacted into glacier ice.

Dr. Bader discussed the project on the final day of a conference held at the University of California here to review findings made in the International Geophysical Year and its successor programs. He was formerly chief scientist of the Army's Snow, Ice and Permafrost Research Establishment, now reorganized into the Cold Regions Research and Engineering Laboratory at Hanover, N. H.

Since ice-sheet drilling began in the nineteen-fifties, he said, there have been 13 holes sunk more than 350 feet into various ice sheets. The deepest, drilled by the Army in Greenland, penetrated about 1,355 feet.

The Russians have bored a 1,200-foot hole near Mirny, in Antarctica, and the Americans have gone down more than 1,000 feet at Byrd Station on the same continent. These holes, however, have marked the limit of ordinary drilling techniques.

Difficulties have delayed the Army's attempt at a record depth. This summer, however, a hole almost 800 feet was drilled with the thermal bit.

A depth of 6,600 feet will be attempted in October. It should take about four months to reach that depth, Dr. Bader said.

The chief difficulty in bringing up usable ice cores, he said, is that the ice, relieved of the extreme pressure existing at great depths, explodes. For the same reason the ice sheet soon flows together, closing the hole.

To avoid this the deeper holes will be filled with diesel oil. Its weight is sufficient to counteract the ice pressure.

Another problem, Dr. Bader continued, occurs in trying to count the ice layers, like tree rings, to determine the age of samples brought to the surface. In shallow portions of the hole the annual layers can often be recognized visually, but at great depths the layers have been so compressed that they are indistinguishable.

A cumbersome and expensive way to count the layers, he explained, is to analyze the length of each core for its oxygen isotope content. There is a slight difference between the isotope ratios in summer snow and those in winter snow, making it possible to identify the annual cycle of seasons.

Dr. Bader, however, hopes to be able to use a simpler method by measuring the electrical conductivity of each sample.

Because little snow falls on Greenland during the dry, cold winter months, more dust accumulates on each cubic-inch than in summer when warm, moist air brings in a great deal of snow. This, he said, makes water extracted from summer layers a better conductor of electricity than the winter layers.

Holes drilled to date have shown a recent warming in both Greenland and Antarctica. Data collected in the I.G.Y. and subsequently have also shown that the air's carbon dioxide content increases slightly each year.

The drilling in Greenland should also solve another puzzle—what is believed to be a layer of ice 1,000 feet thick on the bottom of the Antarctic ice sheet that seems to be a pudding of rocks, dirt and ice.

ARCTIC PLANE CREWS TRAINED IN SURVIVAL

SONDRESTROM, Greenland (Reuters)—The steward serving coffee on a polar flight knows how to shoot a seal, skin it and serve the meat for dinner.

This is only part of the training given to the crews of international airlines that fly over the top of the world.

The crews also know how to build igloos and to employ other methods for keeping themselves and passengers warm in the Arctic wastelands in case of a forced landing.

Ability to build a snow hut is the final skill necessary before airline crews are deemed fit to operate the aircraft, which today regularly cross the Greenland Ice Cap, a 1,200-by-600 mile plateau of ice and

4 Nations Extend Curb On Hunting Fur Seals

WASHINGTON, Oct. 8 (AP)—The United States, the Soviet Union, Canada and Japan signed today an agreement extending for six more years restrictions on hunting fur seals in the North Pacific.

Under the treaty, fishing for fur seals on the high seas is prohibited. The United States and the Soviet Union agreed to give 15 per cent of their catch of the fur seals to Japan and a similar amount to Canada.

The hunting of fur seals is limited to the Pribilof Islands, owned by the United States, and to the Komandorsky and Roben Islands, owned by the Soviet Union.

snow.

Nothing grows on the ice cap, which covers all but the edges of the Danish island of Greenland. Apart from Camp Century, an experimental underground town near Thule built by the United States, the ice cap is uninhabited.

