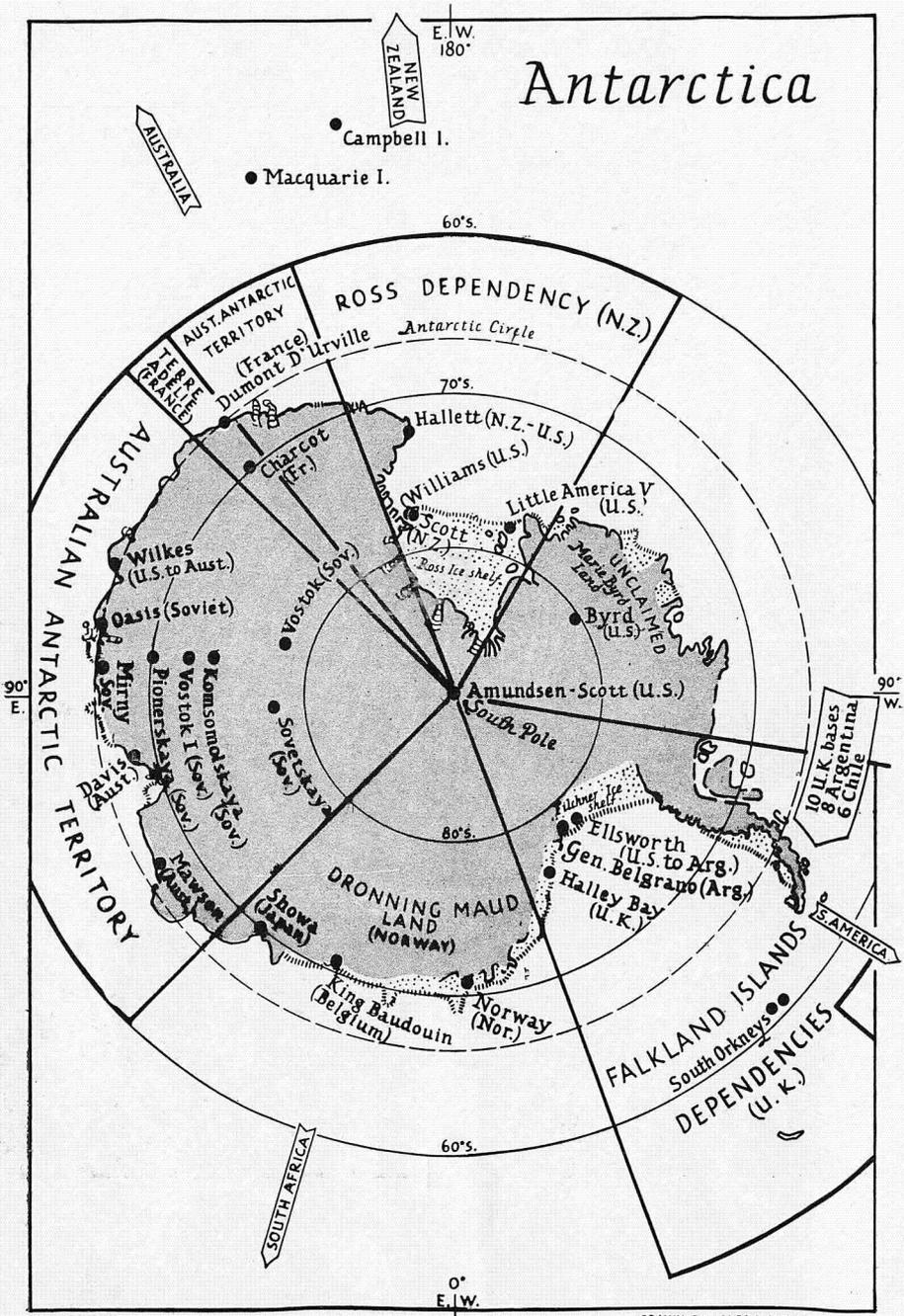


Antarctica



"ANTARCTIC"

(Successor to "Antarctic News Bulletin")

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Democles' Sword

Dr. Harry Wexler, chief scientist for U.S. I.G.Y. research, describes Antarctica's ice cover as a sword of Damocles hanging over the human race. If the Antarctic ice melted it would raise the earth's oceans 150 to 200 feet, destroying coastal cities.

But there is no indication, says Dr. Wexler, that the sword is about to fall. It may do so at some future time, perhaps thousands of years hence.

At a news conference in Washington on March 18, Dr. Wexler and Mr. A. P. Crary, leader of the major over-snow traverses in the Antarctic last summer, agreed that mankind in the indefinite future "will have to keep a close watch on the Antarctic ice." Dr. Wexler said that there is some evidence that in the dim past the Antarctic ice was 1000 feet thicker than it is now. He believes this long-departed ice may have contributed to the great rise in ocean levels after last ice age. The melting of ice from both poles raised the oceans 230 feet. This took place slowly in the period from 10,000 years to about 5,000 years ago.

But there is no evidence that ocean levels have changed appreciably in the past several hundred years. If any sudden change developed in Antarctica, said Mr. Crary, it would quickly be apparent in tidal measurements around the world.

20, AT LEAST

A cape pigeon, ringed by a German whaling ship in the Weddell Sea in 1938, was captured at the whaling station in Tory Channel, Cook Strait, New Zealand, last August.

INDEX

We regret delay in the publication of the index to "Antarctic", volume 1.

The index is now in proof, and orders are being received. Apply: Secretary, N.Z. Antarctic Society, Box 2110, Wellington. Price 2/-.

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THE B.A.N.Z.A.R.E. STORY

Lady Mawson has asked Dr. Grenfell Price, chairman of the Advisory Board of the Commonwealth Literary Fund, to write the story of the British-Australian-New Zealand Antarctic Research Expedition of 1929-30 and 1930-31. Dr. Price will have access to the unpublished diaries and papers of the late Sir Douglas Mawson, leader of the expedition, of which Dr. R. A. Falla and Dr. R. G. Simmers of New Zealand, were members. Mrs. Ifor Thomas, Sir Douglas Mawson's daughter, will write a report on the biology of the expedition.

THE ANTARCTIC

A definition—high land surrounded by high seas.

Busy Autumn Days at Scott Base

Despatches from Scott Base tell of the essential pre-winter work which has to be done if the ten men there are to spend a safe and comfortable winter.

"On three days between February 17 and 24," reports the Base leader, Mr. L. R. Hewitt, "we killed seals for winter dog rations. . . . By the end of the first day we had 34, and after two more days the seals had re-congregated and in one morning we managed 22. A few days later we gathered in the 24 required to complete the calculated number.

"No one enjoys this killing, as apart from the messiness of the whole business, they are not unattractive animals and appear so utterly defenceless. One would have to be without any conscience to accept this necessary task lightly."

An early May report says, "Our brief autumn was marked not by falling leaves . . . but by the drift snow off the mountains piling high against the door and a sledging-out upon the ice for the last seal hunt of the season."

Wedgwood, the cook, has brought up supplies of canned foods from the provisions dumps to base storage. From a man-made ice cave fronting the sea-ice, he loaded a versatile Ferguson tractor which had lain in perfect refrigeration since early January.

Heine, glaciologist and mountaineer, who has spent three summers in the south, excavated equipment snowbound for two years. Earlier expeditions have not had time to resurrect the plant that has been buried in snow drifts since the days of the trans-Antarctic Expedition. Some items of useful equipment peeped out from the snow in the late summer for what could have been their farewell appearance. One more winter would have left them locked and lost in the ice for ever.

WORK AHEAD

Ward, deputy leader and transport officer, has built an annex to the garage for the sorting and storage of engineering parts in preparation for the mid-October take-off of the Sno-cat traverse.

One report says, "Sandford, aurora specialist, and Heiser, American physicist, have had to step up operations to complete the 22ft auroral tower before the April twilight. Then they will sit under a starlit and storm-swept sky to study aurorae phenomena until daylight comes south again.

"With a week to go before we say a long good-night, we have still to cut up the seal carcasses killed in the autumn for the winter rations of our 36 huskies.

LIGHTER SIDE

"But all work and no play could never serve at Scott Base, and tonight some of us go two miles over the hill to the United States base at McMurdo. Our American friends are serving a costume party, at which one must represent one's 'idol or hero'. From where I sit in the mess hall I can see someone fastening on a vee for victory sign. Furtively, in a far corner of the room, an engineer is fitting beneath his red bow tie a photo of an 'idol' who, even at this distance, could be Marilyn Monroe. They should have a good time."

Mr. Hewitt makes particular mention of the "magnificent library" sent to the New Zealand base from Little America. Most fields of geophysics and Polar literature are adequately covered, and the library is "a terrific asset" to the base.

DOWN THE CREVASSE

"The everlasting accumulation of rubbish must be towed down the hill in the heavy 'ashcans' and emptied into a convenient crevasse well away from base. Drums of diesel oil to feed the generators must be loaded at the fuel dump 300 yards away and tractor-drawn to the engine sheds. Refuelling calls for a sensible adjustment; too many drums adjacent to the buildings constitute a serious fire hazard, and too few drums could leave us without power or heat or light in the event of ultra blizzard conditions making work outside dangerous.

"Some scientific recorders, necessarily out of doors, have to be read at pre-arranged and regular intervals. Our huskies must always be fed. Each dog eats five pounds of seal meat every other day. The carcasses of the seals hunted and stored in late summer for winter rations are now well frozen and this means two men on the end of a cross cut must saw the meat into sections and then chop up to a convenient size. The huskies look in fine fettle and seem to welcome the cooler temperatures.

HOLE IN THE ICE

"Our American seismologist, Frans Van Der Hoeven, who is staying with us for the winter, still makes his daily trip across the ice in a Weasel to measure the ocean current at varying depths and compare with the readings of our tide gauge. Three miles from the base he has a temporary hut built over a hole in the ice, where he carries out his experimentation.

"Where only two months ago great killer whales raced through the choppy waves of the Ross Sea now stands 30 inches of sound ice. We noticed a penguin track on the snow-covered ice a few yards from the hut. We followed this in the Weasel until rough country brought us to a discreet halt. This penguin is late in the field, for the nearest open sea is now some eight miles away."

FOR THE RECORD

Temperatures recorded at Scott Base mark the onset of the colder winter weather. Maximum temperatures: January, 36.7°F., February, 26.6°F., March, 18.1°F., April, 7.5°F. Minimum temperatures: January, 5°F., February, -16.2°F., March, -32.8°F., April, -48.1°F.

LATE IN THE FIELD

On February 5 three members of Geological Survey Expedition, G. Henderson, J. Harrison, W. Romanes, accompanied by G. F. Ward, set out with two dog teams to establish a survey station on Minna Bluff. This party sited a station at 3500 feet on Minna Bluff on the 10th, and returned to Scott Base on February 15. This operation was in accordance with Dr. Harrington's wishes and gave an opportunity for a

member of the 1959 "winter over" team to have some experience with the dog teams in the field. Ward had been working long hours and had earned this "bonus".

J. G. Weihaupt of the American contingent, was repatriated on Staten Island's last sailing. On February 2 he was assisting Stuart to unload the U.S. Sno-cat just below Scott Base, when he slipped and fell heavily on the ice. He was in some pain and as the fall had been on his back it was thought advisable to have the U.S. Medical Officer attend him. After a few days under observation, the M.O. removed him to hospital at McMurdo Base with suspected herniated disc.

ICE STUDIES

This left the American team short-handed and Heine assisted in the study of ice and snow. Two snow-pits were dug and extensive work done in all phases of snow study. A line of poles was surveyed and fixed for study of barrier movement. The relationships of snow temperature, salinity and snow thickness, of the area one half-mile east of Pram Point, are being investigated. Cores have been taken to 14 metres, where the ice thickness is approximately 16 metres. Thermohms have been permanently installed in the ice to a depth of 10 metres.

The sea ice started breaking up on February 20 and on the 22nd the water was visible around Cape Armitage from the Base buildings. By February 26 the ice had gone out to the same extent as last summer, and large pieces were still going out every day. New ice began to form on March 10, and by the end of March its average thickness was 22 inches.

Three men early in March made a glaciology, altimetry and gravity traverse to White Island and nearly to Black Island. They established strain line movement points across that portion of the ice shelf.

The oceanography hut was rebuilt three miles south of Scott Base on 25-inch thick new sea ice.

One major pre-winter activity was the construction of the aurora tower. The heating and electrical wiring were completed in March. The first all-sky camera was operating from the 27th, and gave no

trouble. The second was installed during April. Two patrol spectrographs were also installed, the one in the visual spectrum being operational from April 21.

SAD NOTE

Men who wintered at Scott Base in earlier years will hear with regret that lead-dog Quet died on span on April 25. An autopsy by the McMurdo biologist diagnosed the cause of death as old age, combined with the colder conditions. Quet was the lead dog of Murray Douglas's team on the Northern Party journey of the trans-Antarctic expedition.

DR. T. HATHERTON

Dr. Trevor Hatherton, of the Department of Scientific and Industrial Research, has been awarded the Commonwealth Fund Scholarship for 1959. The scholarship, which is for one year, is awarded annually. There were 20 applicants.

Dr. Hatherton is one of the very few people, including Americans, to have taken part in all the four "Deep Freeze" operations. In the summer of 1955-56 he went to the Antarctic with "Operation Deep Freeze 1" to investigate a suitable site for the New Zealand end of the trans-Antarctic Expedition.

He accompanied Hillary's team the following summer and was the chief scientist at Scott Base for 1957. In the 1958-59 summer he was south again and, in addition to carrying out scientific investigations, he accompanied the United States traverse party up Skelton Glacier. Last year he visited the United States to discuss the future New Zealand-United States scientific programme in the Antarctic.

Dr. Hatherton will be undertaking research on palaeomagnetism at several research institutions in the United States. He will also endeavour to spend six months in Washington, working at the United States Coast and Geodetic Survey, which is the world data centre for I.G.Y. gravity and seismic results. This research work will be of material assistance in facilitating New Zealand research on I.G.Y. results, as well as clarifying future New Zealand and international research programmes in the Antarctic.

ANTARCTIC FLIGHT

The Antarctic Flight of the R.N.Z.A.F. is being reactivated, after being suspended at the conclusion of the trans-Antarctic Expedition.

After training in New Zealand the flight will sail with its two aircraft and equipment to Scott Base in December to carry out flying operations from January to March, 1960.

