

ANTARCTIC

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New Zealanders at Shackleton Base, Weddell Sea.

COVER PICTURE

A New Zealand quintet in the Weddell Sea, during the establishment of Shackleton Base, in front of a "sno-cat" during a break in the unloading. From left: Bob Miller, Johnny Claydon, Ed. Hillary, George Lowe and Gordon Haslop.

Trans-Antarctic Expedition.

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(Stop Press)

CAMPBELL ISLAND

By Radio Telephone, June 11.

Excavations for the new camp buildings are complete. Pile driving proved easier than expected, the peat depth being from zero to 12ft. March and April were wet and windy, but May brought remarkably little rain or wind. Several days were calm and even fine. There was a 12° frost, and on June 8 half an inch of snow.

An Antarctic wind-sounding balloon altitude record was established in April when a balloon rose to 64,000ft. The previous record was a "Deepfreeze" ascent of 60,000ft.

A young sea-elephant came ashore on May 24 branded MF/RS. This branding was done on Macquarie Island last October. On several occasions right whales have been basking in North West Bay, and some fur seals were seen at Penguin Bay on the S.W. coast.

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N.Z.-U.S. BASE AT CAPE ADARE

A joint United States-New Zealand scientific base is to be set up early next year near Cape Adare, the nearest point in the Ross Dependency to New Zealand.

New Zealand will send three scientists to the base during the International Geophysical Year (1957-58). Their work will be an important supplement to the observations made at the New Zealand base in McMurdo Sound and other Antarctic I.G.Y. stations.

The United States Navy will construct the base and will provide transport for the party. American equipment will be provided for the New Zealand scientists. Arrangements for the joint station have been made in collaboration with the United States National Committee for the I.G.Y.

Dr. M. A. F. Barnett, Director of Meteorological Services, visited Washington recently for discussions on the base. Dr. Barnett, who had been attending a conference of the World Meteorological Organisation in Geneva, is chairman of the New Zealand national committee for the International Geophysical Year.

Cape Adare will be an important link in the chain of stations being established for the International Geophysical Year around the coast of Antarctica, and on the north-south line stretching from the South Pole through McMurdo Sound, Campbell Island, Invercargill, Christchurch and on to the equator.

It lies on the major earth fault separating the western part of Antarctica from the supposed land submergence of the Ross Sea. Seismological observations there

will accordingly be an important supplement to similar observations made at Scott Base in McMurdo Sound and at the French station at Point Geologie in Adelie Land.

Apart from its immediate usefulness, weather information gathered at Cape Adare will be valuable to the New Zealand Meteorological Service for longer term weather forecasting and research.

U.S.-N.Z. PERSONNEL

The station will be staffed by 12 men, nine Americans and three New Zealanders. A doctor, a mechanic, two radio-operators, three "aerographers" (meteorological observers) and a cook will be U.S. Navy personnel, and will form the base operating staff whose special duty it will be to provide weather information for the U.S. Navy.

The ninth American will be a civil meteorologist, who with the three New Zealanders will form the I.G.Y. party at the base. The New Zealand scientists, who have not yet been selected, will be primarily responsible for:

- (1) aurora and air-glow
- (2) ionospheric recording
- (3) geomagnetism and seismology.

The United States authorities are providing an all-sky camera and a patrol spectrograph designed to give information on the types of aurora and the physical conditions in the higher atmosphere. For ionosphere work the Americans will provide a panoramic ionosonde, which sends pulses into the ionosphere and down again, by means of which the height can be measured by observations over the whole frequency range. As regards geomagnetism, standard geomagnetic equipment will be used, but of interest is a three-component seismograph which measures seismicity in two directions in the horizontal plane as well as vertically.

PREVIOUS EXPLORATION

Cape Adare, the north-eastern extremity of Victoria Land, was first sighted in 1841 by Sir James Clark Ross in the course of his great voyage in the "Erebus" and "Terror" on which he discovered the Ross Sea and circumnavigated the Antarctic Continent.

Ross named the promontory, surrounded by cliffs 1,000 feet high, after his friend Viscount Adare, an Irish M.P. who took a keen interest in astronomy and allied sciences.

After its discovery by Ross, Cape Adare was not sighted again for over half a century. In 1895 a Norwegian expedition made there the first landing on the continent of Antarctica.

I.G.Y. BASE

No radio report was received from the Royal Society's I.G.Y. Base in the Weddell Sea between the departure of the "Theron" on February 8 and early March, when the station's own transmitter began to operate. The party's own vessel, the M.V. "Tottan," had left on January 22, returning north without difficulty by a more westerly route than that taken on the southern journey.

The base is situated at Halley Bay in $75^{\circ}28'S.$, $26^{\circ}43'W.$, some 200 miles "overland" from Shackleton Base. Ten men are wintering here. The leader is Surgeon Lieutenant-Commander David Dalgliesh, R.N. With him are Major G. Watson, Dr. Stanley Evans and E. Limbert (scientists), J. Raymond and D. Prior (carpenters), K Powell and R. Dalgliesh, a brother of the leader (tractor drivers), Commissioned Boatswain G. Lush, and C. P. Le Feuvre (wireless operator).

There is no exposed rock at the base site. The ice appears stationary, with the sea-ice forming a natural quay-side. A continuous ice-sheet apparently resting on a rocky bottom rises very gradually over a distance of about 35 miles. An easy slope gives access to the ice-sheet. The base site is a mile and a half from the slope, and two miles from the open sea. It is believed that this is the spot named Glacier Bay by Shackleton in January, 1915.

The exterior of the hut was completed by Easter Sunday and a report from the Royal Society to "Antarctic" dated May 18 states, "The party are now living inside it. They will make some meteorological and ionospheric measurements and photograph the aurora with an all-sky camera this season."

NEW ZEALAND TEAM FOR SCOTT BASE

The New Zealand Antarctic Expedition which will establish Scott base on McMurdo Sound next summer, and will include the field party to lay depots and assist the crossing team of the Trans-Antarctic Expedition in the final stage of its journey, is fast taking shape. The Ross Sea Committee under the Hon. C. M. Bowden, with generous assistance from the Government and innumerable organisations and individuals, is well ahead with its preparations, including the selection of personnel. The full New Zealand group is planned to comprise 22 men. Of these, 15 have now been named.

THE FIELD PARTY

Sir Edmund P. Hillary, Auckland, aged 35: Leader.

Mr. J. Holmes Miller, Masterton, aged 36: Deputy leader, navigator, surveyor, assistant geologist and stores officer.

Dr. George Marsh, London, aged 30: Field medical officer, chief dog handler and veterinarian.

Mr. Harry H. Ayres, Franz Josef, aged 42: Ice expert and assistant dog handler.

Mr. Murray Ellis, Dunedin, aged 31: Engineer officer.

Mr. Bernard M. Gunn, Dunedin, aged 28: geologist and photographer.

Lt. Richard Brooke, London, aged 29: Assistant dog handler and surveyor.

Mr. Roy A. Carlyon, Wanganui, aged 24: assistant surveyor and navigator.

SCOTT BASE GROUP

Dr. Ronald W. Balham, Wellington, aged 34: meteorologist, biologist and zoologist.

Chief Petty-Officer Peter D. Mulgrew, Lower Hutt, aged 29: Senior radio operator.
aged 29: Senior radio operator.

Mr. John Edward Gawn, Wellington, aged 38: second radio operator.

Mr. James Gordon Bates, Morinsville, aged 31: mechanic.

Two other groups will complete the strength of the New Zealand

team. They are the Royal New Zealand Air Force's Antarctic Flight, at present planned to comprise three men, and the International Geophysical Year party of five scientists.

The Antarctic Flight will comprise:

Squadron Leader John R. Clayton, Christchurch, aged 39: Officer commanding, and senior pilot.

Flying Officer W. J. Cranfield, Christchurch, aged 22: Assistant pilot.

Sergeant L. W. Tarr, Thames, aged 31: Engine fitter.

The I.G.Y. group has not yet been selected by the Inter-Departmental Committee handling arrangements, but one appointment has been made, namely.