Yet the Greenland air space is being increasingly favored by airlines to link Europe to the United States and to the Far East.

Back From Icy Arctic

Back from the glittering Arctic with tales of an unbelievably big ice island and an emergency delivery of medicine to an Eskimo village, the Coast Guard's icebreaker Westwind sailed into New York Nov. 14.

The Westwind spent a certain amount of time up near the North Pole ramming herself into solid ice in tests for a new class of icebreakers. As reward for five and a half months of such duty in the far north, the rugged little ship was given a rousing welcome when she arrived in the harbor.

Ships blew and hooted and a fireboat spewed. As the Westwind moved into the dock at the Brooklyn Navy Yard for a half-year's overhaul, a Navy band played and a cluster of relatives on the dock cheered.

The big ice island was discovered in Kennedy Channel, which separates Greenland from Ellesmere Island. The Channel, incidentally, has no connection with the Democratic Administration but was named a century ago for the British Capt. William Kennedy.

DENMARK WIDENS AID TO GREENLAND

Climate a Barrier to Drive
for Industrial Growth

GODTHAAB, Greenland (Reuters)—Denmark is pressing a development program aimed at turning its former Arctic colony, Greenland, into a self-supporting island with a high living standard.

The Danish Administration has placed its main hope on fishing the rich waters between Greenland and Newfoundland, with tourism a possibility, and as yet undiscovered mineral wealth a long chance.

"Greenland has been in the past the most neglected part of Denmark," Foreign Minister Per Haekkerup said.

The island, which was kept as a closed colony for years, was incorporated in the country by constitutional amendment in 1953 after a referendum among its inhabitants.

Last year Denmark invested nearly \$25,000,000 or the equivalent of \$700 a head, in Greenland, the world's biggest island. Most of the money was for industries, and improving harbors and roads in the small towns scattered along the long, rugged coastline.

Most of the industries started are directly or indirectly connected with fishing. New schools are being built or planned.

Superficially, there is little to show for the money Denmark has put into Greenland since the new "development" policy was started by the Government in 1953. Spokesmen for the administration said that the high cost of working in the Arctic was largely responsible for this.

In northern Greenland, the cost of putting up one telegraph post is estimated at \$800 because dynamite must be used to break the permanently frozen subsoil.

Greenland, which covers 1,000,000 square miles, has no trees. All timber has to be imported.

The longest stretch of tarred road at present is a six-mile airstrip at the Soendre Stroemfjord airfield.

While a few private businesses have opened in the larger Greenland towns, most business, from deep-freezing and canning fish and shrimps to selling toothpaste, is still handled by the official Royal Greenland Trade Department.

The department, which had an absolute monopoly of trade up to 1950, arranges navigation to and from the island and operates about 90 general stores in Greenland itself. Only 20 per cent of the island's trade is in private hands.

SOVIET DISSOLVES ITS ARCTIC AGENCY

Organization Guided Ships
of All Nations Past Ice

The New York Times

MONTREAL, Sept. 21—The organization that once ruled the Soviet Arctic and has directed Soviet operations in both polar regions has been dissolved.

It was known abroad as the Northern Sea Routes Administration. The Russians referred to it by its condensed title: Glavsevmorput.

For the first seven years after its creation in 1932, the organization ruled the Soviet north in a manner analogous to the way the Hudson's Bay Company once held sway in the Canadian Arctic. Its role was then curtailed, but, under the Ministry of the Merchant Fleet, it has continued in its main function—shepherding ships past the icefields to and from ports along the Soviet Union's vast Arctic seaboard.

Last year a record number of 300 ships made such journeys, including about 25 from other nations.

The responsibilities of the dissolved organization have been subdivided. The Ministry of the Merchant Fleet will continue to carry out ice reconnaissance and operate icebreakers, including the atomic-powered Lenin.