It is expected that the flight will consist of three pilots and five ground crew and the aircraft used will be the R.N.Z.A.F. Auster and the Beaver. The Beaver aircraft is scheduled to fly some 250 hours in support of ground parties carrying out mapping and geological surveys in the Beardmore Glacier area some 450 miles south of Scott Base. The Auster is expected to log some 100 hours in a similar role.

The personnel of the flight will not remain at Scott Base for the winter period, but will return to New Zealand at the end of the summer and go back in time to carry out further supporting flights from Scott Base between November, 1960, and February, 1961.

The selected pilots are: Fl-Lt. L. C. Jeffs, of Hawera, Fl-Lt. G. C. Derby, of New Plymouth, F/O. P. S. Rule, of Wellington, F/O. P. W. Tremayne, of Auckland, Fl-Lt. W. J. Cranfield, of Christchurch.

Three of these pilots will serve next season and the others later.

The ground crew consists of: Fl-Sgt. L. W. Tarr, Thames; Sgt. R. Ferguson, Dunedin; Cpl. A. B. Boag, Blenheim; L.A.C. B. N. Johnstone, Taihape; L.A.C. G. A. Hobson, Blenheim. Cranfield and Tarr served with the trans-Antarctic Expedition in 1957-58.

Training for the flight began at Wigram in April. Apart from sorting, checking, servicing and re-packing the spares and parts brought back from the Antarctic when flying ended last year, the ground crew will study polar navigation, Morse, equipment handling, survival and first aid, and photography.

In August the flight will undergo field training on the Tasman Glacier.

In the 1960-61 summer the field of operations will move south to the King Edward VII Plateau.

HALLETT STATION

The scientific group at Hallett this year is headed by Mr. Charles L. Roberts, an American. The other three scientists are New Zealanders, A. W. Black, L. R. Jones, and B. E. Reid. The U.S. Naval group is headed by Lieut. A. Bridgman. (In 1960 the Scientific Leader will be a New Zealander.)

During the change-over period blasting in the antenna field for the new communications building seriously disrupted the programmes in geomagnetism, ionosphere, meteorology and seismology. The new equipment is expected to improve communications for aircraft flying between Christchurch and McMurdo Sound.

CHARTING THE BAY

Before the U.S. Naval vessels left Hallett the "floor" of Moubray Bay was surveyed and depths recorded by echo sounding fathometers in boats which utilised beacons accurately located on the shore line. In future captains of ships supplying Hallett will be reassured by accurate charts.

Gusts to 92 m.p.h. were recorded during a storm in February which blew down the new transmitting whip and sleeve. Three major storms in March did considerable damage to outdoor equipment. One on March 26-29 nearly destroyed the 10-metre Met. tower. Sustained winds over 36 hours averaged above 53 m.p.h.

There was unusually fine weather in April, without any major storms. The bay began freezing over on April 1, and by the end of the month the ice was two feet thick.

February pre-winter work included installing ballast tanks from a damaged barge for fuel and water storage, the completion of a covered stairway to the aurora tower, begun last year, and the repair of communication equipment used for radio schedules to Scott Base and New Zealand.

The last penguins departed on March 20, and the skuas had gone by the 30th. During a "climbing instruction" hike four penguins were found at an elevation of 1,025 feet. A lone Emperor visited the station on April 21.

The ice-breaker "Staten Island" arrived on March 6 for a four hours' final visit.

A party of six led by the biologist camped out one night in April without ill effects; but some equipment proved inadequate for -30°F . weather.

Hallett meteorologists report the first airborne net radiation flight in the Antarctic, on April 26.

PEACEFUL CO-EXISTENCE

On hand to witness the change-over process in late January were some 200,000 Adelle penguins. It appears that the penguins, who valiantly resisted the first attempts to establish the station on this centuries-old rookery site, have become accustomed to the intruders and are content to live side by side with them.

MOUBRAY BAY

An American Naval officer's description of the bay on which Hallett Station is built: "The most beautiful harbour in the world if it were only located some place else."

TRIBUTE

Soviet geophysicist Pavel Astapenko, who spent last year at the U.S. Base, Little America V, has this to say about the New Zealanders at Scott Base.

"Apart from Little America I visited the New Zealand scientific station Scott Base and the American-New Zealand station Hallett, where I had an opportunity to see something of their programme and working methods. The activities of the New Zealand scientists may serve as a good example of the efficient utilisation of people and material resources. Our colleagues from New Zealand have succeeded in accomplishing a comparatively extensive programme at their small stations."

WHAT FLAVOUR, SIR?

At McMurdo Base Cook Petty Officer G. A. Gordona is working his way through a list of 64 distinct ice cream flavours, in an attempt to out-do his opposite number at Little America, who in one month last year served up 31 varieties.

New Zealanders at Scott Base are not jealous: huge cans of ice cream are theirs for the asking.

UNIVERSITY MEN EXPLORE VICTORIA LAND DRY VALLEYS

By COLIN BULL

During last summer a four-man party, the Victoria University of Wellington Antarctic Expedition, 1958-59, made some contribution to the knowledge of a small area of Antarctica by treating it unconventionally.

Nowadays the emphasis in polar exploration is swinging more and more towards the large expedition, equipped with modern mechanical transport, and usually with a considerable indebtedness to the taxpayer of the sponsoring country. Particularly is this true of the Antarctic, but the same applies to the Arctic as well. However, in the northern regions a valuable amount of exploration — mapping, geological surveys, glaciological and meteorological investigations and so on — has been carried out, over the years, by small, modestly-equipped parties from the Universities of Great Britain. Because of the difference in the scale of the transport problems at the two ends of the world, University expeditions of this kind to the Antarctic have not been feasible, but in this last summer, by using transport facilities generously offered by the United States authorities, it proved possible to mount one.

ICE FREE AREA

The Wright Valley and Victoria Valley* area of South Victoria Land was ideal for us. It is most unusual in being practically free of ice — and this allowed us to plan a back-packing expedition. It is close enough to the U.S. Navy Air Facility at McMurdo Sound — about 80 miles away — to make the support of the Expedition by the Americans not too onerous a task. It is a small enough area — 2500 square miles — to allow us, in a short season, to investigate a reasonable part of it. And, most important, it had only been visited once before, by a 4-man party who spent

10 days in the Victoria Valley in February, 1958.

This fascinating deglaciated area lies between latitudes 77° S. and 77° 45' S., and between longitudes 160° E. and 163° E. It is separated from McMurdo Sound by the Wilson Piedmont Glacier, which is about 12 miles broad and rises to about 1500 feet above sea level. In the south the area is bounded by the Taylor and Ferrar Glaciers; in the west by the inland ice, which is at an altitude of about 8000 feet; and in the north by the Miller and Debenham Glaciers. The region consists of continental rocks, whose maximum altitude increases from about 5000 feet near the coast to 8000 feet near the inland ice. It is transected by two major east-west valley systems, the Wright Valley in the south and the Victoria Valley further north. Both valleys are more than 40 miles long. The Wright Valley averages about 5 miles in width, and for most of its length the floor is at less than 1000 feet above sea level. The Victoria Valley is more complex, splitting into three distinct arms in the western half. It is wider and lies between 1000 and 2000 feet above sea level.

During the early years of this century parties from Scott's and Shackleton's expeditions penetrated the entire length of the Ferrar and Taylor Glaciers, examined the Wilson Piedmont Glacier and the Taylor Dry Valley, which is the deglaciated coastal end of the valley, once filled by a more extensive Taylor Glacier. However, it was not until reconnaissance flights had been made in 1956 and 1957 by aircraft of the U.S. Navy and the New Zealand part of the T.A.E. that the full extent of the ice-free area to the north was appreciated.

*These names and the name Lake Vanda are tentative only.—Ed.

IN BY HELICOPTER

Since ours was the first expedition of this kind to the Antarctic we made it a small one. Three of the members, Dick Barwick, the zoologist, and Peter Webb and Barrie McKelvey, both geologists, had spent one or more summers in the Antarctic, while the fourth, Colin Bull, geophysicist, had spent several summers in the Arctic. We were taken down to McMurdo Sound in a U.S. Navy Super Constellation and from there to the Wright Valley on December 12th by U.S. Navy helicopter. A base camp of two pyramid tents and 7 weeks' food was established at the eastern end of Lake Vanda, the five-mile long, ice-covered lake which occupies the lowest part of the valley, thirty miles from the coast, and we also made small depots of food and fuel at the eastern and western ends of the Wright Valley. We worked in pairs; Peter and Barrie together carried out the geological work, while Dick and Colin divided their time between survey, geophysics and biology.

The two pairs worked separately from one another, but, for safety's sake, we carried two small battery-operated radio sets and had daily contact with each other and with Scott Base. Using the three scattered food depots we managed to cover adequately the southern half of the dry-valley block and part of the north.

Fascinating is certainly the right word to use about the area. Many aspects seemed anomalous. To start with, the weather was surprising. At our base camp, which was about 500 feet above sea level, the temperature rose on two days to 47°F., while the lowest was only 22°F., and the average for the 52 days that we were there was 33°F. This is about 15°F. higher than the average temperature for December and January at Scott Base, and about 10°F. higher than the value at the U.S. station at Marble Point, which is on the coast of McMurdo Sound, 40 miles east of our base camp. The Wright Valley, being long and narrow, and having side walls 5000 feet high, completely controls the local winds—they either

blow up valley, or down valley. The winds blowing from the inland ice were warm; those from the sea were cold, and the switch from easterly to westerly winds of moderate strength was often very rapid, and was accompanied by an equally rapid and pronounced change in the humidity. The winds from the plateau were much drier than those from the sea.

AN INLAND RIVER

We should have avoided writing 'up-valley' and 'down-valley' for the following reason. At the coastward end of the Wright Valley the altitude of the valley floor is 1000 feet. In December and January, the melting water from the Wilson Piedmont Glacier forms a considerable river which flows inland for a distance of 25 miles (is this the longest river in Antarctica?) until it flows into Lake Vanda, whose altitude is 400 feet. Further west the valley floor rises slowly over a distance of ten miles to about 2000 feet, and then more rapidly, over the next six miles, to 7000 feet.

No water flows out of Lake Vanda and at present its level seems to remain almost constant, so that the water loss by evaporation must balance the inflow; but in the recent past the lake has been much higher. There are well-defined benches cut in the surrounding country, up to a height of 160 feet above the present lake level, and from the distribution of these former lake levels in the moraines in the valley floor we can work out the extent of the glaciers at these times. At present there are small glaciers extending into the ends of the Wright Valley from the inland ice plateau and from the Wilson Piedmont Glacier. When the lake level was 160 feet higher the western glacier was ten miles longer, and the eastern one seven or eight miles longer, but the central 14 miles of the valley was still free of ice.

GEOLOGISTS AT WORK

During our 7 weeks in the valley the two geologists covered about 500 miles on their traverses. We now have a reasonably good idea of the geology of the area. Naturally, the investigations have not been detailed, but we have mapped most of the area well enough so that the specialists, with their particular pro-

blems, know what to expect here. The extent of the pre-Cambrian metamorphic basement, and of the younger Beacon sandstones, has been mapped, and the relation of these to the intruded granites and dolerites has been investigated.

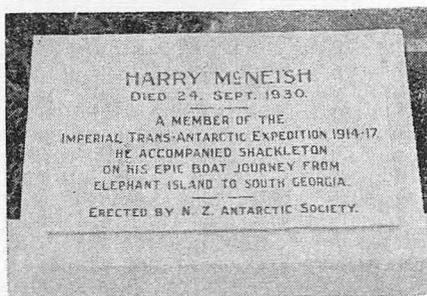
Over the last few years many measurements of gravity have been made in the McMurdo Sound area, and a few on the inland ice west of Victoria Land. Such measurements allow one to learn about the stability of the area, whether or not the land is rising due to the slow removal of the load of ice. Since the Wright Valley offers an easy route, we made a gravity traverse from McMurdo Sound, over the Wilson Piedmont Glacier and along the valley to within 6 miles of the plateau. We could not go further in our limited time. The main results have not been worked out yet, but we did use the gravity readings to determine the thickness of the ice on the Wilson Piedmont Glacier and the depth of water in Lake Vanda. Along our route the greatest ice thickness was about 1200 feet, and since the altitude of the top was 1400 feet, the bottom is here very little above sea-level. The greatest depth of water in Lake Vanda is about 250 feet.

Because so much of Dick Barwick's time was taken up in helping with the survey work—we took rounds of angles from ten points in the dry-valley block and on the coast—he could not devote as much attention to the biology of the area as it deserved. But we did collect lichens during these survey journeys, noting, yet another apparent anomaly, that they were confined to areas above about 3500 feet in altitude, and we spent a few days collecting specimens from the small lakes near Base Camp.

SEALS FAR INLAND

However, the most surprising biological findings were many seal carcasses along the valley floor, from the coast to 45 miles inland. Seals have been found inland in Antarctica before, but never in such large numbers. We found 99. Some were quite recent, and still soft enough to allow post-mortem dissection; others were very old, so that they had been dehydrated and then eroded by

THE CARPENTER'S GRAVE



This headstone was unveiled by the President of the New Zealand Antarctic Society in the Karori Cemetery, Wellington, New Zealand, on May 10, the anniversary of the landing on South Georgia.

Among those who were present—in pouring rain—were Drs. R. A. Falla and R. G. Simmers, of Mawson's 1929-31 expedition, Mr. J. H. Miller, O.B.E. (deputy leader), Dr. R. W. Balham and Mr. A. S. Helm of the Trans-Antarctic Expedition, Mr. W. J. P. Macdonald of the 1957 I.G.Y. party, and Mr. L. H. Pollock of the Cape Expedition.

The flag used was flown at Scott Base during last year and was flying there when the trans-Antarctic Expedition arrived after the crossing of Antarctica.

sand and wind until only a few bones remained. Lots of interesting problems are posed. How old the seals are we hope to find out from carbon-dating of the specimens we brought back. Why do they migrate inland? We know what they eat on the journey—nothing except sand—but we don't know how long they take.

When the helicopter came at the end of January to take us back to Scott Base we were reluctant to leave. Our seven weeks had been very enjoyable and most rewarding, but in that time we had not been able to do full justice to the scientific potentialities of the dry-valley block. Other University parties will, we hope, carry on with the work. Ours was a "try-out" expedition and we are pleased that we were able to justify the confidence placed in us.

New Zealand Plans Further Exploration in 1959-60 Season

The Ross Dependency Research Committee has formulated plans for extensive exploration and research in the Ross Sea area next summer.