Dr. Trevor Hatherton, Wellington, aged 31: Chief scientist.

In announcing the appointment, the Minister in Charge of the Department, Mr. Algie, said, "As one of New Zealand's observers with the United States 'Operation Deep-freeze,' Dr. Hatherton showed qualities of leadership, endurance, and administrative ability which marked him out as a natural leader of the party." Dr. Hatherton will be in charge of the organisation of the New Zealand scientific base at McMurdo Sound, and will be responsible for the co-ordination and planning in New Zealand of the scientific programme to be carried

out in co-operation with other countries in the Antarctic during the I.G.Y. period.

Dr. Hatherton will lead the New Zealand scientific party to Scott Base and will return to New Zealand in February or March, 1958.

The New Zealand scientists will share Scott Base with the New Zealand section of the Commonwealth Trans-Antarctic Expedition under Sir Edmund Hillary.

It is planned that when the expedition's ship departs from New Zealand for the Antarctic next December, it will be manned by the Royal New Zealand Navy. Aboard will be:

Lieutenant-Commander W. J. L. Smith, of Wellington, aged 33: fortified by a season's experience of Antarctic sea and ice. As another of the New Zealand observers with the Americans, Lieutenant-Commander Smith has had special knowledge of Ross Sea and McMurdo Sound conditions.

Nearly one-third of the strength of the New Zealand Navy volunteered to take New Zealand's Antarctic Expedition to McMurdo Sound next summer. To fill an estimated 35 vacancies for the crew of the expedition's ship, 800 men volunteered.

Ten men have already been chosen by the Navy to go to England to bring out the "Endeavour." These ten will leave by air at the beginning of June.

TWO ENGLISHMEN

Dr. George Marsh, M.B., B.S., M.R.C.S., L.R.C.P. of London, physician and veterinary surgeon, trained at St. Bartholomew's Hospital, London. He has served with the Falkland Islands Dependencies Survey, as leader of a base party at Hope Bay, almost on the tip of Grahamland.

An explorer with intensive sledging experience, Dr. Marsh has a special interest in the care of

dogs, and he has the highest recommendation of Dr. V. E. Fuchs, leader of the Trans-Antarctic Expedition, behind his selection also to take charge of the New Zealand party's huskies.

Dr. Marsh will be "general practitioner" at Scott Base, and will accompany the field party in its movements. In the event of any emergency arising in his absence it will be possible to call on the nearest American base for assistance.

Lieutenant Francis Richard Brooke entered the Royal Navy College, Dartmouth, in 1940 at the age of 13½, and saw service off the Normandy beaches in 1944 in H.M.S. Warspite.

He started rock climbing when 17, and has been in the Swiss Alps each year since 1946, except for two summers when he was in Greenland. In September, 1951, with a companion Lieutenant Brooke climbed Route Major, on the Brenva face of Mont Blanc, by moonlight. This was the first British guideless ascent of the route since it was first climbed in 1928 by F. S. Smythe and T. Graham Brown.

For nearly two years (1948-50) Lieutenant Brooke was third officer in the "John Biscoe" on supply voyages to Falkland Islands scientific bases in Grahamland, and during 1950 and 1951 he was aboard the hydrographic survey vessel H.M.S. Scott.

In the summer of 1951 he took part in a month's "back-packing" reconnaissance of Queen Louise Coast, in north-east Greenland, and from 1952 to 1954 was with the British North Greenland Expedition. As senior surveyor he was responsible for the primary triangulation of Queen Louise Land. He drove his own dog team on journeys totalling over 2,000 miles, and covered a further 500 miles carrying a pack himself.

Much work will be involved in the training and care of the full complement of 60 dogs, and in training all expedition personnel in their handling. As the efficiency of the expedition in the field may depend primarily on the dogs, Sir Edmund Hillary has been insistent that the field party should contain at least three men who are or can become experts.

Dr. Marsh, the chief of these, has had extensive slogging experience and has been in charge of a Falkland Islands base.

Until his departure to join the Australian expedition that went this summer to the permanent base at Mawson in the Antarctic, Harry Ayres, well-known Southern Alps guide, had had no experience with huskies, but he has handled dogs as a musterer all his life and trained a dog to cross with him over the glaciated passes of the Alps.

Lieutenant Brooke has had two years with a North Greenland expedition, including extensive trips with dog sledges.

MORE FOR SCOTT BASE

Mr. John Edward Gawn, of Lyall Bay, Wellington, is at present a radio officer aboard the inter-island vessel "Hinemoa." Mr. Gawn, who is single, was educated at Christian Brothers' school, Dunedin, the Marist Brothers' Tasman Street school in Wellington and at Wellington Technical College. He operated amateur transmitter ZL2US as a hobby before he was 20, and went to sea as a radio operator in 1941.

He spent two and a half years aboard the hospital-ship "Maunganui" on voyages to the Middle east and in the Pacific, and was on the "Maunganui" when she took the New Zealand Victory Contingent to Britain in 1946.

Mr. Gawn was a radio technician with the New Zealand Broadcasting Service from 1947 to 1952, at Titahi Bay, Wellington, and Opapa, Hawke's Bay, and then returned to seagoing service. In the past four years he has been with the "Matua" in the Pacific, the "Wairuna," "Monowai" and "Hinemoa."

Mr. James Gordon Bates, who will be mechanic at Scott Base, is married with one child, has alpine experience covering nearly 20 years, with a record of 30 ascents of Ruapehu, mostly on ski, and 16 of Egmont. He has done considerable competitive ski-ing, and has helped to build huts on both Ruapehu and Egmont. He subsequently built his own home in Morrinsville.

An enthusiastic canoe owner, Mr. Bates has negotiated long distances of the Waikato, Wanganui and Patea rivers, and he is also a winner of the New Zealand freshwater yacht championship.

Now a partner in a Morrinsville engineering business, he has wide experience of petrol and diesel engines and of heating and ventilation systems. His activity as an inventor includes the designing of a honey-filling machine, a honey extractor, a high-pressure rotary valve pump and a new type of tile pipe-drain digger.

In World War II Mr. Bates served in Egypt and Italy, and was with the British Commonwealth occupation forces in Japan.

R.N.Z.A.F. MEN

Flying Officer W. J. Cranfield will be second pilot with Squadron Leader J. R. Claydon, who will command the R.N.Z.A.F. element in the expedition.

Flying Officer Cranfield is a flying instructor at the Flying Training School, Wigram. Born in Christchurch in May, 1933, he was educated at Waitaki Boys' High School and Christ's College. He joined the Air Training Corps at 18

and began flying with the Canterbury Aero Club. In 1953 he entered the R.N.Z.A.F. with 70 hours' flying experience behind him. He has now 1,000 hours' flying to his credit and has flown seven types of aircraft, including the Auster, which will be a type used by the expedition.

Flying Officer Cranfield is an athletically-built six footer. He played football at college and was a member of the First Fifteen which won the Inter-collegiate Rugby Championship.

Sergeant L. W. Tarr was born in Hamilton, and received his education at Hamilton Technical College and Druleigh College, Auckland. Before entering the R.N.Z.A.F. in January, 1943, he was a member of the Air Training Corps. He became a sergeant in No. 7 A.T.C. Squadron, Hamilton, where he was assessed as an outstanding cadet.

In the Air Force he trained as a flight mechanic and two years later qualified as an engine fitter.

He has had wide experience overseas. His first tour of duty abroad was in Fiji, from 1945 to 1947. He did a second tour in Fiji from March, 1947, to October, 1949, and in 1952 he went to Cyprus with No. 14 (Fighter) Squadron, continuing to serve there until December, 1954.

Scott Base

Plans for Scott, New Zealand's base in McMurdo Sound, envisage eight buildings to cost £31,700. Of four buildings to be prefabricated in Australia, two will be sleeping and living quarters providing ample living space per man; one will contain kitchen, dining room and stores space, and the other will be for scientific purposes. Other huts, to be built in New Zealand, will accommodate workshops and base services, power generating plant and scientific apparatus.