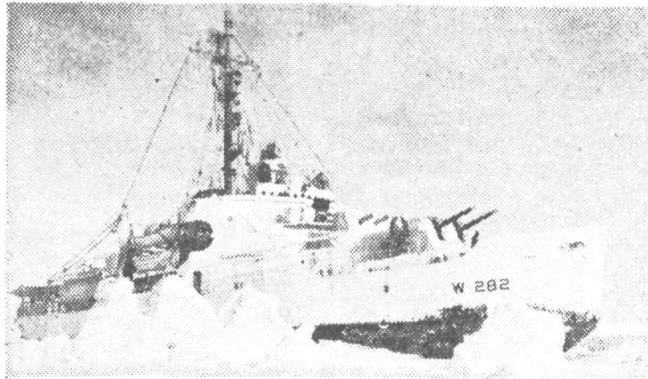
The Hydrometeorological Service, which is the Soviet Weather Bureau, has taken over the polar activities. This includes conduct of the operations in Antarctica, as well as the maintenance of drifting stations on Arctic ice floes, the operation of northern weather stations and of the Arctic and Antarctic Scientific Research Institute in Leningrad. The latter, with a staff of 500, is by far the largest such institute in the world.

The change in organization was described here by Dr. Pyotr A. Shumsky, a leading Soviet specialist in polar ice study. He attended a two-day symposium on the Canadian Arctic organized by McGill University and the Arctic Institute of North America.

Dr. Shumsky said the reorganization had taken place because the situation in the Arctic had evolved to a point where Glavsevmorput was no longer needed.

At the session yesterday, Dr. Terence Armstrong of the Scott Polar Research Institute at Cambridge University, England, stressed the extent to which Soviet development of the Arctic has outstripped that by North America. Dr. Armstrong has specialized in study of the Soviet Arctic and the Northern Sea Route. He attributed Soviet

Coast Guard Ship Is Operating Close to Siberia in Ocean Study



U. S. Coast Guard

The Coast Guard cutter Northwind, which is now making oceanographic studies in the north Pacific near Siberia.

By The Associated Press

WASHINGTON, Sept. 1—Russian fishing vessels may be parked off the eastern coast of the United States, but a United States ship is skirting close to Soviet territory, too, the Coast Guard disclosed tonight.

In a statement, the Coast Guard said the cutter Northwind has for several weeks been making an oceanographic study in northern Pacific waters close to the Siberian coast. The ship is under daily surveillance by Russian planes, the Coast Guard added.

The Coast Guard said tonight that the Northwind had been making oceanographic studies in the Arctic Ocean since July. She proceeded through the

emphasis on that region both to political and geographical considerations.

Many of the great waterways of the Soviet Union flow into the Arctic Ocean, providing routes for minerals to be hauled out of the country. Much of the shipping, including almost all that from abroad, goes to Igarka on the Yenisei River to pick up lumber, he said in an interview. Heavy Soviet traffic also goes to Kolima, he added, but the nature of the cargo is unknown.

The export of nickel, copper and platinum, he said, has expanded Norilsk to a population of more than 100,000.

According to Dr. Shumsky, the head of Glavsevmorput, A. A. Afasianev, has been assigned duties related to his earlier northern operations.

The director of the Hydrometeorological Service is Evgeny Federov, who long represented the Soviet Union in dealings with other nations on space matters. He served as vice president of COSPAR, the international committee on Space Research.



The New York Times Sept. 2, 1963

Cross shows approximate location of cutter. Line indicates her route from Alaska.

Chukchi Sea to the East Siberian Sea and into the Laptev Sea, and has been conducting tests within sight of the north Siberian coast.

A Coast Guard spokesman estimated that most of her work has been done 15 miles or more from the coast. The Laptev Sea is about 1,000 miles east of the Soviet nuclear testing grounds on the island of Novaya Zemlya.

Oceanographic studies include measurements of currents, water temperatures and depth soundings. The spokesman said this was the first known survey in this area by a United States ship in decades, if not the first ever.