It is proposed to explore the coast-line and hinterland south of McMurdo Sound, particularly the little-known area between Barne Inlet (80° 15' S.) and the Beardmore Glacier.

SNO-CAT TRAVERSE

Two four-man teams will work south from Scott Base next summer. One will use the two sno-cats purchased from the Trans-Antarctic Expedition, 'Able' and 'County of Kent'. This team will leave Scott Base in November and explore the Victoria Land coast-line from Barne Inlet to Cape Maude (83° 18' S.). They will attempt to reach the coast at several places, penetrating if possible up to 20 miles inland.

DOGS AND SLEDGES

The other team of four will set out from Scott Base about the middle of January, 1960. They will be flown in to a point somewhere near the foot of the Beardmore Glacier (83° 30' S.) with dogs and sledges and will carry out a reconnaissance of the area from Mt. Hope north to the Nimrod Glacier. They will pay particular attention to the glaciers breaking through the Queen Alexandra Range to the Ross Ice Shelf. They will be seeking a way of access to the little-known area to the west of the Queen Alexandra Range. This region has never been traversed by land parties except for the area over which Miller and Marsh dog-sledged in 1957-58, coming in from the west, or plateau, side. Otherwise it has only been sighted by Scott and Shackleton's parties from well out on the ice-shelf during their sledging journeys via the Beardmore Glacier to the Polar Plateau, and from the air by American and New Zealand pilots and observers.

SECOND SEASON'S WORK

This second team will winter over at Scott Base. Early in the follow-

ing season (1960-61) an augmented party, probably of eight men, again with air support, will return to the area and carry out a full-scale mapping and geological survey of the region. They will work south from the latitude of the Nimrod Glacier as far as and possibly beyond the head of the Beardmore Glacier.

UNIVERSITY EXPEDITION

The Victoria University of Wellington, which was responsible for the successful expedition under Dr. Colin Bull which explored the Wright-Taylor Dry Valley systems last summer (see report on page 50), will again send a team to complete if possible the study of this very interesting area.

SOIL SURVEY

Next summer two officers of the Soil Survey, Department of Scientific and Industrial Research, will examine soil conditions on Ross Island and on the western side of McMurdo Sound, thus extending the Bureau's study of soil conditions in New Zealand territories. They will endeavour to find evidence of soil processes in these areas of extremely low temperatures and feeble organic activity.

THE SEA AROUND

Oceanographers on H.M.N.Z.S. "Endeavour" will occupy hydrological stations during the voyage south to McMurdo Sound. They will then spend a month in the Ross Sea in continuation of the oceanographical work carried out there last summer.

During the cruise also it is proposed to study the geological structure of the sea bottom by using seismic prospecting techniques. A proton magnetometer will be towed behind "Endeavour" to obtain magnetic profiles.

During the month of October "Endeavour" will cruise in the area Balleny Islands—Auckland Islands—Macquarie Island—New Zealand, where a series of sea ridges is a feature of Antarctic oceanography.

NEW FRENCH WINTERING PARTY IN ADELIE LAND

We have received from Expeditions Polaires Francaises a fuller account of the change-over at Dumont d'Urville, Adelie Land, briefly summarised in our last issue.

The "Norsel" reached the archipelago at Pointe Geologie on January 8. Charcot Station had been closed down four days earlier, and some of the Charcot I.G.Y. equipment was loaded on to the vessel for return to France.

During the change-over period the two Djinn helicopters totalled 136 hours' flying time. On the 12th both helicopters flew in perfect weather to Carrefour, which was found almost completely buried under snow. Mail was left for the Charcot 1958 wintering party and for the Rouillon seismic-profile team then still in the field.

These two groups reached Carrefour the following day, but the weather was impossible for flying and they were not contacted until the 19th. The cook at Dumont d'Urville

Here, scientists of the N.Z. Oceanographic Institute will study the distribution of bottom water and water movements, and will take rock and sediment bottom samples.

AT SCOTT BASE

Fourteen men including the Nimrod-Beardmore field party, will be stationed at Scott Base during the 1960 winter compared with ten during the present year.

Spectrographic equipment formerly at Little America will be used. Auroral radar equipment will probably be installed on Crater Hill (1,200ft.) behind the base, to observe auroral phenomena from the southern side of the auroral zone.

BIOLOGY

Two biologists will spend the summer at Shackleton's old hut at Cape Royds, recently renovated by men of H.M.N.Z.S. "Endeavour", to study the Adelie penguins at the large rookery there, and other bird and animal life in the area.

placed a cellophane bag of piping hot fried potatoes in the helicopter as it took off, and 25 minutes later the men, now at B3, were enjoying hot chips. M. Paul-Emile Victor remained with the field parties at B3 to discuss the salvage of the snowcat. A 48-hour blizzard beginning at midnight entailed the complete stoppage of all work at B3. Even communication between the two weasels, only 3 or 4 metres apart, was impossible. The wind rose to 93 m.p.h. with gusts well above that speed.

M. Victor was flown back to Dumont d'Urville on the 21st.

AT MAWSON'S BASE

Early on January 24 a team left on "Norsel" to occupy Sir Douglas Mawson's old magnetic station at Cape Dennison, arriving there at midnight. This was the fifth time the station had been visited since Mawson's first expedition. Landing was delayed by bad weather, but five expedition members with two Norwegian sailors got ashore at Mawson's "Boat Harbour" in the afternoon, and dug out the magnetic hut.

While the magnetic station was being occupied the Frenchmen made the necessary repairs to the living quarters, etc., deposited five cases of provisions for the use of any future occupants, and left at 2 a.m. on the 26th to re-embark on "Norsel" for Dumont d'Urville.

The vessel left for home at 10.30 p.m. on the last day of the year.

ANDRE PRUDHOMME

Twenty hours before "Norsel" arrived with the relief party on January 7 at 3.30 p.m., meteorologist Andre Prudhomme left the hut at Dumont d'Urville Base to make his usual round of the meteorological shelters. Snowfalls had made the area slippery, and a wind of up to 60 m.p.h. was blowing. But visibility

did not seem particularly poor and the met. shelters were only 100 yards from the living quarters. When Prudhomme did not re-appear, a search was begun, and by 6 p.m. every man at the station was patrolling the island on which the base is built, hampered by a thick blizzard. For 18 hours the search continued without pause, but no trace of the missing man was found. When "Norsel" arrived the search was extended by whale-boat and helicopter, but still without success.

It is presumed that Prudhomme lost his footing on an icy slope masked by the fresh snow, and plunged to his death in the sea.

NEW TEAM AT WORK

The twelve men comprising the ninth French Antarctic expedition in Adelie Land are maintaining the agreed scientific programme under Rene Merle. This covers most of the scientific disciplines studied during the I.G.Y., meteorology, geomagnetism, seismology, ionosphere and aurora; also biology and human physiology.

After three years' service, the scientific equipment at Dumont d'Urville Base was in need of considerable overhauling. The electrical installations, auroral radar and ionospheric sounder have now all been put in effective working order.

A new bi-monthly radio link has been established with the Japanese base Showa.

Pancake ice began forming on March 5, but by the end of April the sea was still open. The maximum temperature in March was 28°F. and the minimum -4°F.; in April, maximum 33.8°F., minimum, -12°F. During an unusually mild period lasting several days the temperature hovered between 33.8°F and 28°F. There was even a shower of rain.

Advantage was taken of this warmer weather to visit the Emperor penguins, installed this year at the foot of the cliffs adjoining the Astrolabe glacier tongue between Rostand and Alexis Carrel Islands.

FOR 1960

Next year's leader in Adelie Land will be M. Faure, and the party will total 14. In 1960 studies in glaciology, ozone and ecology will be added to the current programme.

ANTARCTIC FUTURE

The talks set in motion over a year ago by President Eisenhower when he proposed an international conference on the future status of Antarctica, have at last resulted in the fixing of a date for the conference.

The preliminary talks have been between the U.S. State Department and the Washington embassies of the other countries represented on S.C.A.R.; 47 meetings have been held, in complete secrecy. One difficulty, writes Walter Sullivan of the "New York Times", has been the reluctance of Argentina and Chile to take any step towards internationalisation of the Antarctic. Another has been Soviet objections to freezing a legal situation that excludes the U.S.S.R.

It has now been announced that a conference will be held in Washington commencing on October 15. It will be limited to those countries which are engaged in effective scientific activity in the Antarctic.

It is thought that the conference may consider a system of control and inspection to ensure that no military preparations are being made.

BRITISH COMMENT

During a debate in the House of Lords on the international situation, the Joint Parliamentary Under-Secretary of State for Foreign Affairs (Lord Lansdowne) referred to the talks. The British Government, he said, sincerely hoped agreement would be reached at the conference on the two basic principles underlying Mr. Eisenhower's original invitation. These two principles were freedom of and continued co-operation in scientific research and non-militarisation of the area.

Lord Shackleton, son of Sir Ernest Shackleton, and a recently appointed life peer, urged the Prime Minister to follow the initiative of the New Zealand Prime Minister in proposing some form of international agreement in the Antarctic. "It would be an excellent thing," he said, "to get a solution of the Antarctic problem. It would be good practice for the moon when that problem comes up."

SOVIET REPORT ON WORK DONE AND WORK PLANNED

One hundred and twelve members of the Fourth Soviet Antarctic Expedition, headed by Dr. A. Dralkin, are now wintering in the Antarctic. The relief was effected by the ships "Ob" and "Mikhail Kalinin", the latter visiting Antarctica for the first time. The expedition personnel, including the ships' crews, numbered about 300.

Dr. Y. Tolstikov, head of the third (1958) Soviet expedition, told "Pravda" that one of the major tasks set his group was to organise normal year-round work at the continental stations. They had to supply Komsomolskaya, 530 miles from the coast, and Vostok, 870 miles inland, with all the necessary provisions, properly reconstruct them and adapt them for wintering-over in conditions of extreme cold, low atmospheric pressure and oxygen insufficiency. A still more complicated matter was the organisation of the new stations Sovietskaya, 880 miles, and the Pole of Inaccessibility, 1364 miles, from the coast.

The drivers of tractors and trucks, in five long-distance marches, covered a total distance of over 8000 miles.

The average daily temperature at Vostok in August was -96° F., Dr. Tolstikov added.

INACCESSIBILITY

It is confirmed that an expedition from Mirny reached the Pole of Inaccessibility in mid-December and established a temporary station, which was occupied between December 14 and December 26, for scientific observations. The station's coordinates are given as $82^{\circ} 06' S.$, $55^{\circ} E.$ The farthest inland base in Antarctica, it is 12,130 feet above sea level.

No party is wintering over at the Pole of Inaccessibility.

THE LAND BENEATH

Seismic soundings made every 30-100 k.m. indicate considerable irregularity of the land surface beneath the ice between Sovietskaya ($78^{\circ} 24' S.$, $87^{\circ} 35' E.$) and the Pole of Inaccessibility. The sub-ice surface appears to be above sea-level virtu-

ally everywhere along the route.

At $81^{\circ} 05' S.$, $65^{\circ} E.$, the land surface beneath the ice was tentatively reported to be almost 10,000 feet above sea level. At the Pole of Inaccessibility itself the ice bottom was about 2600 feet above sea level, indicating an ice thickness there of about 9545 feet. Near Pionerskaya one sounding showed the ice to extend to a depth of 4900 feet below sea level. The snow surface at $80^{\circ} S.$, $77^{\circ} E.$ was found to be 13,185 feet above sea level.

The "continent" apparently begins about 300 miles in from Mirny. From that point to Mirny, what is underfoot is floating ice 5000 feet thick.

NEW STATION

In accordance with the recommendation of SCAR, the Russians have established another scientific station on the coast of Queen Maud Land, 1900 miles to the west from Mirny. The station ($69^{\circ} 58' 12'' S.$, $12^{\circ} 55' 24'' E.$, 78 feet above sea level), was named after the famous Russian explorer Mikhail Lazarev. The construction of the station was completed, with the help of the Ob's crew, on March 10. The station has a personnel of 7 men, headed by J. Kruchinin, geographer, of the Arctic and Antarctic Institute, Leningrad.

There are no outcrops of bedrock anywhere on the coast near the base. For this reason the seamen and scientists had to build the base on the ice. In less than three weeks the wintering party put up a power plant, a meteorological centre and living quarters for seven. The climate in the region is most severe. Storms broke out frequently during construction work. The velocity of the wind rose to 30 metres a second, and this in the summer and autumn.

The scientific programme of the Lazarev station includes meteorological, aerological, actinometric, glaciological and geographical observations.

INLAND FROM LAZAREV

During the construction of the new station a group of scientists under Prof. M. Ravich carried out a reconnaissance survey on foot and by aircraft in the Eastern part of Queen Maud Land, 93 miles from the Princess Astrid Coast ($71^{\circ} 19' S.$ and $13^{\circ} 13' E.$). A stretch of 142 miles was surveyed, and in the region $72^{\circ} 04' S.$ and $18^{\circ} 37' E.$ unknown mountains were discovered, which form an area with numerous cone-shaped, pyramidal and cogged peaks with uncovered slopes. The height of the peaks above the ice surface is 2,000-5,000 feet, or 10,000-13,000 feet above sea level. According to the results of observations the members of the expedition concluded that during the maximum glaciation the ice reached the 1600 foot level from the present foothills, thus leaving uncovered only the highest peaks.

At the height of 9000 feet above sea level the expedition found orange lichen on rocks, and nests of petrels.

The researches were carried out during 10 days. Meteorological conditions were very severe with frequent snowstorms and wind velocity reaching 40 m/sec., changing to sunny clear days. The temperature of air during the day went up to $21^{\circ} F.$, and on the surface of rocks to $42^{\circ} F.$ At night the temperature went down to $5^{\circ} F.$

Dr. A. Mrkos from Czechoslovakia also took part in the reconnaissance of the Queen Maud Land mountains. He wintered at Mirny with the Third Antarctic Expedition in 1959 and has now returned home.

ON THE OB

On board of "Ob" oceanological, geophysical, aerometeorological and ice observations were conducted throughout her voyage in the Antarctic waters and on her way home. By continuous echo-sounding a bank of 42 feet deep was discovered between Mirny and the Lazarev station. In the Lazarev region a full oceanological station has been ac-

complished, and the shelf ice has been mapped.

The Fourth Soviet Antarctic Expedition will continue to maintain contacts established with the expeditions of other countries conducting researches in Antarctica.