The New Zealand Government has accepted the responsibility of

providing logistic support for the New Zealand party. This means that the Royal New Zealand Navy will organise transport for the expedition, and a ship will be bought for this purpose by the Government. The Navy will also undertake the task of establishing the expedition's base at McMurdo Sound to the requirements of the leader. The R.N.Z.A.F., in addition to supplying the personnel to man both aircraft, will purchase the Auster for use in the Ross Sea. (The other aircraft, a de Havilland Beaver, has been ordered from Canada by the Ross Sea Committee.) The Government will also provide radar equipment for base, ship, aircraft and sledges.

Ship Selected

A suitable ship has been found to transport the Expedition to the Ross Dependency. The Government has decided upon the Royal Research Ship "Pretext," formerly the "John Biscoe," and is now negotiating with the United Kingdom Government for the purchase of the vessel on its return to the United Kingdom from its annual cruise in the Antarctic.

When the negotiations have been successfully concluded, the ship will be taken over by the Royal New Zealand Navy and re-named "Endeavour." She will be commissioned as a ship of the Royal New Zealand Navy and sailed under the White Ensign. A party of 10 naval officers and ratings, who will be flown to the United Kingdom by Service aircraft, will stand by while the ship is being refitted there and will form the nucleus of the crew to sail it to New Zealand later in the year. For the expedition, H.M.N.Z.S. "Endeavour" will be manned by the New Zealand Navy.

During the Expedition, "Endeavour" will be commanded by Captain H. Kirkwood, O.B.E., D.S.C.,

R.N., the Admiralty having agreed to release Captain Kirkwood to the Royal New Zealand Navy for the Expedition. Captain Kirkwood commanded "John Biscoe" for several years during its service in the Weddell Sea and he is one of the most experienced British ice captains. He previously visited the Ross Sea on a number of occasions in R.R.S. "Discovery II" and is familiar with conditions in that area also.

The "Endeavour"

The ship which has been selected is a wooden-hulled vessel of about 900 tons gross register powered by diesel electric motors. She was built in the United States as a net layer in 1944 and during the war served with the Home Fleet as H.M.S. "Pretext." In 1947 when she was bought by the Falkland Islands Government and re-named "John Biscoe," she was extensively refitted and fully equipped for ice conditions. This included sheathing the hull in three inches of green-heart timber. As "John Biscoe," she made a number of summer voyages to the Antarctic to service and relieve the stations maintained by the Falkland Islands Dependencies Survey. "John Biscoe" is now being replaced because a ship with longer range and greater cargo capacity is required for the F.I.D.S. At present she is returning from her last annual cruise in the Dependencies, and her name has been changed back to "Pretext" in order that that of "John Biscoe" may be used for her successor.

Before her present voyage, the ship was extensively refitted at Southampton. In September, 1955, a "condition survey" was carried out by Lloyds surveyors on instructions of the New Zealand High Commissioner in London. The surveyors reported that the ship was in good condition. On her return to the United Kingdom in June she will

again be examined by Lloyds surveyors before being purchased by the New Zealand Government.

The name "Endeavour" has been chosen because of its close association with exploration in the history of New Zealand. It was in H.M.S. "Endeavour" that Captain Cook rediscovered New Zealand in 1769. On a subsequent voyage Cook also made the first crossing of the Antarctic Circle.

Valued Assistance

The United States Navy has offered to assist the New Zealand expedition by providing up to 1,000 tons of cargo space in the ships of Task Force 43 which are also going to McMurdo Sound next season. This offer was made by the United States as a gesture of co-operation in connection with the International Geophysical Year and is intended primarily to assist the New Zealand I.G.Y. party. The two groups of New Zealanders—explorers and scientists—will be working together and living in the same base. The Royal New Zealand Navy will therefore arrange transport for both in co-operation with the United States Navy.

High Duty Alloys Limited, an English aircraft firm, has made a gift of £1,000 worth of the alloy hyduminium to be used in the construction of the four main buildings for the New Zealand base.

Half as heavy as the normal material being used for similar construction in the Antarctic, it is built to withstand severe treatment from the weather, and is easily handled and easily assembled. A New Zealand engineer, Mr. K. R. Mosheim, of the New Zealand Metal Imports Group, was largely responsible for this fine offer.

The material in panel form is manufactured in sizes which are multiples of four feet, with a maximum of 200 feet, and contain doors and windows as desired.

It is not expected that the foundations for the buildings—which are expected to be required for at least 20 years — will present great difficulties. Tie bar-wires will be used and studs will probably be fired into surrounding rock.

The Wakefield Metal Company of Christchurch, has given £500 worth of special copper tubing, especially designed for cold water systems and resistant to extreme cold.

The New Zealand Meat Producers' Board has agreed to defray the cost of the raw meat to be provided for the expedition under the new dehydration process. This represents a donation of £750 to the expedition.

The Queen Victoria School for Maori Girls, after hearing that there was keen table-tennis rivalry between Sir Edmund Hillary and Mr. Harry Ayres, has donated a full table-tennis set to the expedition.

The firm of Bonny Products, Palmerston North, in conjunction with Messrs. Salmond and Spraggon Ltd., Wellington, has contributed the full supply of Bonny Dog Biscuits for the duration of the dog camp at Mt. Cook. This represents a donation to the value of £675.

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In Training

Twenty-six huskies from the Australian Antarctic base, Mawson arrived in New Zealand on March 28, having been flown from Australia via Norfolk Island by the R.N.Z.A.F., under the care of Mr. Harry Ayres. They had travelled from Mawson to Melbourne on the "Kista Dan." They were taken on to the Hermitage, Mt. Cook, in three Army trucks. Here they joined some twenty huskies about a year old which have been bred at the Auckland Zoo.

New Zealand Army engineers erected the compounds for the dogs.

The compounds, about 90ft. long and 40ft. wide, have been constructed of wire mesh netting donated by the Christchurch firm of Cyclone Netting. Four Army huts have been made available by the Army Department for storing sledges, harness and equipment.

When Sir Edmund Hillary arrives at the Hermitage area, full scale exercises for the New Zealand team will begin in conjunction with training of the sledge units.

Sir Edmund was in Norway early in April inspecting and testing equipment which might be suitable for the expedition. He saw new types of tractors with improved treads, as well as sledges which the Norwegians had recommended. The tractors are specially adapted with rubber-padded tracks. Rubber tracks and cleats will stand up to hard ice, such as the New Zealand "Deepfreeze" observers found on the Ferrar Glacier, better than steel tracks.

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Ross Dependency Stamps

A set of four stamps is to be issued for New Zealand's Ross Dependency. They will be used by members of the New Zealand Antarctic Expedition when they are in the Ross Dependency area, and will be valid for postage only at post offices established there. Arrangements will, however, be made for stamps to be available to collectors at the principal New Zealand post offices. Denominations are as follows:

3d.: the discovery of the territory in 1841 by Sir James Clark Ross.

4d.: Shackleton and Scott.

8d.: a map of the Dependency showing its geographical relationship with New Zealand.

1/6: a portrait of the Queen.

SETTLING IN AT MAWSON

When "Kista Dan" left Mawson in glorious weather on March 4 with her job completed, the aircraft hangar, the largest structure yet attempted in Antarctica, was standing as a skeleton frame dwarfing its surroundings after ten days' work under bitter conditions by a team of eight men. The building still had to be sheeted with iron and a special tip-up door fitted.

Five other new buildings were erected and sealed, with one new sleeping hut completed and the men installed comfortably. Scientific work throughout continued without interruption and the new party received adequate instruction from the old on all aspects of work.

The "Kista Dan" called at Heard Island and the Kerguelens, and reached Melbourne on March 26.

During the coastal survey carried out by the "Kista Dan" on her return journey from Mawson, the Australians visited the Russian base, Mirny, some 800 miles east of Mawson. The base, reports Mr. Law, is on a large scale and all its equipment is the very latest. The Russians "were very frank and friendly, and showed us everything." Mr. Harry Ayres was one of the party which visited Mirny.