To get to the Laptev Sea, the Northwind passed through the Sannikov Straits, a 35-to-40-mile-wide body of water running through the New Siberian Islands, about 100 miles off the Siberian coast.

The Coast Guard said the Northwind had been breaking through four feet of ice, with humps ranging up to 10 feet, and had experienced some damage to her bow, but not enough to cut short her mission.

The ship, which set out on the mission from Point Barrow, Alaska, is expected back there

in October and in her home base of Seattle by November.

A Coast Guard spokesman said surveillance would not provide the Russians with much information about the Northwind that they did not already know. She was in Russian service under the World War II Lend-Lease program until her return to the Coast Guard in 1951.

Like her two sister ships in the Coast Guard's "Wind" class, the Northwind is 250 feet long and displaces 6,515 tons with a full load. The sister ships are the Eastwind and the Westwind.

The Northwind's construction is entirely welded, with a double hull and exceptionally heavy plating in the bow designed to crush nine feet of ice. She also has a helicopter platform aft.

In 1957, while on duty with an American expedition in the Antarctic, she smashed through nearly a mile of ice to help the American freighter Arneb after she had crashed into an ice floe.

U.S. Icebreaker Off Siberia Is Damaged by Heavy Ice

WASHINGTON, Sept. 18 (AP)—The Coast Guard said today that the icebreaker Northwind, returning from an oceanographic voyage along the north coast of Russian Siberia, had suffered extensive damage to her steering gear from Arctic ice.

The Northwind reported that heavy ice had reduced its steering capability by more than 50 per cent, in addition to previous damage sustained by the vessel during its voyage near Siberia.

BERING FISHERMEN TO SPARE HALIBUT

VANCOUVER, B. C., Nov. 24 (AP)—The North Pacific treaty nations agreed yesterday to cut next year's halibut quota in the eastern Bering Sea by more than 40 per cent.

Delegates representing the United States, Japan and Canada, at the annual meeting of the International North Pacific Fisheries Commission, recommended a combined quota of 6,393,340 pounds.

That compares with a quota of 11 million pounds this year.

Approval by the member governments is regarded as a formality.

Japan also agreed to a proposal that no long-line fishing gear be in the water for 48 hours before the opening of the halibut season. That will give fishermen of all three nations an even start.

Japanese spokesmen told the commission there would be no substantial increase in Japanese trawling operations in the halibut-rich Gulf of Alaska in 1964.

VICTOR E. LEVINE, A BIOCHEMIST, 71

Former Head of Department
at Creighton U. Is Dead

Dr. Victor Emanuel Levine, professor emeritus of biological chemistry and nutrition at the Creighton University School of Medicine in Omaha and a widely known authority in his field, died Sept. 29 in Memorial Hospital. He was 71 years old.

Dr. Levine, who retired in 1960, had been head of his department at Creighton and also had served as advisory director of its Graduate School of Chemistry. Recently he had been a visiting Fulbright Professor at the Universities of Madrid and Valencia in Spain.

Dr. Levine's career had included frequent trips to the far north to study life of the Eskimos. In 1948 he led an Arctic expedition for the United States Office of Naval Research, which made its headquarters at the Arctic Research Laboratory at Point Barrow, Alaska. He had made other Arctic trips as a consultant to the United States Public Health Service from 1927 to 1938 and in the summer of 1939.

Born in Minsk, Russia, Dr. Levine was brought to the United States as a boy. He was graduated from City College in 1909, and received a Master of Arts degree in 1911 and a Doctor of Philosophy degree in 1914 from Columbia University. After studying at The Johns Hopkins University and the University of Toronto, he received his medical degree from Creighton in 1928.

While pursuing his graduate studies, Dr. Levine taught at the College of Physicians and Surgeons of Columbia University, at Fordham University and at Creighton. He also had been director of the chemical laboratory at Beth Israel Hospital and director of chemical and pathological laboratories for the City of New York.