Occupation of Pionerskaya and Sovietskaya ceased in January, and Komsomolskaya may also be closed down during the winter. The station at the Pole of Inaccessibility was occupied only for a short period, and Oasis has been transferred to the Poles, who are not wintering in the Antarctic this year. Over 100 Russians are wintering at the other bases, Mirny and Vostok.

THE YEAR AHEAD

The scientific research work in Antarctica in 1959-1960 will be carried out by five groups: aerometeorological, glaciological, geophysical, hydrophysical and gravimetric. The continental expedition also has units of aviation, communications and radionavigation, transport and auxiliary detachments.

The aerometeorological group with Dr. Shlyakhov as leader, plans to collect data about the circulation of the atmosphere and the climate of Antarctica. The group also intends to find material about the influence of Antarctica on the general circulation of the atmosphere with the view of improving forecasting methods.

Regularly four times in the 24 hours all the Soviet stations will make observations of temperature and humidity of the air, atmospheric pressure, velocity and direction of the wind, nebulosity, visibility, atmospheric phenomena, the height and density of the snow cover. Twice during the day Mirny and once a day Vostok will conduct complex radiowind soundings of the atmosphere. Horizontal-vertical soundings of the atmosphere will be carried out from aeroplanes.

The group plans actinometric observations of all the components of the radiation balance, special gradient observations at different levels, observations of snow cover dynamics and transfer of snow.

SCIENTIFIC PROGRAMME

The surface measurements of the intensity of the electric field, characteristics of the electric conductivity, general ozone contents, chemistry of precipitation are included in a special programme.

The geophysical group (Dr. B. Brunely, leader) will continue systematic magnetic, ionospheric and seismic observations and also observations of aurora, cosmic rays and earth currents.

Interesting work has been undertaken by the hydrophysical and geodetic-gravimetric groups. The latter will accomplish geodetic leveling and gravimetric readings for geodesy. This will be carried out on the Mirny-Vostok trek with the help of two Penguin tractors specially equipped.

Gravimetric readings determined on the continent will add to our knowledge of the geological structure of Antarctica, and ice thickness.

ACROSS THE CONTINENT

The principal task of the glaciological group, headed by Dr. B. Saveliev, professor of the Moscow University, is to carry out complex scientific work during the trans-continental traverse via three poles: south geomagnetic, south geographic and pole of relative inaccessibility. The length of the traverse will be about 3,700 miles.

The trans-continental traverse as planned will be made by the three new snow tractors manufactured in Kharkov and named "Kharkovchanka". The tractors left Mirny in February 1959 and after 17 days reached Komsomolskaya, where the tractors were left until the next Antarctic spring.

The train comprised three powerful tractors pulling six sledges, loaded with 125 tons of equipment.

In an interview in Sydney, Dr. Somov, chief Soviet representative at the S.C.A.R. meeting, did not underestimate the difficulties, especially on the possible final leg from the Pole of Inaccessibility to Lazarev. "No one is sure it can be done," he said. "Maybe when our expedition reaches Lazarev it will be so late they will be iced in all through 1960."

ROI BAUDOUIN

After the tense days, December 5 to 16, during which the search and rescue operations detailed in our last issue were being carried out, the Belgian base, King Baudouin, settled down to ordinary routine work. At the base itself Captain de Maere, second in command, was asked by Commandant de Gerlache, then again in the field, before the return of the 1958 party, to convey to the Commandant's three companions his admiration for their endurance and courage, and to the Russian rescue team and all the base members his thanks for their devoted services during the rescue operations.

The 17 expedition members received a rapturous welcome on their return to Belgium. At Ostend, and later at Bruges, great crowds gathered, 50,000 at Ostend, headed by King Baudouin himself, who conferred upon the leader the title of Baron de Gerlache.

THE 1959 PARTY

The expedition now at Base Roi Baudouin is headed by Captain Bastin. Organisation of Belgian work in the Antarctic has now passed to the "Centre National de Recherches Polaires", which will continue Antarctic research as recommended by S.C.A.R.

In January at Roi Baudouin base the mean temperature was 25.5°F., the maximum 36.8°F., and the minimum 5.4°F.

In October 1959 it is intended to start on the ice-cap trek from Komsomolskaya, during which intense glaciological studies will be conducted: thickness of ice, relief under ice, volume of ice and its stratification. The observations will be carried out with seismic soundings, gravimetric and magnetic profiles.

Complex glaciological stations will be made every 186 miles (300 km.), gravimetric-magnetic—every 15 miles.

With results in hand the Soviet scientists hope to approach the problem, fascinating to many scientists, whether Antarctica is a continent or an archipelago covered with a gigantic cap of ice.

AUSTRALIANS AT THREE STATIONS PREPARE FOR WINTER

A.N.A.R.E. men, 23 at Mawson, eight at Davis and 17 at Wilkes, taken over from the Americans, have worked hard to protect their homes against the rigours of the winter night.

AT MAWSON

The year-old ice broke out from Mawson harbour at the end of February, taking with it the shattered wake of the "Thala Dan" and all the marks and mess of the change-over. It was all dispersed by a 90 m.p.h. blizzard on March 3. The blizzard whipped up spray which froze as it fell on the western arm of the harbour and offshore islands, sheathing the rock with ice up to 50 feet above the sea. Blizzard lines were already essential.

The tardy ice break-out had one advantage—it made the job of seal hunting easier, resulting in sufficient dog meat for the winter.

"The Mawson scene is changing," wrote Bechervaise on March 3. "The new powerhouse now dominates the station area. The work on this was carried out, often in low temperatures and high winds. The roofing and snow proofing were accomplished by mass effort just in time to defeat the blizzard; and the race to secure stores from inevitable snowdrift was also narrowly won."

A mass tractor and sledge excursion, involving fifteen men and various experimental anchorages, flagged a route to the proposed plateau landing-strip.

March was the windiest, most blizzardy March in station records. It left the base more heavily drifted than most winters. The outer sea-ice was often dispersed. By early April it was two feet thick, a white immobile mass stretching for thousands of square miles. The birds had long since flown.

AMAZING WEATHER

On April 2 the station had amazing weather. Out of a sunny day a series of violent cyclones swept Mawson, with gusts up to 80 miles an hour assaulting it from every point of the compass. A rare northern

blast of unusual violence lifted bodily five whole railway sleepers and scattered a crate of plywood over the plateau. Iron was torn from the hydrogen shed and swept across the station dangerously.

Twisters careering over the new sea-ice tore it up in sheets and hurled spray hundreds of feet in the air. The harbour ice took a swell of 20 inches. It was one of the most unpleasant—almost sinister—days in memory, yet it was sunny throughout.

The most serious loss in the high wind was the spare auroral dome. One of the new caravans weighing tons was blown 150 yards uphill and the heavy Adams sledge hut was overturned.

PLATEAU AIRSTRIP

Five hundred feet above sea-level and a mile and a quarter from Mawson, a new airstrip has been established on the bare plateau ice. The strip, which is 1000 yards long, is kept constantly swept clean by strong katabatic air streams. After many weeks' experiment and preparation several successful landings and take-offs took place late in April, and a few days later the Beaver took off carrying a full cargo to the Taylor Glacier auroral out-station.

The airstrip has a windfence, strip markers, a windsock and a small flight terminal. They are all tied down with steel cables and frozen-in ice anchors. The terminal is a caravan which in 1957-1958 was hauled 800 miles south into the interior. In its present exposed position it has stood up to winds of more than 120 m.p.h. The strip is designed to operate throughout the year, especially when sea-ice conditions are unfavourable.

The planes usually take-off from the convenient harbour ice that reaches to within a few feet of the

hangar. Two flights to Davis, 380 miles east of Mawson, are scheduled to take place before the winter darkness closes in.

At Taylor Glacier in the great Emperor Penguin Rookery three to four thousand birds have assembled for their year-long breeding cycle.

AT DAVIS

After the eventful trip of "Thala Dan," the previous year's party under Trigwell, handed the station over to Steiger and his seven companions on January 31. Prior to the hand-over there had been the erection of the new sleeping quarters, the radio met hut, the latrine and the laying of the foundations for the balloon filling hut and hydrogen generating shed. Two hundred and fifty tons of cargo were unloaded from the ship by army duck which groaned up the steep rocky slope to where the men stacked their loads in respective heaps.

The party leader declared the first day a holiday but all were up early, busily finishing off the sleeping quarters, and as the radio and met work had to be done, two of the lads were on those duties during the day. But at last the extensions were completed and everyone could relax to a certain extent.

While "Thala Dan" was at Mawson power lines were erected for the radio met hut and transmitters installed so that station VLZ could shift from the mess quarters and the met men could settle into their section of the hut. The cook was urging everyone to frantic efforts as he was to inherit the space previously occupied by the radio as an extension to his limited cooking space, there being eight men at Davis now instead of four.

When the ship returned, the radio theodolite was quickly unloaded and erected. Mawson sent four huskies to join the station pet Nellie as a team. For the next few days four men spent their spare moments sealing for dog-meat stocks.

The station leader says that the radio hut has sprouted so many poles and aerials that the birds fly a detour through Heideman Bay.

The first radio-sonde ascent took place on April 13. Transmitting the messages makes a lot of extra work for the radio men.

The once lovely seascape view has changed into a snowscape. The sea is frozen solidly. The sea-ice, which is 18 inches thick, is all covered with snow.

There was great excitement at Davis in early May, as the first plane was to bring Dr. Budd to give the men a thorough checkover. The doctor had a surprise waiting for him. The spare cubicle had been transformed into a neat and efficient sick bay. The plane was also to bring the R.A.A.F. boys who wanted to use the lathe for some work on their aircraft.

Engineer Newman put a lot of work into converting the old balloon-filling hut into a workshop complete with lathe-drilling machine, electric welder, etc. With assistance he converted the Ferguson tractor into a full-track vehicle.

Cook Eadie is much happier since he got his own realm in the form of a separate kitchen. He has a fuel stove to supplement the electric one. A snow house (12 x 18 feet) built by Newman and Steiger to house the stores was greatly improved by a heavy fall of snow and is now fully drifted over.

AT WILKES

February temperatures were max. 37° F., min. 9° F. The weather was generally good, apart from brief periods of drifting snow on February 8, which introduced premature drift formation in the station area. Huts and corridors quickly accumulated deposits of wind-blown snow, giving an unexpected opportunity to pinpoint the constructional defects about the station. All spare time has been applied to the weather-proofing of huts and associated corridors, the securing of outside installations and the safe storage of all supplies landed by the "Magga Dan" and "Staten Island". Popular opinion suggests that Wilkes is a well established and comfortable station, but woefully in need of preventative maintenance before the onset of the Antarctic winter. The 17 members of the ori-

ginal expedition have been strengthened by the addition of John Williams, R.A.A.F. fitter rigger, who voluntarily elected to see the winter through.

The meteorological team are working a full programme each successive 24 hours, learning and mastering the intricacies of new equipment and operational techniques. The R.A.O.B. equipment has been transferred to a new site west of the main station in an endeavour to improve the accuracy of the bi-daily flights.

WINTER APPROACHES

March temperatures were: maximum, 35° F., minimum, -3° F. The maximum gust was 88 knots. There were 151 hours of sunshine. Precipitation was recorded on 18 days with heavy falls during the latter part of the month.

By early April a narrow belt of fast ice extended along the coast but it showed no tendency to consolidate at that stage. Auroral displays were disappointing both in frequency and intensity.

Denholm maintained the glaciological programme at Site One, located five miles E.S.E. of Wilkes and 862 feet above sea level. He has completed three Weasel excursions to Site One during March to renew and measure ablation stakes and to establish new track markers along the route.

The meteorological team attained a record height of 107,400 feet from this station for radiosonde observations.

By the beginning of April all Adelie penguins with the exception of the odd moulting bird had abandoned their rookeries and rendezvous points in the area. Penney had six captive Adelies under observation. These were being hand-fed daily with fish bait until his observations were successfully completed or until his fish supplies were exhausted. Five hundred Adelies sporting "Penney bands" have been requested to return to Wilkes' rookeries next summer to contribute their services towards the biological programme.

APRIL DAYS

April temperatures were: Max., 38° F., min. -9° F. The maximum

gust was 58 knots, and there was sunshine on 64 hours. Precipitation was recorded on 16 days. The weather was generally good. By the end of the month the sea-ice extended almost to the Frazier Islets, the average thickness on Newcomb Bay being one foot.

At the end of April, Antarctic petrels, snow petrels and giant petrels were still in the area. McCormack skuas were last sighted on the 26th. Occasional seals had been observed in the vicinity of McMullin Islet.

Another section of the trail between Site One and Site Two was flagged with trace markers, and ablation stakes between the base and mile twenty were measured. The drift-gauging apparatus supplied by Melbourne University was operational from the first of April, but blizzard or drift conditions had not been of sufficient intensity to provide any satisfactory records by the end of the month.

Fresh water for the station continued to be drawn from a partially frozen melt pool. However, the snow melter was given an extended run on the 13th, half the station being employed feeding snow into the asphalt kettle.

RUSSIAN DOCTOR HELPS

A Russian doctor from the Russian Antarctic station at Mirny flew 475 miles to the Australian station at Wilkes on May 4 to treat an Australian suffering from a nervous illness. The Australian became ill some weeks before.

An officer at Wilkes reported frequently on his condition by radio to the Antarctic Division headquarters in Melbourne. A Melbourne specialist was consulted and prescribed treatment.

But in view of the gravity of the illness and the rapid depletion of the stocks of drugs to treat it, it was decided to seek another medical opinion and to get further supplies of drugs.

A radio message to this effect was sent to the officer in charge at Mirny, the closest station. The doctor flew to Wilkes to examine the patient.

Because of weather conditions it will not be possible to fly the sick man to Australia before December at the earliest.

Fire Destroys Mawson Power-house

Mr. J. Bechervaise, Leader at Mawson station, in this despatch describes how Mawson was struck by the Antarctic's most feared enemy, fire.

"Throughout March when winds of up to 120 m.p.h. swept Mawson, the men slaved on the new power house. On April 3 it was virtually complete after the expenditure of more than 1500 man hours. The gantry was in the course of erection and the old engine room was in the first stages of demolition according to plan.

"From the time the outside panneling and roof were complete the engineers and fire officer were concerned with the fire risk, for in a building of plywood and sisalation, with no planned provision for ventilation, the heat was excessive. This heat had caused several years' accumulation of oil-impregnated ice below the wooden floor to thaw and daily many gallons of this liquid were bailed away. To cool the building Price had constructed a 12-inch ventilator at ground level and a 12-inch fan exhaust at roof level. In case of fire six newly charged extinguishers were in position.