Commenting upon the relief operation on his return, Mr. Law said that it had proved "the toughest assignment in the nine years of (Australian) Antarctic exploration." The "Kista Dan" had pushed through packice off the coast of Wilkes Land to make four landings on "hitherto inaccessible coast." Australian airmen had risked their lives time and again on long flights over the most rugged terrain in a single-engined aircraft. From the four landing places and from a spot near Haswell islet in Queen Mary Land flights had been made to photograph 1,000 miles of coast line.

CONSTRUCTION WORK

Bewsher, the new Mawson leader, radioed on March 21: "Generally fine weather since the departure of

the ship has enabled us to make good progress with all work. Low temperatures and frequent wind make our major task, the erection of an aircraft hangar, extremely difficult, but an excellent job is being done. Dowie, Hollingshead, R.A.A.F. members Leckie, Seaton, Sundberg and Johansson are working constantly on the hangar, with others assisting when possible. The framework is completed, the rear wall and the roof sheeted. The new store and sleeping hut are in use, while the biology and office huts are almost ready for occupation. Gardner is building an inner room extension and has installed a new diesel engine, while Cooper has repaired the weasel. A last minute addition, Army DUWK mechanic Cooper makes our party 20. The experience of Crohn, now spending his second year at Mawson, is helpful and time saving during this early period. In addition to keeping the party well-fed, Mackenzie has constructed a large box for storing fresh frozen meat near the mess. Physicists, radio operators and weather personnel, although busy with their own sections, assist with the building programme and the other numerous odd jobs.

"The new weasel performed well on March 17 when McCarthy, Gardner and Crohn made an uneventful four hour return weasel trip to Mt. Henderson meteorological station to change records. Killer whales were seen within 20 yards of shore on two occasions. Recently-formed sea-ice covers most of the harbour and extends northwards for some miles. All members are happy, com-

fortable, settled and working long hours but have the satisfaction of knowing that all necessary tasks will be completed before the short days and bad weather."

PREPARATORY WORK

On April 5 Bewsher reported that although much general work remained to be done before winter, most of the men were able to devote more time to their own work. Jacklyn had installed a new narrow-angle cosmic-ray telescope. McGregor had poured a concrete pier into the new seismic hut and hoped to commence seismic work later in the month. Bunt, however, was still fully occupied with the building programme and had not been able to commence his biological work. The radio personnel besides sending 20,000 "groups" to Perth during March and keeping regular schedules with eight other stations, had been busy installing a beacon transmitter aerial as an aircraft homing device and overhauling field radio sets. The meteorological team had been kept busy with daily observations and radiosonde flights. Continued effort by R.A.A.F. members and others had resulted in the completion of the hangar. Local test flights had been made in the Auster and the Beaver was being prepared for flights in the near future. A party of four led by Crohn made an eight days field trip to the Masson range for survey, geology and ice measurement. This gave the new men their first experience in plateau weasel travel. A temperature of minus fifteen was recorded on this trip. The first blizzard came at the end of March, more severe in the Mawson area with gusts of eighty miles per hour and two days of heavy snow. Further work was necessary in snow-proofing the huts and the hangar, which was covered

several inches in snow. The erection of blizzard lines became a priority task. Flights showed the Mawson bay ice to be the only firm sea-ice for nearly 200 miles of coastline.

MORE MOUNTAINS

On May 1 it was reported from Mawson that April winds and temperatures were generally above average with the highest daily wind run ever recorded at Mawson, 1,404 miles, on the 12th. Seven blizzard days found weaknesses in the hut and hangar snow-proofing. High winds stopped the local sea-ice from consolidating, which prevented the intended geology survey journeys to the islet groups.

Fortunately the bay-ice was firm, allowing an excellent start of the flight programme, including three major exploratory flights by the Beaver. Leckie and Kirkby made two flights south west from Mawson and discovered a new high range in Enderby Land, commencing about 150 miles from Mawson, rising from the 10,000 feet plus plateau and stretching for about 200 miles. The average height of the range is 11,000 feet, with some peaks 12,000 and 13,000 feet. The main range is about 30 miles wide. Seaton and Crohn made a flight south which delimited the western margin of the Prince Charles ranges, and discovered a cluster of peaks still further south. Other flights included a reconnaissance of the Prince Charles ranges and King Edward the Eighth Gulf. The establishment of a fuel depot at this gulf for use in spring was commenced.

Lied has taken the dogs on three long journeys, twice to Welch Island, and once 14 miles on a plateau trip pulling a 600 lbs. load. The dogs performed well and will be used frequently on sea-ice trips

later. McCarthy, Cristensen and Cooper spent two days in the weasel at Henderson depot waiting for the blizzard to clear after changing met records there. All field parties are always fully equipped for such occurrences.

Daylight hours are swiftly decreasing so outdoor work is given priority when the weather is suitable, but blizzard spells allow catching up with indoor tasks. The station now comprises 24 huts and the aircraft hangar which houses the Beaver and Auster aircraft, A.N.A.R.E. headquarters point out that the task of covering the hangar frame, erected before the "Kista Dan" left, with galvanised iron was a difficult task. The men's most arduous job was battening down the roofing sheets. They had to clamber over steel girders in a freezing gale, hampered by heavy clothing, boots and thick gloves, and tighten bolts to prevent the sheets of iron being whisked away.

On February 23 the two giant cosmic ray telescopes at Mawson recorded a sudden increase of over 50 per cent. in the intensity of cosmic radiation reaching sea level. The increase lasted for over two hours and was accompanied by a complete radio blackout. Mawson was entirely cut off from outside communication. On the 25th the magnetic instruments recorded a severe magnetic storm, which further extended the radio blackout. Only one disturbance of comparable magnitude has previously been recorded.

The Mawson records will be of particular value since this is the only observatory at present operating in such a high southern latitude. The reports should be a valuable contribution to the study of cosmic ray phenomena and of the complex terrestrial effects of solar disturbance.

WEASEL TROUBLE

Australians at Mawson have found the 'weasel' sturdy and reliable, but there have been some difficulties in starting the vehicle when temperatures are below -15° F. At this temperature the oil in the sump requires pre-heating. On the other hand, running temperatures are frequently quite high, particularly when heavy loads are being carried. In low-gear operation the gear-box over-heats because of the small quantity of oil contained in the gear-box. C.O.R. laboratories have been seeking to develop an oil capable of providing effective lubrication at extremes of heat and cold. 200 gallons of an experimental oil were taken south on "Kista Dan's" latest voyage.

SHIP PLAN REJECTED

The Australian Government has rejected on the grounds of cost the request of the Antarctic Committee for a specially built ship for Antarctic exploration. Sir Douglas Mawson points out that the "Kista Dan" is little more than "a freighter used to dump Australian expeditions on the Antarctic coast." Such a ship could not be used for the sort of work done by the Russian ships "Ob" and "Lena," which were specially designed for the purpose.

The British submarine *Telomachus* is being made available to the Royal Australian Navy for an ocean gravity survey in Antarctic waters from June 1 to August 2, in connection with the International Geophysical Year. Shallow water diving suits, special breathing apparatus and radar are being lent to the Antarctic Division by the R.A.N., who will assist with the training of Antarctic Division personnel in the use of the equipment.

EIGHT MEN FACE ANTARCTIC WINTER AT SHACKLETON BASE

The first radio message from the eight British explorers remaining at Shackleton Base when the "Theron" left for England on February 7 was received in London on May 10. It read, "Everyone well but hut incomplete due inclement weather." The message added that temperatures of minus-40° F. and persistent winds had made building difficult.

A sudden break-up of the sea-ice at the end of March caused the loss of all their coal, the balloon hut, the workshop, 130 drums of kerosene, 90 drums of petrol and certain other stores as well as meteorological equipment. They had sufficient kerosene for essential purposes during 1956. A cryptic phrase "Long John for ever" is interpreted by the London headquarters of the expedition to mean that the party was learning to appreciate a particularly thick form of underwear.