During World War II, Dr. Levine served as a major and later as a lieutenant colonel in the Army Medical Corps.

He was a fellow of the American Association for the Advancement of Science, the American Geographical Society, the American Institute of Chemistry, the New York Academy of Science, the American Public Health Association, the Royal Society of Arts and Sciences in Great Britain, the British Institute of Philosophic

DOCTOR'S RECORDS VITAL AFTER 53 YEARS

VICTORIA, B. C., July 20—The last survivor of a forgotten expedition to the Arctic died in Royal Jubilee Hospital Friday evening.

He was 86-year-old Dr. L. E. Borden, rushed to hospital from his home at 1315 Monterey soon after 4 p.m.

On July 5, 1956, he established Canada's claim of sovereignty over the Arctic islands.

"That settles it for all time," he declared then.

Dr. Borden was the last survivor of the first Canadian Arctic expedition in 1903 when official possession of Ellesmere and Southampton Islands was taken for the Canadian government.

Long-forgotten documents establishing this possession were sent 53 years later to Ottawa and the government said they proved that "the Canadian Arctic belongs to Canada."

Dr. Borden was surgeon with the government-sponsored expedition from Halifax in 1903 when the Newfoundland-sealing vessel Neptune sailed north under command of Capt. A. P. Low.

The exploration was researched by Ottawa following 1956 reports that U.S. servicemen in the Arctic did not seem



DR. L. E. BORDEN
... settled it.

to recognize Canadian sovereignty there.

Dr. Borden heard of this and sent documentary proof.

His documents showed that, on the Neptune's expedition, official possession was taken of Ellesmere and Southampton islands and all adjacent smaller islands.

Ellesmere is in the Far North; Southampton in Hudson Bay.

The documents showed that

Canada's Arctic is "all that area between two geographic lines drawn from the western and eastern ends of Canada and meeting at the north pole."

They were read in the House of Commons by H. W. Hertridge, CCF member for Kootenay West.

The document pertaining to Ellesmere Island stated:

"In the name of King Edward VII and on behalf of the government of the Dominion of Canada, I have this day taken possession of the island of Ellesmere and all the smaller islands adjoining it... (signed) Capt. A. P. Low."

Born in Nova Scotia, Dr. Borden sat in the B.C. legislature from 1928 to 1933, representing Nelson, as the riding was then known. He was a graduate in arts and medicine from Dalhousie University and a major in the medical corps in both world wars. Later he practised at Nelson, B.C., for 45 years.

His home here is filled with specimens of Eskimo arts and crafts picked up during Arctic expedition.

A leading Free Mason, Dr. Borden is survived by the widow at home; a daughter, Mrs. Elizabeth Horton in Vancouver and one sister, Mrs. Annie Newton in Winnipeg.

Studies, the Royal Anthropological Society of Great Britain and Ireland, the International Dental Research Association and the American Medical Writers Association.

A member of the board of governors of the American Polar Society, he also had been a director of the Professional Men's Club and had belonged to the Explorers Club, the Spanish Club, the Elks and numerous professional organizations.

In 1937 he received from the Columbia Graduate School Alumni Association a scroll for "outstanding contributions to the human race." He was the author or co-author of several technical books, and had contributed articles on the biological aspects of the Eskimos to the Encyclopedia Arctica.

Scientist Dies at Pole

A polar scientist, Jerome A. Hirschman, 39, of Madison, Wis., died July 31 on an ice floe 100 miles from the North Pole. He was stricken with pneumonia on July 9. When Hirschman rallied, it was decided to keep him on the floating island during his convalescence. He suffered a relapse

RALPH S. O'LEARY, A SCIENCE EDITOR

Texas Newspaperman Dies
After Antarctic Assignment

CHRISTCHURCH, New Zealand, Nov. 13 (UPI)—Ralph S. O'Leary, science editor of The Houston Post, died today of a heart attack at Operation Deepfreeze headquarters here. He was 52 years old.