"Then at 1.40 p.m. on April 3 we witnessed the total destruction by fire of the power house.

FIRST ALARM

"Price, who had resumed work after lunch, left the engine room for five minutes and on his return noticed what seemed to be a small fire burning beneath the Petter McLaren engine. He immediately applied a foam extinguisher. Lawrence arrived while Price was attending to the fire and seeing it was gaining gave the general alarm. All men immediately responded, arriving at the engine room with dozens of foam and CO₂ extinguishers from all quarters. Within minutes dense smoke and fumes filled the powerhouse and it was obvious that the fire was burning fiercely in hidden cavities below the floor level and in the wooden supports.

"All doors and apertures were sealed. The windows nearest the Petter were broken and foam and

CO₂ extinguishers were discharged in the direction of the fire through small holes, while Cosgrove, Peake-Jones and Price, using masks and air tubes, successively reached the seat of the fire with foam, CO₂ and dry powder extinguishers. The heat eventually drove them back as the Petter fuel tank ignited. The worst difficulty was the baffling double building obstruction with no coincident doors. The men were guided back with ropes but Cosgrove, who has had considerable naval fire experience, returned repeatedly until the heat was intolerable and the danger from the main settling tanks and the oxy acetylene cylinder was excessive.

HOLE IN THE ICE

"When it seemed that no liquid oil remained from the Petter tank and before the fire had reached the main settling tanks (which contained 500 gallons of diesel fuel) men worked on the roof pouring hundreds of gallons of water from a pit cut in the harbour ice, through holes in the roof. For two hours chains of men carrying buckets and tins transported about 1000 gallons of seawater, working to near exhaustion in a temperature of 4° F. Three men on the roof were kept supplied and two pumps were also operated until the formation of ice halted the operation.

"In spite of all these efforts, however, the fire continued spreading until the roof and walls became very hot. I feared an explosion from the settling tanks, which could be heard bubbling, and ordered the men from the roof. Our major effort was then turned to removing all materials from the doomed powerhouse—the new Petter switchboard, fuel drums, gas cylinders and also the vehicles in the vicinity. This was scarcely accomplished before at 4.35 the roof sagged and dense black smoke and flames rose 60 to 70 feet before streaming out over the harbour.

ON GUARD

"Fortunately the wind was still relatively moderate and the high snow drifts were an added protection, for any subsequent explosions and flames would have gravely endangered the main fuel tanks on the hill. Rostered men patrolled the down-wind areas all night and three minor fires were arrested. The main fire continued all night, leaving a mass of girders over the ruined machinery. . . .

"Emergency power was promptly provided for radio and essential lighting from the D4 alternator and the Armstrong Siddeley 6KVA. The whole party was put on an emergency footing, split up into six teams."

One team unpacked and set up the first small stand-by generators and then the big Petter unit, which fortunately had been dragged from possible danger. They cast the heavy concrete bed, assisted by everyone, at zero temperatures, keeping the mix from freezing by pumping hot air under a tarpaulin.

Another team took stock of all available building materials and designed and built a new structure (pre-cut in the Rec. room) in record time. "It is metal-lined, gaily painted and tied down as an enduring monument to strenuous days."

WORK AS USUAL

Throughout this period skeds and obs in radio and met were maintained on short power from the small generator and the magnetic programme was uninterrupted—at the cost of manhandling heavy batteries to the distant variometer hut. After a fortnight of cold, clear weather every team had completed its task and the full scientific programme had been resumed.

With a little power rationing, the year's activities should only be interrupted by engine overhauls, which can be carried out at night.

NEW SANCTUARIES

On April 15 it was reported from Canberra that the Minister in charge of the C.S.I.R.O. would be asked to consider declaring as sanctuaries for seals and penguins the parts of Antarctica under Australian jurisdiction.

ON THE AIR AGAIN

Lewis Island, the only long-run automatic weather station in Antarctica, was back on the air again after being silent for eight months. A party from the "Magga Dan" spent 14 hours on February 9 erecting new radio masts at the station to replace those blown down last year, fitting new parts and making adjustments to the radio transmitters.

From now on the station will transmit under the call sign VNX on two different frequencies—6910 and 9815 kilocycles—four times daily (at 0400, 1000, 1530 and 2245 Australian Eastern Standard time plus or minus five minutes). The broadcasts will give coded letters representing the barometric pressure, temperature and wind velocity. The ship left Lewis Island at 10.35 p.m. on February 9. The station will not be visited again until January, 1960.

SKI-SHOD DAKOTA

The R.A.A.F. is modifying the engines and frame of one of its surplus twin-engined Dakotas to fit it for Antarctic work next season. The aircraft has been bought by the External Affairs Department, which controls Australian Antarctic operations, but will be manned by a specially trained R.A.A.F. crew.

The aim is to provide "twin engine reliability" for flights in remote and difficult areas, and also to provide a plane suitable for photo-mapping from the air. For this purpose aerial survey cameras will be fitted and additional fuel tanks will also be required.

The ski-type undercarriage may have to be imported from the United States.

AUSTRALIA'S OWN SHIP?

The executive planning committee of the Australian National Antarctic Research Committee has asked the Australian Shipbuilding Board to prepare preliminary plans for a ship specifically designed for Australian Antarctic work. Rough specifications have been supplied by the Antarctic Division of the External Affairs Department.

JAPANESE ESTABLISH SATELLITE STATION AT SHOWA

The Japanese expedition ship "Soya" left the Antarctic on February 12 and arrived back at Tokyo on April 13, as planned.

All goes well with the wintering team at Showa Station. Mr. Masami Murayama, who is the leader of this team, and five men, a seismologist and a surveyor included, made a snow-car journey from April 1 to 21. They carried out glaciological research, especially seismic sounding, and reached 58 miles S.E. from Showa Station. At this spot (69° 30' 09" S. 41° 28' 04" E.) a satellite station was established and an automatic meteorological recorder set up. According to unofficial information from Dr. Sadanori Murauchi, the chief scientist, the surface at this point is about 4,900 ft. above sea level and the thickness of the inland ice is about 8000 feet. The base therefore lies about 3000 feet below sea level. The team will try more distant inland trips after the winter.

SCIENTIFIC PROGRAMME

During the voyages to and from the Antarctic, programmes were carried out on "Soya" in aurora and air-glow, ionospheric physics, cosmic rays, meteorology, geomagnetism, oceanography and biology. During the change-over period (January 3-February 12) work was done in gravity, topography, oceanography and biology. The wintering party of fourteen will be concerned with the disciplines studied on "Soya", except for oceanography and biology, and will also study glaciology and seismology.

"Soya" was reconstructed for the 1958-59 voyage. Her stern deck was converted into a flight deck and the vessel carried two Sikorsky S-58 helicopters for transporting cargo at Showa, two Bell 47G-2 helicopters for patrol purposes, and a Beaver aircraft for survey work. During the change-over "Soya" was from 75 to 100 miles (nautical) from the base.

The S-58 helicopters made 58 flights during this period. About 54 tons of cargo was carried, as well as 38 men, on these flights.

PLANS FOR 1960

Preparations for the coming expedition, i.e., the supporting party 1959-60 and the wintering party for 1959-61, are now in progress. The wintering team will consist of twelve men, possibly fifteen. Dr. Tetsuya Torii will be the leader. Dr. Torii is an associate professor of chemistry at Chiba University, and a member of the Japanese Alpine Club.

Prospective members of the 1960 wintering team were billeted together from March 9 to 13 on Mt. Norikura, 9895ft., in the Japanese Alps. Some tests of vehicles and sledges were to be held from the 9th till the 13th of May on the Midagahara Plateau, 5000-6000ft., of Mt. Tateyama.

The fourth expedition will depart from Japan on October 28, 1959, and arrive at the neighbourhood of Ongul Island about December 25. The expedition's ship, M-S "Soya", will carry five aircraft, as on the 1958-59 expedition. It is hoped to use a "snow-car" also during the transshipping operations.

The expedition, the fifth, to go south at the end of 1960, will not, according to present plans, include a wintering party.

CHILE

The usual reliefs of Chilean bases was carried out during the summer by the patrol vessels "Lautaro" and "Lientur" and the transport "Maipo".

The commander of the expedition was Captain Ramon B. Gonzalez, who travelled on the "Maipo", and the chief of Operations was Cdr. Victor V. Lamas.

RELIEF OF F.I.D.S. BASES HAMPERED BY HEAVY ICE

Fast ice and heavy pack, reported in our last issue, continued to impede the relief of the southern bases of the Falkland Islands Dependency Survey.

In spite of valuable assistance given by the American ice-breakers "Northwind" and "Edisto", it was necessary to close down the Loubet Coast and Stonington Island bases (W and E). It also proved impossible to reopen the Graham Coast base (J) which had been closed earlier in the season. Base Y was relieved by air. Bases O and J were closed as planned.

As reported in the March issue, the "John Biscoe" was held up for fifteen days by fast ice at the entrance to Grandidier Channel and was eventually forced to return to the Falklands to refuel. She sailed south again on February 16, and closed down the Danco Coast and Graham Coast bases (O and J)—the programme of field work having been completed in the two localities—before proceeding to the Loubet Coast (Base W). She was again held up by heavy ice and made little progress until joined by the American icebreaker "Northwind" on March 3. Even so, it was not possible to reach W and the two ships continued south to Marguerite Bay and arrived in the vicinity of Base Y on March 8. Base Y was relieved by helicopter and Base E was evacuated, Base E personnel having sledged up to Base Y.

RECORD GALES

The weather and ice conditions deteriorated further and it was not until the 11th that the ships were able to proceed north again and make another attempt to reach W. The last lap of the journey south, which normally takes half a day, had taken two days, but on the return journey conditions were so bad that it was 18 days before they were able to approach the Loubet Coast. Severe southerly gales experienced for three weeks during February

and March in this locality broke all records for duration, and instead of dispersing the ice the gales appeared to drive greater quantities up from the southwest and added to the congestion. Bad weather prevented flying but the ten men from Base W were eventually able to sledge out to the ships, the base having been closed down.

The two ships were then joined by a second American icebreaker, the "Edisto", and together they worked their way slowly northwards through heavy pack. Only after several attempts was it possible to revisit the Argentine Islands (Base F) and land cargo at Port Lockroy (Base A). On April 9, "Northwind" parted from the "Edisto" and "Biscoe", which continued together as far as Deception Island. The "Edisto" then sailed for Buenos Aires while the "Biscoe" rendezvoused with the "Shackleton" before proceeding to Hope Bay. The "Biscoe" then returned to the Falklands via the South Orkneys and South Georgia, arriving at Stanley at the end of April.

The "Shackleton" meanwhile, having completed a voyage round the northern bases returned to Stanley on January 18. It was then found necessary for her to go into dry dock at Montevideo for repairs to her rudder post which had been damaged in the South Shetlands in November (see March issue). The ship remained at Montevideo until the end of March, and the delay was particularly unfortunate as at that time the "Biscoe" was held up in the south. However, help given by H.M.S. "Protector" enabled much of the summer programme to be carried out as planned. "Shackleton" sailed south from Stanley again on April 4 and visited Deception Island and King George Island before returning on the 14th.

SUMMER FIELD WORK

Six surveyors spent the summer months in the Bransfield Strait area, linking up the surveys of Graham Land and the South Shetlands by means of a tellurometer survey. The surveyors were landed by H.M.S. "Protector" on Livingstone, Deception, Low and Snow Islands in the South Shetlands, and also on Inter-currence Island and two small islands at the northern end of the Gerlache Strait. Parties of surveyors also worked on Greenwich and Robert Islands in the South Shetlands.

Physiographical reconnaissance was carried out by Professor David Linton in the South Orkneys, South Shetlands, on Clarence and Elephant Islands and in the Gerlache Strait.

A biological field party also worked on Livingstone Island, studying the seal population.

AT THE BASES

Routine work continues at the nine bases successfully relieved.

From Hope Bay (Base D), a four-man survey party working on Joinville Island in February and March reported good progress, and during the same period three men carried out a magnetometer survey northeast of Mt. Bransfield. From Base E, geological work was carried out on Roman Four Promontory in February, and a party also visited the Debenham Islands. On King George Island (Base G) field parties worked at several localities along the south coast and in Admiralty Bay, transport being provided by the "Protector's" helicopters. Glaciological work was continued on the glaciers northeast of base.

Ornithological work was continued at Signy Island (Base H). Over one thousand Giant Petrel chicks were ringed and the Sheathbill population was also studied. Adelle penguin chicks caught for the Edinburgh Zoo were collected in March by the whale catcher "Southern Gem".

On the Graham Coast, several localities were visited before Base J was closed down on February 23. Base O was closed on the 22nd.

At Base W, field work was continued on Roux Island, Detaille Islet around Hanusse Bay and on the plateau, up to the time when the base was evacuated.

Two men from Base Y visited Base E and two men from E visited Y in January. A geologist and surveyor from Y also visited Blaiklock Island.

METEOROLOGIST KILLED

Without a doubt, it has been the most difficult summer season that F.I.D.S. has ever experienced in 16 years of operations in the Dependencies. Nevertheless, in spite of many setbacks all bases were relieved and much useful work done. It is particularly sad, therefore, that having completed a difficult season without serious mishap, we have to report the loss of one man in April. It was with deep regret that we heard that meteorologist Alan Sharman had been killed as the result of a fall while walking near the base hut on King George Island to which he had just been posted. He had already completed one year with F.I.D.S. and his loss will be keenly felt by all who knew him.

Sir Vivian Fuchs is to lead a three-ship convoy to tour twelve British bases in the Antarctic late this year. Sir Vivian has returned to his post as Director of the Falkland Islands Dependencies Scientific Bureau.

ARGENTINA TAKES OVER ELLSWORTH

The United States has handed over Ellsworth Station, established in the 1956-57 season, to Argentina. Unusually severe ice conditions this year, described by Captain E. A. McDonald, U.S. Task Group Commander, as "one of the worst on record," delayed the arrival of the U.S. ice-breaker "Edisto", which was trapped in ice 105 miles from the station.

The Argentine Antarctic Institute will be responsible for the operation of the station. The leader for this year will be Lt.-Cdr. J. H. Suarez. Cosmic radiation studies will be under the supervision of Ricardo Rastelli. Glaciological work at Ellsworth will be intensified.

Two American bacteriologists, Dr. J. S. Sieburth and Dr. P. R. Burk-

holder, left Argentina on the "General San Martin" in December to carry out research on the antibiotic properties of plankton.