The loss of fuel will reduce the scope of radio communication from the base. There will be sufficient to permit a limited use of vehicles, but the party will have to make more use of dogs than was expected.

A later message received on May 22 said that the party, working by lamplight, had completed the framework of the main hut and were hammering the roof into position. (The last sunlight was at the end of April). Battery lighting had been installed. The latest topic of conversation was whether the party would be able to spend mid-winter's day (June 21) in the hut or not. A celebration is planned.

Ever since they started building the base severe weather had hampered them. Blizzards formed snow drifts 15 feet high and 50 yards long, burying many of the metal and wood parts needed to build the hut. The men found it impossible to dig down to the equipment; they had to tunnel through a hill of snow to reach it.

They sleep in tents, but use the giant crate as a dining-room. At one end of it a kitchen has been set up, at the other, a radio station. Every day they have to dig themselves out.

The message concludes "Humans and huskies happy and cheerful."

THERON ARRIVES HOME

The "Theron" reached London on March 23 with her bows showing dents left by the pack-ice which trapped her in the Weddell Sea two months earlier. Dr. Fuchs said that the vessel had stood up to the job wonderfully, but she was no ice-breaker and had suffered accordingly. The sturdiness of the ship and the skill of Captain Maro had been exceptional, as on the occasion when ice-pressure bent the rudder so that it was scarcely possible to steer to port. Taking the only remedy possible, the captain went astern into an ice-floe, forcing the rudder back into its correct position.

When the main party goes south in November they will travel in the 1,700-ton vessel "Magga Dan" now being built in Denmark. She will be completed in September. The ship will be painted red to show up clearly if trapped in pack-ice.



The next meeting of the International Whaling Commission is to be held in London, commencing on July 16.

U.S. Seabees Extend Bases

The men left behind in the Antarctic from "Operation Deepfreeze" will spend the winter improving and enlarging the bases at Little America V and Hut Point—the Williams Air Operating Facility.

When the season breaks, and they are joined by members of "Operation Deepfreeze II" in November this year, they will begin the difficult task of building scientific observatories, one in Marie Byrd land, and one at the Pole.

The area round the pole, described as a saucer-shaped depression about 200 feet deep and 15 to 20 miles wide, will prove one of the most difficult building assignments ever undertaken. The station will house 15 scientists, and all material for its erection—nearly 500 tons of it—will be flown in or air-dropped, most of it by massive Globemasters being flown from New Zealand.

Admiral George J. Dufek, in command of the operation, is considering the use of an aircraft-carrier to ferry twin-engined Douglas planes to be used for work in the polar building plans.

DANGER ON THE TRAIL

A second United States Navy man lost his life early in March. A tractor-train carrying fuel-oil drums from the coast to an inland base encountered a crevassed area, 110 miles east of Little America. When tractors were attempting to fill the larger crevasses with snow, one of them plunged through surface snow into an undetected crevasse. The driver's body could not be recovered.

The tractor-train left Little America on February 27, hoping to establish a cache of diesel and aviation fuel 250 miles inland, that could be used next October by a cargo train bringing supplies to the projected Marie Byrd Land base. The train was forced to turn back.

SURVEY CANCELLED

On March 29, the support programme given by the United States

Navy to the land forces ended when the American flag was raised at Atka Bay, on the Queen Maud Land Coast. The ice-breaker Glacier, carrying Admiral Dufek, was originally to have surveyed the Knox and Weddell Sea coasts, to choose sites for scientific bases for the coming season. Porpoise Bay, Long. 129°E., Lat. 66°30'S., considered to be a possible site, had been vetoed by Admiral Dufek after numerous checks on the area, and before further examination could be made of the coasts, he had had to cancel the survey. The lateness of the season and other commitments had caused the cancellation.

An early start to find and establish sites for the bases will have to be made in the coming season.

LATER OPERATIONS

"Operation Deepfreeze II" will begin on enlarging and building at the established bases in November. The operation will consist of three naval units. The first will leave from New Zealand and head for Little America V (Kainan Bay) and McMurdo Sound, both in the Ross Sea area. The second will leave from either Australia or New Zealand to establish a scientific station somewhere on the Knox coast. From South America, the third will leave to build another scientific base on the Weddell Sea coast.

Two more operations—"Deepfreeze III" as a re-supply unit for the bases, and "IV" to wind up the scientific work in 1958-59—will conclude the practical part the United States will play in the International Geophysical Year in the Antarctic, though results of all observations and research may not be known for some years.

NEW BASES IN GRAHAMLAND

The eight main F.I.D.S. bases were relieved by the R.R.S. "John Biscoe" on her first southern voyage in the middle of December, and they were all visited again later in the season. The R.R.S. "Shackleton" arrived at Stanley at the end of January, and left on her first southern voyage in mid-February. Five bases were visited and two new bases established, bringing the total of F.I.D.S. bases up to ten (excluding View Point, which is subsidiary to Hope Bay).

Base O. "Danco Coast Base," has been established at 64°44'S., 62°32'W., on a small unnamed island less than one mile from the mainland. It has a staff of six personnel.

Base W. "Loubet Coast Base" is situated on one of a small group of islands at the entrance to Lallemand Fjord, at 66°55'S., 66°48'W. This is an eight-man base.

Routine Meteorological work continues at all bases. In addition, establishment of the geophysical station at the new site in the Argentine Islands (Base F) continues. A second radio mast has been erected and work has commenced on the wind-tower. Radio-sonde ascents have been maintained, one ascent reaching a height of 73,500 feet.

Geomorphological Studies have continued at Deception Island. The survey of Coronation Island has progressed and is reported complete between Cheal Point and Penguin Point. Several routes have been reconnoitred for future survey journeys. One sledge party reported that the British refuge hut at Sandefjord Bay in the northwest of Coronation Island has been blown down and is a total wreck.

Ornithological work (including web-marking) has been carried out on Signy Island and several recoveries have been made.

At Hope Bay, the new local survey is now complete. At the same base a full programme of physiological research into cold acclimatisation has been carried out and the

Medical Officer is now writing up his results for the Scientific Bureau. The physiology of sledge dogs has also been investigated in detail. Comparative studies have been made of various diets and the factors affecting the work of sledge dogs have been studied with the help of a specially devised Strain Gauge apparatus. This work is also being written up for the Bureau, and will be published as a report in the F.I.D.S. Series.

F.I.D.S. Aerial Survey Expedition (F.I.D.S.E.) has now completed its first season's work, and the charter ship "Oluf Sven" is due to arrive back in London on May 22.

The South Georgia Survey Expedition reports that the hut occupied by Stonehouse and Bonner at the Bay of Isles 1953-55, was visited and reported to be in good order. The party is reported to have suffered some damage and loss of equipment during an exceptionally severe hurricane on November 12-14, but in spite of that have had a very successful season.

Contact with "Shackleton Base." The Trans-Antarctic Expedition base at Vahsel Bay has been in radio contact with F.I.D.S. Base Y on Horseshoe Island in Marguerite Bay. Messages were transmitted through F.I.D.S. to the Expedition Office in London.

F.I.D.S. SHIPS

A new ship (also to be called the "John Biscoe") has been built for F.I.D.S. by Fleming and Ferguson of Paisley, and is due to be

launched on June 11. The old "John Biscoe" has resumed its former name, "Pretext," and is to be taken out of service this year. The new ship will be approximately the same size as the old "John Biscoe" (approximately 900 tons).

Detailed information of F.I.D.S. activities is published in the "Polar Record," the official journal of the Scott Polar Research Institute in Cambridge.

Erratum. The R.R.S. Shackleton has accommodation for 30 passengers, not 20, as stated in our last issue.



New Zealander Saves Australians' Lives

Under a bold three-column heading "**MODEST HERO OF ICE CLIFF. SAVED TWO FROM DEATH PLUNGE,**" the Melbourne "Argus" tells how the New Zealand observer with the Australian relief expedition to Mawson, Harry Ayres, saved the lives of Mr. P. G. Law, chief of the Antarctic Division, and Mr. W. Bewsher, leader of the Australian party now at Mawson, while the "Kista Dan" was on her way south in March. Ayres, says the "Argus," "is a very modest man . . . he would not talk about it," but here is Mr. Law's own account of the incident.