Mr. O'Leary had returned to Christchurch Sunday after spending six days on a navy tour of the United States base in Antarctica.

Survivors include his widow, the former Ellen F. Fatherree.

Mr. O'Leary, who was born in New Orleans, attended Tulane University. He became a reporter for The New Orleans Item in 1928 and later was a legislative correspondent and assistant city editor of the

paper. In 1941 he became a reporter for The St. Louis Star-Times.

After the war, in which he served in the Air Force, Mr. O'Leary returned to reporting at The Star-Times. In 1951 he joined The Houston Chronicle as a reporter and in 1953 he became a reporter for The Houston Post. He was its city editor from 1954 to 1960 and had been science editor since then.

5 Nations to Sign Accord On Whale Ship Observers

LONDON, Oct. 25 (Reuters)—Five nations will sign an agreement Monday on an international observer system aboard whaling expeditions, a British Foreign Office spokesman said today.

The signatories will be Britain, the Soviet Union, the Netherlands, Norway and Japan.

Under the agreement each Government would have the right to put an observer of its own nationality on foreign expeditions to the Antarctic.

The inspectors would verify observance of the international whaling convention and see that whaling quotas, aimed at conserving stock, are not being exceeded.

GRIFFITH TAYLOR, GEOGRAPHER, DIES

Professor and Explorer Had
Taught in Australia

The New York Times

SYDNEY, Australia, Nov. 5.—Prof. T. Griffith Taylor, geographer, explorer and author, died today in Manly Hospital. He was 82 years old.

An authority on social and economic geography, he had been professor of geography at three universities—at Sydney from 1920 to 1928, at Chicago from 1928 to 1934 and at Toronto 1935 to 1951.

Dr. Taylor was senior geologist in the Antarctic expedition of 1910 to 1913 in which the leader, Capt. Robert Scott, lost his life.

Dr. Taylor was born in London, came to Australia at the

age of 12 and spent most of his life in Sydney. He was educated at Sydney University and Cambridge.

Dr. Taylor was frequently the center of controversy because of his unorthodox views. In the early nineteen twenties, when many people spoke of an eventual Australian population of up to 200,000,000, he asserted that Australia could support only 30,000,000 at a high standard of living. Some critics called his opinion unpatriotic.

He ridiculed the "white Australia" immigration policy. In 1960, he urged Australia to consider giving 2,500,000 square miles of Australian-claimed Antarctic territory to the United Nations as a demonstration of Australia's belief in internationalism.

At various times he was president of British, American and Canadian geographers associations.

Dr. Taylor wrote 40 books and two weeks before death was correcting proofs of his last book.

He is survived by his widow and two sons.

Dr. Georgi A. Ushakov, 62, Dies; Soviet Surveyor of North Land

The New York Times

MOSCOW, Dec. 4.—Dr. Georgi A. Ushakov, Soviet polar explorer, died yesterday. He was 62 years old.

Dr. Ushakov, who was active in Arctic exploration in the nineteen-thirties, is known mainly for his survey of North Land, an archipelago off the northernmost point of Siberia. He discovered that the ice-covered area formerly thought to be a single land mass was a group of islands.

He was a native of the Russian far east and fought there with Bolshevik partisans against Japanese intervention troops after the 1917 revolution. From 1926 to 1929 he served as chief of a polar research station on Wrangel Island off northeast Siberia.

For the exploration of North Land, he and four associates were abandoned in August of 1930 by the Soviet icebreaker Sedov and picked up two years later by the icebreaker Sibiryakov. The Sibiryakov was the first ship to cruise along the north coast of Siberia from west to east in a single navigation season without wintering in the ice.

The Ushakov expedition mapped the North Land archipelago, covering almost 1,400 miles overland, and named its principal island for the Communist party and its 1917 Revolution.