Argentina planned a two-month oceanographic survey in Drake Passage during last summer.

SYMPOSIUM

The Antarctic Symposium of Buenos Aires is to be held between November 16 and 21, 1959. The preliminary scientific and technical results of Antarctic activities carried out during the International Geophysical Year will be presented, and an opportunity will be afforded for Antarctic investigators to make personal contacts.

Biological and geological sciences will be included in the scope of the Symposium, and discussion of all scientific aspects of I.G.Y. work in Antarctica will be welcomed.

The Argentine Government will pay the return transportation expenses of two delegates from each national member of S.C.A.R. and their sojourn expenses in Argentina for ten days.

TOURISTS

The 11,540 ton liner "Yapeyu" of the Argentine State Fleet, which normally serves the River Plate-Europe run, completed early in March its first Antarctic cruise; 260 passengers, each paying £100, visited regions "previously known only to explorers", says a Buenos Aires press report. The party included 16 Americans, most of them business men working in Argentina.

The cruise, which lasted three weeks, was the first commercial voyage ever made to the Antarctic by a ship of the Argentine maritime fleet, though the Argentine Navy sponsored a similar expedition there last year.

Captain Finn Ronne, the American explorer, boarded the vessel at Ellsworth, where he was completing the transfer of the station from the United States to Argentina.

Commander Juan A. Carrere, master of the "Yapeyu", said that the voyage was favoured by good weather but they had encountered far more icebergs than usual. At one stage he spent seven straight days on the bridge.

PROBING

Plans announced at the 3rd S.C.A.R. meeting in Canberra suggest that the 1959-60 summer may mark spectacular attempts to probe deep into the heart of Antarctica.

In addition to the **United States** projects outlined on page 69, the following traverses are in contemplation:

The U.S.S.R. plans the largest over-snow journey in Antarctic history, from Komsomolskaya via Vostok to the South Pole, to the Pole of Inaccessibility and on to the new station, Lazarev, on the Princess Astrid Coast.

Australia is contemplating a traverse from Wilkes Station to Vostok.

Belgium has announced a proposed journey south from King Baudouin Station at least to about 80° S.

Japan also plans a relatively short southern journey.

New Zealand will strike south along the Victoria Land coast to the southern limit of the Ross Ice Shelf.

PROJECT ARGUS

Launched in great secrecy during the final weeks of last northern hemisphere summer, U.S. "Project Argus" was cautiously revealed early in March this year as a major scientific and military experiment.

A task force of nine U.S. vessels made its way into the South Atlantic. Near Antarctica, in heavy seas, the ships deployed. On August 27, the U.S.S. "Norton Sound", a guided-missile launcher, fired a three-stage rocket, on August 30 another, and on September 6 a third. Each rocket carried a small atomic bomb that exploded more than 300 miles above the earth. After each explosion a thin shell of radiation spread quickly around the globe.

One result may be that scientists will be able to map the earth's magnetic field more accurately and learn more of the "core of escape" over the magnetic poles through which future space travellers may depart in order to avoid the intense radiation through which they would have to pass elsewhere.

Americans Locate Mountain Range During Autumn Traverse

Despite lower temperatures and shortening days, Americans at Byrd Station in the heart of west Antarctica carried out an extensive sno-cat traverse in late February and early March which made important geographical discoveries.

A four-man traverse party under John Pirrit, who led the 1400-mile traverse from Ellsworth to Byrd in 1958-9, and is spending his second consecutive winter in the Antarctic, this time as Byrd Station scientific leader, set out from Byrd on February 14 in three sno-cats. The purpose was to investigate the Executive Committee Range in the heart of Marie Byrd Land.

These mountains were first sighted during the 1939-40 U.S. Antarctic Service Expedition by a flight from Little America III. Four peaks were reported, but neither location nor heights could be determined. A second sighting occurred in 1947, when two Navy aircraft observers from Operation "Highjump" reported two new peaks, one believed to be 20,000 feet in height.

For a decade there was no further opportunity to investigate the range. On the basis of flights in December, 1958, it was decided that vehicle approach to the mountains was practical.

Positive location of the mountains was reported by Pirrit's team in a summary of their three-week, 500-mile oversnow traverse, which ended on March 6. The traverse party spent two days positioning the peaks, making glaciological studies, and conducting a preliminary geological reconnaissance.

Pirrit reported that the range trends north and south for about 60 miles, between 76° 20' S. and 77° 20' S. Preliminary geological investigation shows the mountains to be volcanic and about 90% covered by snow and glaciers. Alpine type glaciers flow down from the peaks to join the vast ice sheet of Marie Byrd Land. Glaciation has modified the mountain craters.

The smallest of the ten peaks in the range is 7,144 feet high; the

highest 13,856 feet. The high peaks, reported Pirrit, are made up almost exclusively of varieties of basalt overlain by a thick series of breccias and tuffs. At least one of the mountains appears to be a rejuvenated cone, indicating more than one period of volcanic activity.

VOLCANIC ROCKS

A problem of great interest to the traverse party and one without immediate solution was posed by a widely scattered array of volcanic rocks on the surface of the ice sheet, as far out as five miles from the peaks. The rocks give the appearance of having been scattered by an eruption.

"The mountains are not excessively high," Pirrit radioed, "and the glacier flow rate cannot be more than 50 or 100 feet per year, so that presumably the outermost rocks would have taken many years to reach their present position, yet they have every appearance of having been recently placed there." Normally it would be expected that the rocks would be covered by snow and ice.

Further studies of this and other problems will be made next October by a seven-man party.

SNO-CAT TRAVERSE

Before Ellsworth Station was handed over to Argentina, six men left the station with vehicles and sleds to perform a scientific traverse over the route between Ellsworth and Byrd Stations. Their purpose was to close the gap between the Ellsworth Station traverse of the 1957-58 season and Byrd Station.

The party, led by John Pirrit of Glasgow, Scotland, departed from Ellsworth on October 30, 1958. A total of 17 major seismic and glaciological stations were made at 30-

mile intervals from 81°S., 69° 15'W., proceeding westward along the 82° parallel. Mountains at 81° 53' S., 89° 20' W. were visited briefly; they were found to consist of granites intrusive into gneisses, analogous to the basement suites of south Victoria Land and Edward VII Peninsula. After covering 1250 statute miles, the party arrived at Byrd Station on January 7, 1959.

AT McMURDO

A permanent laboratory is being installed at McMurdo to support field studies in biology, medicine and other life sciences. In addition to a wide variety of equipment, biological supplies and culture media, the laboratory will have a library of standard references, special texts, and the scientific reports of past Antarctic expeditions as well as current materials pertinent to Antarctic research.

The laboratory was opened on April 12 and thrown open for inspection. The Navy men took great interest in the microfilm reader, dissecting microscopes, battery-powered tele-thermometer and other instruments, as well as in the marine biologist's collection of octopi, starfish, sponges, shellfish and other marine organisms. The scientists were kept busy answering questions. Three narcissus plants in full bloom reminded the visitors that they had not seen flowering plants for many months.

On April 13 the new 6,000ft. ice runway on McMurdo Sound was surveyed and laid out prior to the final sunset of the season. Three Navy men were flown out on to the bay ice by helicopter, with trail flags to mark the centre lines. The temperature was 30° F.

LAST FLIGHT

During the brief period of twilight before winter covered McMurdo in total darkness, the last flight of the season was made by a helicopter. The purpose was to survey ice and weather conditions.

Take-off and landing, in almost complete darkness, were the first at the new permanent heliport at McMurdo. It comprises a circular asphalt surface built on a rock-like basis of volcanic ash. Installed round

this landing pad are twenty-one tie-down rings which serve as anchors for the helicopters when they are parked.

The heliport, which will include two other landing pads, is expected to be completed by late 1960. Nearby will be a two-bay hangar with complete maintenance and repair facilities.

UNITED STATES ANTARCTIC RESEARCH PROGRAMME

Recommendations regarding programmes for future U.S. Antarctic research will be made by the Committee on Polar Research of the National Academy of Sciences. The investigations decided upon will be implemented by the National Science Foundation. NSF's U.S. Antarctic Research Programme co-ordinates the scientific efforts of Federal and non-government agencies with an interest in Antarctic research, and oversees the conduct of field investigations and data analysis. The U.S. Naval Support Force, Antarctica, provides the logistic support for U.S. science programmes in the area.

Mr. Albert P. Crary has been appointed chief scientist of the U.S. Antarctic Research Programme. Crary is a noted polar geophysicist with wide experience in the Arctic before he served as scientific leader at Little America for two and a half years. During that term he led two long over-snow traverses which made geophysical and glaciological measurements of the Ross Ice Shelf and the Victoria Land Plateau.

On these traverses Crary himself covered a total of 3,100 miles. In all, U.S. traverses organised by him have totalled 7,500 miles, spanning Antarctica from the Weddell Sea to the Ross Ice Shelf and into the Victoria Land Plateau.

Several further oversnow traverses are planned. From Byrd Station it is proposed to carry out a roughly triangular traverse north to 75° S, 120° W., south-west across the Executive Committee range (see above) to approximately 77° S., 140° W., and back to Byrd.

From Byrd also it is proposed to strike north-east across the Ellsworth Highland to 77° 30' S. and

98° W. and north along that meridian to the Hudson Mountains in 74° 30' S., south of the Thurston Peninsula.

From McMurdo two traverses are planned, the one north and the other south of the Crary traverse of last summer: (1) south-west to 81° S., 100° E., and south-east to the Beardmore Glacier area, crossing the route of the trans-Antarctic Expedition en route; (2) north-west from McMurdo to 71° 30' S., 140° E., and east to the Victoria Land coast at Hallett Station.

Both of these traverses would cross large areas of previously unexplored territory. An airborne north-south traverse is also contemplated approximately along the meridian of 90° W. between the eastern end of the Horlick Mountains (85° S., 90° W.) and the Sentinel Mountains (78° S., 85° W.).

SEARCH AND RESCUE

Operation Deep Freeze headquarters in Christchurch has asked the U.S. Air Force to consider basing a search and rescue aircraft at Invercargill by the time the Americans take men and stores to McMurdo Sound, late this year.

A DC3 aircraft of the Civil Aviation Administration has made a final check of the approach lights to Invercargill airport runway.

'WARE CREVASSE!

Two officers of the U.S. Army Corps of Engineers claim to have devised an improvement upon the crevasse-detector which has been used with some success in recent years on Antarctic over-snow traverses.

By the new device, carried in an aircraft, infra-red radiations from snow and ice fields are focussed, amplified electronically, and recorded on a screen. The temperature immediately above a bridged crevasse, the inventors say, is, depending upon barometric pressure and other factors, either warmer or colder than that of surrounding areas. Relatively warm areas appear light upon the screen, relatively cold areas dark, and in this way a crevasse-picture is thrown on the screen.

S.C.A.R.

The third meeting of the Special Committee on Antarctic Research of I.C.S.U. was held at Canberra from March 2 to March 6, 1959. Delegates were present from Argentina, Australia, Belgium, France, Japan, New Zealand, Norway, South Africa, the United Kingdom, the U.S.A., and the U.S.S.R. New Zealand was represented by Dr. E. I. Robertson and Dr. R. G. Simmers (of Mawson's 1929-31 Expedition).

Among those present were three distinguished members of Scott's 1910-13 expedition: Sir Raymond Priestley, Prof. F. Debenham and Prof. Griffith Taylor.

NOT YET

Poland had applied to be admitted to S.C.A.R., and it was decided that Poland's adherence be accepted "from the date of the disembarkment of their wintering party on the Antarctic continent."

A small Polish group landed at Oasis Station last January and set up instruments, but withdrew after about two weeks.

A working group on Antarctic cartography was formed under Gen. Laclavere. New Zealand is represented by Mr. R. G. Dick. A proposal by the Russian delegate that the collecting of information for, and preparation of a 1:3,000,000 map of Antarctica should be begun without delay was referred to the Antarctic mapping centres of the member nations.

The necessity to integrate the various branches of oceanographical research such as marine biology was stressed.

METEOROLOGY

The meetings of the working group on Meteorology were the largest of the Conference. The effectiveness of floating and other types of automatic weather stations is to be investigated with a view to filling in the present gaps in meteorological reporting. The U.S. Navy will maintain the existing meteorological communications centre at McMurdo, and will install, probably this year, a radio teletype link from there to

Melbourne (see below). Meanwhile, information will continue to be passed through New Zealand.

The New Zealand Government has invited S.C.A.R. to meet in New Zealand in 1961. The 1960 meeting will be held in either Paris or Cambridge in August or September of that year.

WEATHER CENTRE

The Australian Government, acting on the advice of the Australian Academy of Science, has established an International Meteorological Antarctic Analysis Centre in Melbourne.

The Centre has been established on the top floor of a building in a convenient locality in Melbourne. It has full telephone and teletype facilities, and is equipped for reception by facsimile of the output of the Central Analysis Section of the Bureau of Meteorology, which is located about one mile away.

In addition to excellent plotting and analysis accommodation and a large conference room, space has been reserved in the Centre for library and research purposes. The United States of America has generously donated the meteorological library from the Little America Antarctic Analysis Centre for use in the new Centre.

CENTRE AT WORK

The work of this Analysis Centre is broadly controlled by a Joint Working Party of the Commonwealth Bureau of Meteorology and the Australian Academy of Science, with the Director of the Meteorological Bureau as chairman and executive officer. Reports on the work will be made, at least annually, to the Council of the Australian Academy of Science, and then to the Special Committee for Antarctic Research (SCAR).

The principal purpose of the new Centre is to develop and undertake current analyses and to study the appropriate techniques of analysis. The primary task is to compile reliable circumpolar charts, extending northwards to 30° S. for the sur-

face and the 700 mb, 500 mb, and 300 mb constant pressure surfaces, at 00 hours and, for the surface at least, 12 hours GMT. A preliminary version will be broadcast as quickly as possible, it is hoped within 12 hours of the time of observation, through the meteorological sub-continental broadcast from station AXM (Canberra). The final analyses will be checked against all available sources of data and placed on microcards. These analyses will be the basis for research at the centre (for example, in developing ideas regarding extended period forecasting), and copies of the microcards will be made available to interested organisations. Regular bulletins will not be published by the Centre; its work will be mainly known through its broadcasts and microcards and by research papers in established meteorological journals.