"On the way to Mawson we spent some time exploring the ice barrier. One day we decided to gain some experience in ice-climbing by tackling a sheer cliff towering about 125 feet from the sea. We only had one rope and two ice axes, so Ayres took the lead to cut steps in the ice with one axe. I was in the middle, and Bewsher brought up the rear with the other axe.

"Ayres was about threequarters of the way up when I heard a yell. Bewsher had slipped and was

hanging at the end of the rope. I just dug my feet in, and sat back in the steps hoping for the best, but the strain pulled me down the cliff. I thought 'This is the end. Harry can't possibly hold both of us.'

"But his years of experience came to the fore. Without looking round, as soon as he heard the yell he instinctively drove his axe deep into the ice, took a couple of quick turns of the rope around the shaft, and held on while we scrambled back into the safety of the steps he had cut.

"Had he not acted so quickly, nothing could have saved us. We would have drowned in the icy water before help could have come . . . Bewsher and I certainly owe our lives to Harry Ayres."



Argentine Moves

The ice-breaker "General San Martin" carried out a supply mission to the San Martin Base "under favourable ice conditions." The ice-breaker also carried out oceanographic work to the north of Alexander I Island and in the region of the Gerlache and Bismarck Straits before sailing for Marguerite Bay.

The transport "Bahia Aguirre" sailed for the Shetland Islands while the hydrographic ship "Chiriguano" interrupted her work to go to the help of the Chilean naval base "O'Higgins." She then returned to her hydrographic tasks.

The air-group carried out aerophotographic work over the Biscoe Archipelago as well as doing the work of the Antarctic air-mail service.

Since the establishment of the most southerly Argentine base, General Belgrano, 40 kilometres have been explored from the base by sledge, 400 by tracked vehicles and 1,600 by aircraft. Four depots of food and fuel were established.

RUSSIANS TREK INLAND

When the last Soviet Expedition vessel "Lena" left Mirny in mid-March the base was firmly established on the Queen Mary Land coast. Early in March an aircraft made a 10-hour 1,625-miles flight penetrating to 76°S.

A party of four including Professor Guse landed on the ice-cap at 74°10'S., 95°40'E., and set up a tent. Their task, a first step in the exploration of the route to the geo-magnetic pole, is to study the degree of air-cooling, radio reception and magnetic deviation.

An 11-man overland party set out on April 2 with two tractors, each drawing three sledges, across the ice-cap towards the geo-magnetic pole. They conveyed a scientific laboratory, radio station, dwelling hut, kitchen and food store, and observed en route magnetic deviation, barometric pressure and snow structure. On April 6 they were at an altitude of nearly 5,000 feet in a temperature of -7°F. The ice-cap here, two and a half miles from the coast, was 1970 feet thick and rested on the sea-bed. Twelve and a half miles inland, at 2,755 feet, the ice was 2296 feet thick, and rested on solid land,

STATION SET UP

By April 9 the party had covered 62 miles. They built pyramid-shaped "cat's eyes" along their route to guide the aircraft. A plane from Mirny made contact with them on April 11. They then ran into a blizzard and very low temperatures, and were held up for a week. Setting out again, the party entered territory never before seen by man. Three weeks after leaving Mirny they had covered 134 miles and on April 26 it was reported that they had reached a point about 190 miles from the coast.

On May 28 Moscow radio announced that the team had set up their first research station in the Antarctic interior, hoisting the

Soviet flag the previous day at 8,780 feet above sea level, after a trek of 240 miles.

At the end of March hurricanes caused havoc at Mirny. Blasts of over 80 m.p.h. ripped away radio aerials and made breathing "almost impossible." The direct telephone link between Mirny and Moscow began a regular service on April 25, when Mikhail Somov, the leader of the expedition, said in a conversation on the link that the temperature at Mirny was -5°F. Radio contact had been established early in April with the French base in Adelie Land.

VOYAGE HOME

The expedition vessels "Ob" and "Lena" had difficulty in working their way clear of the ice in the Davis Sea. "Ob" left at the end of February and steered a wide zig-zag course east to the Balleny Islands, carrying out oceanographic work en route and mapping previously uncharted portions of the Wilkes Land coast line.

On March 7 a hitherto unknown archipelago of three islands was discovered to the east of the Davis Sea, not far from the Knox Coast. The group was named "March 8" in honour of the International Women's Day. Eight women, including Professor Marie Klenova, were aboard the "Ob."

The vessel stayed for 24 hours at the Australian Macquarie Island base, arriving there on April 4. She reached Wellington on April 9, and representatives of the New Zealand Antarctic Society assisted in various functions arranged to entertain the scientists and the ship's company. Captain Man and Professor Kort

I.G.Y. PLANS

France

M. Paul-Emile Victor, president of the Antarctic Sub-Committee of the French I.G.Y. National Committee, has supplied us with further details of the Adelie Land base on the Point Geologie archipelago. This new station (near where Mario Marret's party wintered under primitive conditions in 1952) comprises hutments, workshops, generator sets, radio equipment and the expedition's first permanent scientific installations.

The base is situated south of the Antarctic Circle in 66°39'S., 140°01'E. The lowest temperatures likely to be encountered here will be about -30°F. Wind and blizzard are the factors least conducive to a normal life, but the huts and equipment provided assure effective protection. Foodstuffs also are planned to provide as nearly as possible normal nutrition, a supply of vitamins compensating for the lack of vegetables and fresh fruit. In the huts, special attention has been paid to insulation, utilising the most modern techniques and materials.

M. Robert Guillard, leader of the party wintering this year in Adelie Land, is a veteran of six summer expeditions in Greenland and was leader of the 1949-50 wintering party in Greenland.

SATELLITE STATION

In October, 1956, the expedition will establish a satellite station about 300 miles towards the interior

subsequently forwarded to the Society an album of photographs as a token of appreciation.

The "Lena" sailed more directly to Adelaide on the voyage back to Leningrad, where she was expected to arrive early in June.

of the plateau, in the vicinity of the South Magnetic Pole. This station is expected to commence operations early in 1957, with a complement of three men. The satellite base hut will consist of a building 20 feet by 13 feet in the form of a semi-cylindrical light metal insulated tube. The leader here will be M. Jacques Dubois, who has previously spent two summers and a winter (1950) in Adelie Land, and was a member of a French expedition to Greenland.

Transport is being divided into three sledge units, each unit towed by a motorised vehicle. Once in the field the three units will be linked together.



Japan

A Japanese Antarctic Research Expedition under Professor T. Nagata, a geomagnetist of Tokyo University, will carry out Japan's obligations in connection with I.G.Y. The ex-lighthouse-supply ship "Soya" is being converted into an ice-breaker. Some fifty men will go south towards the end of this year, exclusive of the ship's company of seventy men, and ten men will be left to establish the station. The ship will return next year with a full team of 53 men.

Japanese scientists are concerned about the question "Can a Japanese live on rice in the Antarctic?" Dr. E. Nishibori, a professor of chemistry and deputy-leader of Japan's forthcoming expedition, conferred with Mr. P. G. Law recently on what food and clothing will be needed by the Japanese I.G.Y. party.

Dr. Nishibori said later that he had been promised every possible help. He would depend on Australian advice in establishing a base because Japan had had no experience

in the Antarctic since the Shirase Expedition of 1911-12, and all the members of that expedition were now dead. The present intention was to establish a base about 600 miles east of Mawson, in Norwegian Crown Prince Olaf Land. Scientific information would be channelled through Mawson which, says Dr. Nishibori, will be a "mother station" for Japanese scientists during the I.G.Y. period. "And we as a daughter will have to obey mother," he added.