As deputy head of the North-

ern Sea Route Administration in the thirties. Dr. Ushakov played a key role in organizing the Soviet Union's Arctic exploration program. In 1934 he participated in the air rescue of the stranded crew of the Chelyuskin, a Soviet ship crushed by ice off Northeast Siberia.

The following year, aboard the icebreaker Sadko, Dr. Ushakov navigated from the Greenland Sea to the Barents Sea around the north side of Spitsbergen. The Sadko expedition discovered an island between Franz Josef Land and North Land that reached the latitude of 82 degrees 42 minutes, the northernmost point attained by a freely navigating surface vessel. The island was named for Dr. Ushakov.

Dr. Ushakov later earned the academic title of Doctor of Geographic Sciences. He was the author of a book, "On Untrod Land," an account of his Arctic exploration published in 1951.

In May of 1934, after the rescue operations off Siberia Dr. Ushakov visited New York on his way back to the Soviet Union. He was a guest of honor at a dinner given by the American Russian Institute for Cultural Relations with the Soviet Union.

POLAR BEAR

A rampant polar bear is the motif of a new series of definitive stamps issued by Greenland. Designed by Viggo Bang,

SEATTLE ICEBREAKER SKIPPER AND 'COPTER PILOT KILLED

WASHINGTON, Oct. 16.—(A. P.)—Two Navy officers were killed yesterday when their helicopter crashed on ice in the Beaufort Sea north of Alaska.

They were Comdr. John J. Metschel of Seattle, and Ens. James L. Wood of Annapolis, Md.

The Navy said the helicopter, from the ice breaker Staten Island, sank after crashing. Neither body was recovered.

Metschel leaves a wife, Mary, and three young children.

Wood is survived by his father, Joseph Wood, of Annapolis.

Comdr. John J. Metschel, whose wife and children live at 3642 34th Av. W., took command of the Staten Island in January, 1962.

Mrs. Metschel said the ship left here July 20. He was to have been succeeded as com-



COMDR. JOHN J. METSCHEL

manding officer in Alaska November 1 and was to have flown here three weeks from now.

Metschel was to have been given a new assignment as special-projects officer at the Sperry Gyroscope Co., Long Island, N. Y.

A native of Buffalo, N. Y., Metschel, 40, entered the United States Naval Academy from high school and received his commission in 1945.

Besides his wife, he leaves three children, Catherine, 4; Carol, 3, and Bobby, 2.



the new stamps will first appear on Sept. 17 in the following denominations and colors: 1 kroner, brown; 2kr, red; 5kr, blue; 10kr, greenish black.

SOUTH GEORGIA

Whaling is the principal activity of South Georgia Island, a British possession approximately 850 miles southeast of the Falkland Islands. The island has a precipitous rockbound coast, but excellent harbors for the whaling industry.

Whether or not its slightly more than 1,000 inhabitants write sufficient letters to need a new 15-stamp series of definitive, or regular, postage stamps, including several of high denominations, such a series has appeared. It is as follows: ½ pence, reindeer; 1p, South Sandwich Island; 2p, sperm whale; 2½p, chinstrap and king penguin; 3p, fur seal; 4p, fur whale; 5½p, elephant seal; 6p, sooty albatross; 9p, whale catcher; 1 shilling, leopard seal; 2s, Shackleton's Cross, for the famed Arctic explorer; 2s6p,



wandering albatross; 5s, elephant and fur seal; 10s, plankton and krill, and £1, blue whale.