THE STAFF

The staff of the new Centre comprises about ten permanent assistants and a section leader, all of whom are provided by Australia, but the collaboration of other countries has been sought for an adequate number of competent professional meteorologists to ensure full and mutual benefit from the programme. Accommodation is available for up to ten meteorologists. It is not practicable for Australia to pay either their salaries or living expenses.

The leader of this Centre is Mr. H. R. Phillipot, initially supported by Mr. K. T. Morley, who worked during 1958 in Weather Central, Little America, Mr. T. I. Gray, Jr., of the United States Weather Bureau, formerly meteorologist in charge of the IGY Antarctic Weather Central at Little America will join the section late in June, 1959, and Lt. Commander J. Timbs, Royal Australian Navy, will join at about the end of July, 1959. Argentina, France and Japan are also exploring the possibility of attaching meteorologists to the Centre.

PROBLEMS

The problem of securing the required surface and upper air observations is being slowly resolved. Re-

Commercial Air Routes Across the South Pole

The world's air experts are not asking "Will it ever be possible of inaugurate regular commercial flights over the Antarctic?" but "How soon will the service start?"

Some of them believe the day is near, within a decade perhaps, when giant airliners will link the African, American and Australian continents via bases in the Antarctic, just as airports in the Arctic already provide servicing posts for routine trans-Polar flights. Five airlines, S.A.S., K.L.M., C.P.A., A.F., and P.A.A run scheduled flights across the Arctic basin, the first two from Copenhagen and Amsterdam respectively, to Tokyo, actually across the North Pole.

Already, with a makeshift ice runway at McMurdo, heavily laden Globemasters during some of the summer months regularly make the 2,200 mile flight from Christchurch to McMurdo Sound.

It was on December 20, 1955, only three and a half years ago, that four United States aircraft made the first direct flight from New Zealand to the Antarctic. But last summer the Globemasters alone, not to speak

ports from Antarctica and the Falkland Islands Dependencies Survey are being relayed by the United States Naval Air Facility at McMurdo and New Zealand; New Zealand also onforwards reports from islands in the South Pacific. The South African Weather Bureau passes selected reports for the Union, and observations from Madagascar and Mauritius are being relayed by the Australian Department of Civil Aviation at Cocos Island. Argentina is investigating the practicability of South American reports being relayed across Antarctica. At the present time reports are not being received as frequently or as promptly as is necessary for the Centre to function efficiently, but all authorities are co-operating to ensure that omissions and delays are reduced to a minimum.

of numerous other aircraft, made 37 flights across "the stormiest ocean in the world" almost as a matter of routine.

In November, 1957, a group under Major Lassiter flew two C47s from Ushuaia, Argentina, to Ellsworth Station, a distance of 2,000 miles, with two intermediate stops.

In January, 1958, Squadron Leader Lewis flew in a single-engined Otter the 1250 miles from South Ice on the Weddell Sea side to Scott Base on the Ross Sea via the South Pole.

And last October a Soviet twin-engined Ilyushin IL-12 flew from Mirny across the Pole to McMurdo and after refuelling flew the 1,700 miles direct back to Mirny.

NO WILD DREAM

The possibility of regular South Polar air routes today is no longer something on a par with space fiction, the dream of unpractical visionaries. In a lecture delivered over a year ago to the Royal Aeronautical Society, Mr. K. Hagrup, a high executive of Scandinavian Airlines System, the pioneers of trans-Polar air flight, said, "It is no more remarkable to fly over the Polar region than to fly over any other part of the world. The time has come to realise the fact that commercial flying across the Antarctic may soon become reality." Mr. Hagrup went on to say that during the next couple of years it would be technically possible to connect Australia with South Africa and with South America by flying over the Antarctic ice-cap.

New Zealand is similarly placed. The 6,300 mile journey non-stop between New Zealand and South America via the South Pole is too long at present even for the most powerful aircraft. But Mr. Hagrup pointed out that "no doubt aircraft will be built which can make such a

direct flight, or airfields will be built in the Antarctic, thereby making it possible for large air lines in the Southern Hemisphere to develop commercial flying across the South Pole area."

In considering the practicability of flights across the Antarctic and beyond comparable with the existing trans-Arctic routes, however, the absence of intermediate stopping points and the admittedly high weather hazards are factors which have to be taken into consideration. But the United States has been working for some years on an ice-free rock airfield north of Marble Point in McMurdo Sound which, it is estimated, could ultimately provide a 10,000-foot runway usable all the year round.

SLASHING THE MILEAGE

The saving in mileages by trans-polar routes is staggering. Marble Point is 2,200 miles from Christchurch, New Zealand. Only another 4,600 miles in almost a direct line leads on to Capetown; a total of 6,800 miles. The present air mileage from New Zealand to South Africa, via Australia, is approximately 9,940 miles.

To cite another example, the air route from Sydney via Marble Point to Buenos Aires in Argentina is a mere 7,450 miles. And this Antarctic route passes almost directly over the proposed Russian station, on the Bellingshausen Sea, conveniently situated roughly half-way between Marble Point and Buenos Aires. The alternative route via Nandi and Honolulu is 13,950 miles, 6,500 miles longer.

The distance from Copenhagen across the North Pole to Tokyo, with a touch-down at Anchorage, Alaska, is, for comparison, 8,202 miles and this route is regularly flown by S.A.S. passenger DC7C planes.

AUSTRALIA LOOKS AHEAD

An air base either at Wilkes, recently taken over by the Australians, or at the Russian base at Mirny, would provide a halfway staging point on a direct line between Brisbane, Sydney and Cape-town.

On "Magga Dan" during the Australian take-over of Wilkes from the

Americans was a Department of Civil Aviation engineer who went to investigate the siting of an airfield on the ice at Wilkes Station; the first step towards establishing a direct Australian-Antarctic air link. With him was Squadron-Leader Douglas Leckie, Australia's most experienced Antarctic pilot.

Wilkes is 2350 miles from Melbourne, compared with McMurdo's 2200 miles from Christchurch, and Australian officials believe it may have great possibilities as an international landing ground to which long-range jets will fly from Australia on a shot cut across the bottom of the world. Qantas is ready to fly a Super-G Constellation to the Antarctic whenever the Government asks and the necessary facilities are available.

A landing field at Wilkes will have to be formed on the bay ice, in the same way as the American strip at McMurdo Sound on which the transport Globemasters touch down—while it lasts. If heavy wheeled-planes are to fly in direct from Australia, homing beacons and GCA equipment, as well as radio, weather and radar stations will have to be installed. Planes like the R.A.A.F. four-engined Hercules transports could leave Melbourne with a 20-ton load and touch down eight hours later on the snow-covered runway.

When Mr. C. O. Turner, Qantas chief executive officer, arrived at Perth on March 6, he said that there was certainly an interest in Australia in the development of an Antarctic air route. Australia's immediate interest would be to establish a service to Wilkes Station. Asked about a Qantas service from Australia through Antarctica to South America, Mr. Turner said that the distances were so great that another base in the Antarctic besides Wilkes or McMurdo would be needed. He could not see trans-Antarctic air development for a number of years. "The problem of flying across the continent needs much investigation," he said.

LICENCE TO FLY

It was announced in Washington on January 15 that under an amendment to the United States-Brazilian civil air agreement, United States

airlines will be able to fly to Australia via Antarctica. The amendment gives permission to U.S. airlines to fly "beyond Brazil to Uruguay and Argentina and to Antarctica and beyond." Officials say that by "beyond Antarctica" they meant Australia. The United States already has permission from Australia to fly to that country by way of Antarctica.

No United States line plans to fly such a route immediately. But the men who know the Antarctic well have few doubts about the future of Antarctic flying. Sir Vivian Fuchs said in Montreal on February 15 that international airlines would almost certainly some day use the Antarctic as a regular stopping base. There was no reason why flying stops could not be established across the Antarctic, he said. Rear-Admiral Dufek said at the "take-over" ceremony in March that he believes the regular air services will come in ten years' time.

When this happens, New Zealand will be an important link in the chain.

The possible tourist angle is not to be forgotten, despite the relatively low populations of the southern hemisphere countries. Chile has sent an experimental tourist plane to Graham Land; and Pan American Airways' Stratocruiser flight of October 1957 from Christchurch to McMurdo Sound and back attracted world-wide attention—if only because two attractive air hostesses were aboard.

Antarctica must inevitably feature strongly in any development of global air-routes, because even if direct flights non-stop between the southern continents were to become practicable meteorological forecasting services and navigational aids on the Antarctic continent would still be essential.

One of the potentially great air-centres of the future, that at Marble Point, and also the prospective emergency landing ground in the Cape Hallett area some 400 miles to the north, are in New Zealand's Ross Dependency.

BOOKSHELF

This quarter we review three books which are of "marginal" Antarctic interest. Two are autobiographies of men who contributed substantially to Antarctic exploration and research. The third deals with a subject of great importance to Antarctic explorers.

"COME NORTH WITH ME", by Bernt Balchen; London, Hodder and Stoughton, 318 pages, ill., N.Z. price 25/3.

Though more of his adventurous life was spent in the far north than in the far south, Bernt Balchen was in charge of the aviation unit of Byrd's first Antarctic venture; and one 45-page section of this autobiography deals with that historic expedition, which opened the age of intensive air exploration in the Antarctic. Balchen gives racy accounts of the destruction of the Fokker plane in which Gould, June and he had flown for a geological survey of the Rockefeller Mountains, and of the first flight over the South Pole, on 28-29 November, 1929, a flight on which he was the pilot.

Balchen tends to jump from event to event, not always chronologically, in a rather disconcerting way; and his stylistic mannerisms, such as the very frequent use of the historic present ("The accident occurs on the first test hop") are annoying. But here is a real man of action talking, and his story, moreover, ripples with humour. No enthusiast for Antarctic reading will want to miss this new, first-hand and lively description of events which will live in memory as long as men are interested in the great story of Arctic and Antarctic exploration.

"JOURNEYMAN TAYLOR, The Education of a Scientist", by Griffith Taylor; London, Robert Hale Ltd., 352 pages, ill., diagrams, N.Z. price 25/-.

This is the autobiography of Professor Griffith Taylor, well remembered as geologist and glaciologist with Scott's last expedition and as the author of "With Scott: The Silver Lining" (1916). "Grif" is now living in retirement in Sydney.

Some 40 pages of this frank and lively story are devoted to the author's experiences in the Antarctic. They are of particular interest to New Zealanders, since Griffith Taylor was leader of the western parties which made the first geological study of the Taylor Dry Valley and Granite Harbour areas, in which New Zealand expeditions have recently worked.

The author travelled widely in Europe, Asia, Africa, North and South America, Australia and Antarctica, always with his geologist's eyes wide open, and to the geologist and to the geographer in particular his life-story will be of exceptional interest.

"A GUIDE TO OCEAN NAVIGATION"

By Frank Knight: London, Macmillan and Co., Ltd., 177 pp., diag. Published price 18/-.

Navigation is both one of the problems and one of the arts of Polar travel. Travel across the inland Antarctic Plateau presents the identical problem which faces the mariner at sea. Hence, the Polar navigator uses the identical methods of the mariner.

For this reason, Frank Knight's book is of more than interest to those intending to travel in Polar regions. Basically, of course, in the areas of Antarctica near the South Magnetic Pole, such as the Ross Dependency, the magnetic compass is virtually useless. Its place is taken by the sun compass—a method of navigation not covered in this work. However, astro-navigation is the basic tenet of Polar navigation and the treatment of astronomy, spherical trigonometry and, in particular, the position line method of determination, is extremely well handled.

One unfortunate omission for which the writer must be excused, since his work is not intended for Polar regions, is a treatment of map projections. He does cover the Mercator projection and its uses but this projection, since it approaches infinity in Polar latitudes, must be replaced for the Polar navigator.

The navigator's requirements necessitate an orthomorphic projection. Thus, the Polar stereographic projection is the only choice. A treatment of its properties would have been a worthy addition. Nevertheless, students of navigation and intending Antarctic travellers will find the necessary fundamentals of astro-navigation well covered in this excellent work.

J. H. MILLER.

"SHACKLETON'S BOAT JOURNEY,"

by F. A. Worsley. London: Hodder and Stoughton; 159 pp. N.Z. price, 3/-.

This is a "paper back" re-set edition of Worsley's specially written account first published in 1940 of the famous boat journey from Elephant Island to South Georgia, and the crossing of the island. It contains much information not given in "Endurance."

"SVERDRUP'S ARCTIC ADVENTURES": London, Longmans, 30/- net.

A new, edited version of the Arctic classic, "New Land", by Otto Sverdrup, first published in English in 1904, will interest many whose special interest lies at the other end of the world. As now presented, it makes very good reading.

STRAIGHT UP IN THE AIR

And not in a helicopter but in a conventional plane.

Sq.-Ldr. D. W. Leckie, R.A.A.F. pilot, said on his return from the Antarctic on March 3, that in winds of 70 m.p.h., often encountered in the Antarctic, it was only necessary to "gun" the engine and release the aircraft's brakes for it to spring off the ground like a kite.

When coming in to land he flew over the selected spot and reduced flying speed until he "went down like a lift."

The Soviet whaling flotilla has reported that it has failed to find Swain's Island and Masys Island, whose existence in the Antarctic was reported by 19th century seafarers.

From the Sub-Antarctic Islands

MACQUARIE (Australia)

There was excitement on Macquarie Island on February 22 when a signal was received from the "Magga Dan" off Oates Land, "Exploration completed. Now pushing through pack ice. Expect arrive Macquarie early Thursday."

Engine trouble caused some days' delay, but on February 27 the flag was flying on Camp Hill as "Magga Dan" dropped anchor at 10.30 a.m. In a limited stay of four hours the visitors were welcomed ashore and then escorted to the mess for a cup of tea and greetings. They took numerous photos of animal life on the isthmus, and of the station buildings. A magnificent buffet lunch, including a decorated cake of the "Magga Dan" in miniature, commenced at 12.30., and the vessel left for Hobart at 3 p.m.

DISASTROUS FIRE LOSS

On March 30 a fire broke out in the ionospheric hut on the western side of the isthmus. The alarm was sounded and all hands turned out to fight it with extinguishers. The men attempted to rescue the scientific equipment from the cosray section but were thwarted by dense brown toxic smoke. They then attempted to pull away the ionospheric hut with the bulldozer but a wire rope prevented their doing so. Finally they attempted to crash the walls adjacent to the cosray section, but the hut exploded and a strong wind did the rest.