A correspondent on the U.S.S. "Glacier" states that the American ice-breaker volunteered to search the little-known Queen Maud Land coast for a practicable site for the Japanese expedition's base. The "Glacier" ran into heavy pack-ice in the Luetzow-Holm Bay area, about 1,000 miles from the Prince Harald Coast (west of the Prince Olaf Coast). Fog prevented the use of a helicopter and a storm which began to stir up heavy seas caused Admiral Dufek to cancel the survey.

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Norway

Professor H. U. Sverdrup, Director of Norsk Polarinstitutt, kindly sends us the following information.

"The Norwegian I.G.Y. expedition is expected to leave Norway at the beginning of November, 1956, on-board the sealcatcher "Polarsirkel," a ship of about 549 btto. reg. tons. On the way to the Antarctic the "Polarsirkel" is expected to call at Montevideo and at Grytviken, South Georgia, where part of the equipment which has been sent to South Georgia by whaling ships will be taken onboard. The "Polarsirkel" will then proceed towards Cape Norvegia, entering the pack ice between 1° and 15°W., and after having reached the continent she will follow the coast to the west, preferably to a locality close to the zero meridian.

"The party will comprise 14 men, with Mr. Sigurd Helle, geodesist at the Norsk Polarinstitutt, as leader. At the main base, which we hope to establish on the shelf ice preferably at a distance of about 25 miles from the barrier, emphasis will be placed on the meteorological work, and, in addition, observations in terrestrial magnetism will be carried out, and photography of aurora from two stations, 25 miles apart, will be undertaken. Furthermore, a field trip toward the west is planned, partly for the purpose of extending the topographic survey of the Norwegian-British-Swedish Expedition, 1949-52, and partly to make glaciological observations.

"At the base the whole time will be: two meteorologists with four assistants, two radio operators, a physician, and a cook. The field party, which is expected to be operating for about five months during the summer of 1957-58, will comprise four men; the leader of the expedition, Mr. Helle, the glaciologist, the dog driver, and the mechanician. The party will use tractors and dogs for transportation.

"It is expected that the base will be visited in the season 1957-58, and that the entire party will be brought home early in 1959."

—★—

Whalers' Catch

Pelagic whaling in the Antarctic ended on March 4, the season having then lasted 58 days. This is the shortest catching period experienced in the Antarctic. In the two previous seasons the catching lasted 72 and 76 days, when the maximum permissible catch was 15,500 blue whale units. The maximum this season was 15,000. According to telegraphic reports, says the Norwegian Whaling Gazette, the actual catch was 14,860 units, 140 less than the maximum allowed.

In Shackleton's Footsteps

The third South Georgia Survey Expedition under Duncan Carse in October last travelled across South Georgia from Fortuna Bay to King Haakon Bay, the route traversed in the opposite direction by Shackleton, Worsley and Crean in 1916. Shackleton and five companions had landed at King Haakon Bay, after the 800 miles beat-journey from Elephant Island described in the extracts from Harry McNeish's diary published in "Antarctic" no. 1.

Two members of the Carse expedition travelling on a sailing vessel located a beach that precisely fitted Shackleton's description of his Peggotty Camp site in King Haakon Bay. The subsequent east-west crossing, carefully planned and unhurried as it was, was beset with difficulties. Carse says it was "like travelling in a bowl of milk, with the snow most precarious and liable to avalanche." Paterson, moreover, became severely snowblind. Conditions made it impossible for the party to get a sure sight of "the extraordinarily difficult mid-section" of the Shackleton route.

On the section between Possession Bay and King Haakon Bay it was necessary to relay the three sledges up a steep slope. When they went back for the third sledge it was not there.

Two clean-cut straight-running tracks showed where it had got away. They followed the tracks for nearly three miles and found the sledge piled up against a ridge of scree, having missed the edge of "the rough stuff and crevasses falling into King Haakon Bay" by six feet. The last part of its slide must have been precisely the route followed by Shackleton at the start of his crossing, says Carse in an article in the "Times."

Nothing of value was lost and the sledge was temporarily repaired.

Carse, on the spot, pays this tribute to the three men who made the first crossing. "They were desperate castaways with sick companions. They travelled under headlong durance, reduced by long privation to exhausted starvelings destitute of all but their worn-out clothing—no sledges, no tents, little food and less time. They broke new ground against failing reserves of strength. Their only safety lay in speed and the short cut regardless of danger. They dare not fail . . . I do not know how they did it, except that they had to."

The Carse party hoped to re-travel the actual Shackleton route in March of this year. Their description of the journey will be eagerly awaited.



HE BEING DEAD?

We are happy to announce that a report implying the death of three members of the Ross Sea party of Shackleton's 1914-17 Trans-Antarctic expedition, published in a British journal, was "greatly exaggerated." The report spoke of Professor A. Stevens as being the "last surviving member" of the party marooned in McMurdo Sound.

Mr. R. W. Richards, Principal of the School of Mines and Industries, Ballarat, Victoria, in answer to our anxious inquiry, assures us in a cheery letter that he is very much alive and adds:

"There are two other survivors in Australia, Keith Jack and Irvine Gage. The former resumed his job as an industrial chemist in the Defence Department after his return. Gage has had a somewhat more colourful career in two world wars. In between he held an executive position in a large boot and

shoe manufacturing concern while for the last few years he has acquired a pastoral property in the Western District of Victoria. His son is the well known racing driver Tony Gage.

"While Stevens, Gage and Jack together with myself are survivors of the marooned party, I am the sole representative of our Southern Sledging Party consisting of Mackintosh, Hayward, Smith, Wild, Joyce and myself. We had a long season of depot laying for Shackleton and covered some 1600-1700 miles all man-hauling. We lost Smith with scurvy on the journey and Mackintosh and Hayward had to be pulled on the sledge for the last 70 miles or so with the same trouble—which we all suffered from to a greater or lesser extent. I will be interested to see how Fuchs gets on if things go against him and he has to spend a protracted period on the trail. I hold some pretty definite views on scurvy and am not at all sure that modern bio-chemistry has the answer under such conditions.

"So far as my subsequent history is concerned there is very little to report. I came back a pretty sick man and was in indifferent health for many years after my return. This effectively prevented any more wandering and I had to settle down to a quiet life—incidentally this was a harder fight for me than anything in the Antarctic. I have been in charge of the Mathematics and Physics Department here until the last nine years when for my sins I was made Principal. I received the award of the Albert Medal for our work on the sledging journey—I could never quite figure out why as we were only saving our own lives and could scarcely do that and leave the others behind."

—★—

During April, 15,000 Emperor penguins returned to the area near the British I.G.Y. base on the eastern coast of the Weddell Sea.

Chilean Hopes

According to the Chilean newspaper *El Mercurio*, Chile has decided to "intensify acts of occupation and administration" in the Antarctic sector which she claims, and to prosecute "historical investigations" at home and abroad in the hope of re-inforcing her claim. A policy of "energetic defence of the Chilean sector" is to be implemented "in strict accord with Argentina in all the points which we have in common in this matter."

Father Edmundo Stockins, a well-known Chilean photographer and broadcaster, speaking in Santiago on April 25 about his second visit to the Antarctic on the tanker "Rancagua," said that personnel of the Chilean Navy had landed on Peter I Isand for the second time since the Norwegians left the island 30 years ago. The voyage was undertaken on the instructions of the Minister of Foreign Affairs, to gather information "in view of the desire expressed by Japan, Russia and Spain to establish meteorological stations on the island as a contribution to the I.G.Y." "It must be recognised," he said, "that Chilean Antarctica may provide, in the course of the years, a gigantic stock of raw materials which will no doubt be exploited when we have the equipment which will enable us to carry out this type of work."

On May 10 the President of Chile, Carlos Ibanez, inaugurated at Punta Arenas, on the Straits of Magellan, the longest and most modern landing strip in Chile, about 8,000 feet in length. This is in preparation for the replacement of D.C.3's by D.C.6's on the Linea Aerea Nacional cutting the flying time Santiago-Punta Arenas from 8½ hours to 5½ hours. Press reports suggest that the aim is to be ready for a trans-Antarctic air-service between South America and Australia.