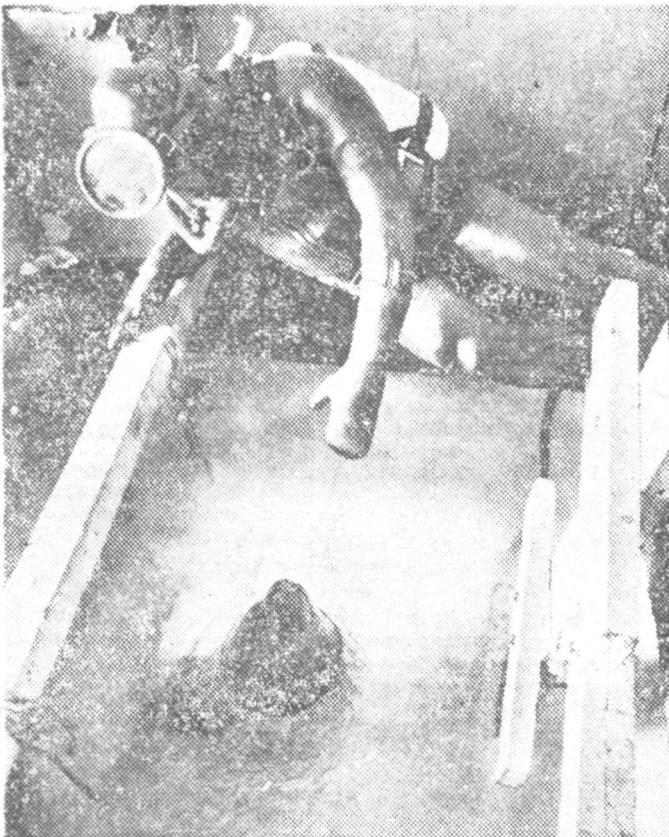
Except for the Shackleton's Cross stamp, which is green and blue, all the stamps are of a single color. Some are horizontal and others are vertical.



The Newest of U.S. Antarctic Stations Can Be Moved From Site to Site

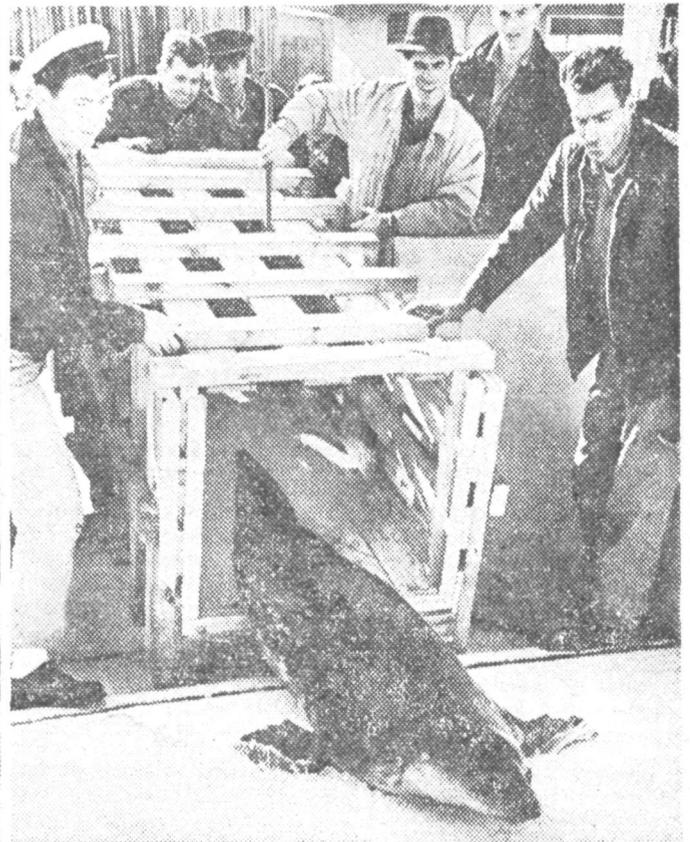


Men clear snow roof of Eights Station after blizzard. Snow must be removed to keep units from being crushed.



The New York Times (by Allyn Baum)

In Antarctica, Elmer Feltz makes friends with a seal that came into the expedition hut through hole cut in the ice.



The New York Times (by Meyer Liebowitz)

In Brooklyn, Dr. Carleton Ray, another member of expedition, prods one of seals obtained into a pool at Aquarium.