The fire was a disastrous blow to Tasmanian cosmic ray research. The destroyed equipment included a £1,500 cosmic ray recorder built by the University. As the assembly of another recorder will take months and the equipment cannot be installed before the next Antarctic summer, the loss will break a chain of stations engaged on cosmic ray research. Most of the year's records were lost and the disaster will have international repercussions in the

exchange of cosmic ray data.

The fire was apparently caused by an electrical fault in the ionospheric equipment. It spread quickly to the cosmic ray hut next door. The total loss, involving the ionospheric sounder and a quantity of film, cosmic ray telescope, the ozone spectrometer and auroral camera equipment, probably amounts to £10,000.

SEALING AGAIN?

A 63-ft. gaff-rigged schooner, the "Patenela", left Hobart on March 14 for Macquarie Island in a bid to start a sealing industry on the island.

The vessel was chartered by Mr. Alan Powell, a Melbourne business man. He planned to estimate the seal population, and if the numbers warranted it his syndicate proposed to install a modern factory on the island. The whole of the seal, he said, would be processed and everything would be used except the skin. Besides the blubber, the factory would produce liver oil for medicinal purposes, oil for the manufacture of margarine, and meat and bone meal. Even the glands would be marketed.

Mr. Powell planned to have a refrigerating ship running a shuttle service to Hobart, where the fresh seal-meat would be frozen and packed for export to America. If the venture proved successful another factory could be built on Macquarie and the possibility of using Heard Island could also be explored.

Neither the Commonwealth nor the Tasmanian Governments at this stage opposed the establishment of the industry, but vigorous protests were soon made by the Tasmanian Fauna Conversation Committee and numerous other organisations as well as private citizens. It was urged that the re-commencement of sealing would lead to decimation of wild life on the island and possibly to the extinction of the elephant seal. "Every effort should be made to prevent any commercial exploitation of this unique animal life," said a circular put out by conservation bodies in all parts of Australia.

TURMOIL

Mr. Powell returned to Hobart on April 8. He said that there were plenty of seals on the island, but that the difficulties were greater than he had expected. Roads would have to be built because the seas were too rough to take carcasses from bay to bay.

Mr. Powell said it was the first time he had encountered a pea-soup fog and a 60-mile wind at the same time.

Referring to the widespread indignation at the prospect of sealing being re-commenced despite the fact that the island was in 1933 declared a wild-life sanctuary, Mr. Powell said that only bachelor seals longer than eight feet would be killed and the killing would be humane. Other natural life on the island would not be interfered with.

LICENCE REFUSED

On April 13 the Tasmanian Premier announced that because of the strong opposition to the proposal and because it seemed clear that little benefit would accrue to Tasmania from such an industry, no licence would be approved.

PREPARING FOR WINTER

Apart from the scientific routines the efforts of all members during April were directed to accomplishing certain tasks before the onset of winter. An oil pinion was fabricated and then installed at Hurd Point. The concrete foundation for a new hut was laid; and a new hydrogen generating and balloon filling hut was erected.

The Tasmanian Government rejection of the proposed sealing venture was welcomed, particularly by the biologist, who wished to complete a study of the sea elephant.

On Anzac Day the whole station assembled by the half-masted flag on Camp Hill at midday to observe a two minutes' silence in commemoration of fallen men.

One day was spent shearing the station's 22 sheep. It took 12 hours, all participating in what station-leader Harwood describes as "this barbaric sport".

On the last day in April a 36-hour storm struck Macquarie. The wind rose to an average speed of 70

m.p.h. Some gusts were as high as 106 m.p.h. Twenty feet high waves washed across the isthmus, threatening the station fuel dump. Four of the 44-gallon fuel drums were carried out to sea. The party worked hard and with the bulldozer constructed a wall around the dump. Some damage was done to the workshop wall, the food store, the water tank and one of the aerials.

In the course of the controversy over the proposed re-establishment of the sealing industry at Macquarie, somebody recalled that the notice in the Hobart Gazette in 1891 prohibiting the taking of seals on the island was signed by the then Commissioner of Fisheries, whose name was MATTHEW SEAL.

MARION

(South Africa)

The S.A. frigate "Vrystaat" made an 11-day round trip of 2000 miles from Simonstown Naval Base to Marion Island early in May to rush doctors to a sick member of the staff, Johan Swart, the artisan looking after the station's meteorological equipment.

An urgent call was sent out saying the man had acute appendicitis. When the warship arrived he had recovered to such an extent that an operation was not immediately necessary.

The Vrystaat brought Mr. Swart back with other staff near the end of their tour of duty on the island.

KERGUELEN

(France)

The annual relief this year took place in March-April for the last time. Next year, it will be carried out in November. The relief ship "Gallieni" carried 111 men from Tamatave (Madagascar), where some had arrived by air. The Kerguelen relief party numbered 69. This year's leader is M. Heurgon.

Because of the exceptional length of the last expedition, 20 months, almost all last year's party were relieved. The "Gallieni" was at Port Aux Francais from April 11 to April 22.

CAMPBELL ISLAND

(New Zealand)

During the past three months the Expedition has really settled down to the work programme for the year, and has developed into a well organised team. Meteorological and Ionosphere Observations and Reports are coming through to New Zealand with smooth efficiency and apart from poor circuit conditions which arise about this time of the year, few problems are experienced.

The final touches on new buildings are being effected and the last of the new building sites prepared. It is anticipated that by November one building only will be needed to complete the project started three years ago.

STAFF

All members are in excellent health and in his regular discussions with Head Office the Officer in Charge tells us that morale is high in spite of the approach of the winter months.

Preparations are now in hand for the all important mid-winter's day celebrations. Rob Rae, the station chef, will shine on this occasion.

PLANS FOR 1960

The Head Office staff is very busy at this time of the year organising the supplies for 1960 and arranging interviews for applicants for next year's expedition. At this stage it is not possible to say whether expectations will be exceeded but the response to advertisements is encouraging. However, difficulty is experienced in obtaining Ionosphere Observers and enquiries from young men with inclinations in this direction would be welcomed.

WINTER CLOSES IN

Field activities have been very restricted during the past month or so. Even the albatross and their colleagues have gone for shelter and it is unlikely that there will be much to report for some time.

Since the last call of U.S.S. "Brough" in February, the sea birds have been the only visitors. Although no further visits by vessels from New Zealand or the United States Navy are expected until October or November, arrangements are in hand for a possible air drop of mail and light stores some time in June.

BOUVET

(Norway)

The small expedition under Dr. Silvio Zavatti, Director of the Polar Geographical Institute of Italy (see "Antarctic" vol. 1 No. 12) left Genoa on January 24 en route for Cape-town and Bouvet Island.

It is hoped eventually to establish a weather station on this seldom-visited Norwegian island, situated south of Africa in 54° 26' S., 3° 24' E. The Norwegian Government has given its consent.

The expedition is officially named "Cerentola".

A message from Capetown says that Dr. Zavatti left there in March on his return to Italy.

The Italian party, we are informed, succeeded in landing several times on the small Lars Island, which lies off the south-west cape of the main island. Here they stayed several days. A landing for a few hours only was also made on the main island, southwards of Cape Norvegia. Bad weather rendered the taking of photographs impracticable. Gales in the "roaring forties" made the voyage between Capetown and Bouvet Island, both ways, a very difficult one.

Bouvetoya (Bouvet Island) was discovered by the French explorer Lozier Bouvet in 1739. In spite of searches by Cook and others it was not sighted again till 1808 by Lindsey. The first landing claimed was by Morrell from the American sealer "Wasp" in 1822. It was mapped by the "Valdivia" expedition in 1898.

During 1927-30 the "Norvegia" several times visited the island. It is described as "covered all over with an enormous mantle of ice which reaches the precipitous slopes at the coasts". Only in a few places low land projects and presents a possibility for landing, but even in these places it is difficult.

Attempts have been made to erect permanent buildings on the island. A strongly-built depot building and flagpole left by the Norwegians in 1929 had completely disappeared a year later, despite having been placed close to the rock wall and over 30 feet inland—the extreme width of the beach.

Bouvet is important to South Africa as a possible weather station because its location is more or less central in a large and otherwise empty expanse of southern ocean. From January 30 till February 2, 1955, the S.A. Navy frigate "Transvaal" visited the island, and landings were made at several places in a lucky spell of fine weather; but no attempt was made to establish a station.

C.S.A.G.I. recommended in 1956 that Norway, South Africa and the U.S.S.R. should jointly investigate the possibilities of organising a station on Bouvet Island on an international basis during the I.G.Y. and, if possible, take practical measures for the establishment and maintenance of the station.

When the U.S.A. expedition ship "West Wind" passed the island on its way from Capetown to Ellsworth in December, 1957, photographs were taken by helicopter of the south and west coasts. These revealed the existence of an accessible promontory about 70 feet high extending about 200 yards seawards from the steep cliffs of the middle west coast. The Americans thought this to be a suitable site for a station, but owing to its location on the windward side of the elevated island it is a poor site for a meteorological station.

The photographs also showed the existence of a shoulder about 250 feet above sea level on Cape Circundition, which is the north-westernmost cape, but the exposure is far from ideal and the establishment of a station would be a major engineering problem. The south-eastern gentle ice slope would be the best site but it could only be established and serviced by helicopter.

At the S.C.A.R. meeting in Canberra in March the South African delegate said that his country was still interested in establishing a weather station on Bouvet, and was considering sending another reconnaissance expedition.

There is no doubt that the establishment of a station on Bouvet Island would be a very difficult undertaking.

Cherry Garrard Dies

One of the few remaining veterans of Scott's last expedition, and one of the most affectionately remembered, died in London on May 18, aged 73.

Apsley Cherry-Garrard was a young ex-university man of considerable means when he was selected to accompany the expedition as assistant zoologist. Though greatly handicapped by short-sight, he soon became recognised as one of the ablest scientists and finest characters in the wintering party. Scott, in his diary, frequently praises him: "He manages somehow to do more than his share of work"; "in tight places, sound all through"; "not only without complaint, but continuously anxious to help others."

Cherry-Garrard will probably be most widely remembered as the man who shared with Wilson and Bowers the terrible privations of the winter journey of 1911 to the Emperor penguin rookery at Cape Crozier. But in addition to his always conscientious scientific work, he took a full and valuable share in the depot-laying journeys; he was in the support party to the Polar team as far as the Upper (Beardmore) Glacier Depot, 85° S. (only Evans, Lashley and Cream went further with the final five); he was in charge of the dog teams which set out in February, 1912, to meet the southern party, and drove himself to a point where his condition—an overstrained heart—caused Dr. Atkinson "serious alarm"; and he was one of the search party which found the bodies of Scott, Wilson and Bowers. In these heroic efforts he suffered greatly, and he lived under the shadow of the great tragedy for the rest of his life.

Cherry-Garrard's book, "The Worst Journey in the World," is generally regarded as the best story of polar exploration ever written. And it was Cherry-Garrard who suggested the inscription from Tennyson's "Ulysses" which is carved up-

on the cross on Observation Hill which has stirred the emotions of every man who has gazed upon it: "To strive, to seek, to find, and not to yield."

It is a line which may well be applied to "Cherry" himself.

Whaling Season 1958-59

Pelagic catching of fin whales began on January 7, and of blue whales on February 1. It was permissible to take humpback whales in the period February 1 to 4 from 0° eastwards to 60°W.

The catching period for fin whales was 69 days and for blue whales 44 days, the closing date, March 3, being the same as for the two previous seasons. Preliminary reports indicate a total catch corresponding to 15,288 blue-whale units, i.e., 288 units more than the fixed maximum catch, 15,000 units.

The total number of whales caught was 36,196, comprising 1191 blue whales, 25,776 fin whales, 2394 humpbacks, 1402 sei and 5433 sperm whales. Of this total the nine Norwegian expeditions caught 13,248, the three British expeditions 4596, the six Japanese expeditions 12,558, the Dutch expedition 2219, and the Russian expedition 3575.

NO AGREEMENT

Britain, Norway, Holland and Japan have still failed to reach agreement on Antarctic pelagic whaling quotas.

At a conference in Tokyo beginning on May 18, however, the differences between them are said to have been "considerably narrowed", and a further meeting is to be held in London before the 17-nation International Whaling Convention opens there on June 22. The Soviet Union has also been invited. Norway, Holland and Japan have all given notice that they will secede from the Convention unless a satisfactory settlement on national quotas is reached before July 1.

The crew of the factory ship "Southern Harvester", first of the British whaling fleet to return from the Antarctic, reported one of the worst seasons it had ever experienced. Bad weather on the whaling grounds lost the ship 30 catching days out of 67.

NUCLEAR PLANT

Nuclear reactors will be in operation in United States bases in Antarctica within three years, said Rear-Admiral Dufek at a Press conference in Canberra on March 3. The project had been approved, he said, and men were being trained to operate the reactors. Only the finance was to be arranged.

The Americans would begin with a unit at McMurdo, but hoped to get reactors at all four U.S. bases. One would be installed at the joint U.S.-N.Z. station at Cape Hallett, and package reactors would be established at the South Pole and at Byrd Station.

Nuclear power, said the Admiral, would save its installation costs in two years. After the introduction of nuclear power, all heating, lighting and electrical power would be supplied on the spot, and the only fuel needed apart from that would be for planes and surface vehicles.

MINING NEXT?

Admiral Dufek added that it was possible that the installation of nuclear reactors would facilitate commercial mining in the Antarctic. So far, 178 different metals had been traced, including gold, silver, lead, tin, and iron. So far, the finds had all been "low grade" and would not warrant commercial mining. But, he pointed out, less than one per cent of the 6,000,000 sq. mile continent has so far been geologically surveyed, and if a rich vein of mineral that the world needed was found, Antarctic mining would be possible. Nuclear power could then be used to supply the power needed for mining operations.

A writer in the "Washington Post" says that component parts of atomic power plants like the three and a half million dollar plant at Ft. Belvoir in the United States could be transported by air to relatively inaccessible regions like the Antarctic and reassembled there. The use of uranium would replace the need for hundreds of thousands of gallons of fuel oil. Shipping the reactor core would require 25,000 times less weight than the barrels of oil required to do the same job.

The New Zealand Antarctic Society

—is a group of New Zealanders, some of whom have seen Antarctica for themselves, but all vitally interested in some phase of Antarctic exploration, development or research.

You are invited to become a member.

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Ionosphere Research (J. W. Beagley).

Meteorology (A. R. Martin).

Marine Biology (R. K. Dell).

Aurora Australis (I. L. Thomsen).

The Nations in the Antarctic (recent Australian, South African, French, etc., exploration by leading experts in the countries concerned).

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