SUB-ANTARCTIC ISLANDS

MACQUARIE ISLAND

Ian Adams, the New Zealand leader of the Australian party on Macquarie Island, reported on March 2 that the month started with snow, hail and sleet. Then conversation turned to toboggans and skis; but then the weather improved and sunshine broke through.

During the recent sun flare Trost and Cook recorded interesting cosmic ray and magnetic activity. The party saw two new fur seal pups. Keith and Adams while on a field trip were caught in an exceptionally heavy fog and spent four hours searching a small area of broken country for their little tent. At darkness a moss windbreak was built but wet through, with temperatures approaching freezing, an unpleasant eight hours was spent until dawn allowed them to return to base, none the worse except for lack of sleep. Two days later the fog lifted and the tent was retrieved. So that better results could be obtained from the radiosonde, Price and his tractor bodily picked up a complete hut and moved it to a new site.

HEARD ISLAND VISIT

The "Kista Dan" arrived at Heard Island at 0630 hours on March 9. Oldham went ashore with assistants by motor-boat at the South-west corner of Atlas Cove to make magnetic and gravity measurements while Law took a number of ex-Heard-expedition men to the South-east corner to inspect the station. It was a strange experience, he writes, walking up to the dead station, deserted a year before, and "experiencing a hundred vivid memories of graphic incidents of fine men and the hard work they accomplished here between 1947 and 1955." All was in excellent order, very little deterioration having occurred. No visitors have paid a call. The day proved unusually fine

for Heard. At 1630 hours Law took the motor-boat to pick up the scientific party, but the boat broached to in the surf and rapidly filled. The five men worked in cold surf water at a temperature of 36° F., wet to the waist for an hour and a half, without avail. The ship then hoisted out a D.U.K.W. and with its help all returned by 1900.

SOUTH AFRICAN ISLANDS

The reconstruction work on Marion Island has been completed and the S.A.S. Transvaal visited the island in April to bring back the working party. Unfortunately an accident occurred in which the motor-boat was lost and Petty Officer Bold of the Transvaal was drowned. This necessitated a return to Cape Town and a second visit to the island. On completing this task S.A.S. Transvaal sailed for Tristan da Cunha and Gough Island to transport members of the Gough Island Scientific Survey to Cape Town and arrived there on May 20. The Union Government has agreed to the maintenance of a station on Gough Island from the withdrawal of the Gough Island Scientific Survey until the end of the International Geophysical Year.

A bottle released in the pack-ice on February 24, 1950, at 68°52'S., 11°12'E. from the Norsel was found on April 1 on a beach in Frenchman's Bay, near Albany. The "Norsel" was on her return voyage after the Norwegian-British-Swedish Antarctic expedition had been set up at Maudheim. The ship was beset for about four days and the pack-ice edge was some 200 miles to the north. The message contained in the bottle had about a quarter inch of the paper worn off the edges and along the fold, presumably due to the paper rubbing or knocking against the glass of the bottle.

Stranded on Shackleton Ice

Reports from the Weddell Sea, when the British Trans-Antarctic Expedition was trying to gain a footing on the ice-shelf preparatory to establishing Shackleton Base, told of the stranding of five of the party on the ice when the "Theron" was blown out to sea by a blizzard. One of the five was Mr. J. Holmes (Bob) Miller, one of the New Zealand observers, and since appointed Deputy-leader of the New Zealand Expedition. In this letter to "Antarctic" Mr. Miller describes his experiences.

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Unloading at Shackleton proceeded very smoothly and quickly if not altogether according to plan. Before arriving, a first class workable plan of systematic unloading had been worked out, each type of equipment and commodity being allocated to a particular dump in fairly close proximity to the ship. The landing site was half a mile of bay ice, then a 150 foot slope up to the top of the shelf ice with the Shackleton Base site one mile beyond.

Well, as things worked out, it was considered unwise to have the dumps on the bay ice in case it all went out at once. Although the bay ice was up to 12 feet thick and looked remarkably permanent, a tide crack at the base of the shelf ice appeared ominous, so it was wisely decided to try to take everything directly from the holds of the "Theron," on to sledges to be towed immediately to the top of the shelf-ice slope. This would have been a good scheme except that the area immediately above the slope was badly crevassed and the eventual set-up was to take everything from hold to sledge and then directly to Base site.

All kinds of difficulties were encountered. The Ferguson tractors were found to be incapable of pulling any weight up the sloping ice shelf. This difficulty was overcome by the tractors pulling a train of sledges (approximately two tons weight) to the base of the slope, where the weasels would take over drawing the sledges up the slope

and on to the Base site. Of course the best of plans are destined to have their setbacks and we had ours. There were the inevitable vehicular troubles, the difficulties of finding and maintaining the route up the slope, and more important, the cluttering of the immediate area around the ship in the search for urgently needed vehicular equipment, despite all good intentions not to leave anything lying about on the sea ice.

THE BLIZZARD STRIKES

The weather conditions were ideal for the first two or three days of unloading—temperatures were just above zero, and light S.W. winds. But in the afternoon, the first of February, just when the plan was beginning to work smoothly, a fresh N.E. blizzard sprang up with little warning, and beginning with light drift and light snowfall, within an hour this had built up to a 40-50 knot wind with heavy snow and drift, with visibility reduced to 10 yards (at least this was the case up on the ice shelf). At this particular time I was driving one of the weasels operating up the shelf slope and on to the Base site. Edmund Hillary and George Lowe were each driving tractors from the "Theron" to the base of the slope.

I can only speak from hearsay of events at the ship side but it would appear a high sea very quickly arose bringing in high and hummocky pack from the N.E. Seas began to break over the bay ice and soon flooded the immediate unloading area where unfortunately quite

an amount of odds and ends were lying about, probably somewhere about five tons of cases, etc. Simultaneously the ship began to break her moorings and eventually, because of the pack ice pressing on her starboard side, she had to slip away with little warning leaving about eight men wading in the icy cold flooded area rescueing cases.

The captain megaphoned that he would endeavour to get back and 20 minutes later managed to do so, those eight men scrambling up the ship's side as opportunity offered, the ship plunging madly all the while. Once on board the ship put to sea and fought the driving pack for some hours, eventually standing off some miles awaiting eventualities during the continuing night of storm.

ON THE INLAND TRAIL

Working a mile or two inland we were unaware of all this. We had been fighting the rising blizzard for some time, marking our trail up the slope and onwards at ever decreasing intervals with tall poles. Finally at about 4.30 p.m., David Pratt and I made an anxious journey down the slope and finding no sledges at the bottom continued onwards toward the ship. Emerging out of the gloom, came George Lowe on his tractor drawing two sledges. He told us that the ship might have to leave at any moment if conditions worsened. We informed him of the three men still at the Base site and decided that we should take his sledges, return up the slope, continue on to the Base site and return with all hands.

No sooner had we turned than the blizzard worsened considerably. George could have just reached the ship in time to catch it as it pulled out but we were not to learn of this departure for another eight hours. David and I fought our way up the slope but on top of the shelf visibility in the drift and howling gale was so bad that I had to walk

ahead of the weasel feeling for the tracks in the snow with my feet as we inched our way from marker to marker and doubling up the number of markers again for our return journey.

The three at Shackleton had not expected anyone back and had hastily erected a shelter from hut materials. We quickly unloaded the sledges and began the return journey but this time straight into the teeth of the gale with almost zero visibility. We managed to pick up markers for about half a mile but having failed to pick one up we floundered and shortly stopped altogether as the edge of the shelf was known to be not too far ahead. Even had we negotiated the slope and found a way across the sparsely marked bay ice, we would have been too late to catch the ship.

NIGHT IN A WEASEL

This was about six in the evening but not till near midnight did it clear sufficiently for us to grope our way shorewards. In the weasel, which has a covered top, we were not unduly uncomfortable. It was cold, of course, but what warmth the five of us mutually shared quickly melted the drift which was in, on and all through us, bringing a wetness less endurable than the cold. David P. managed to get an internal heating unit to function and while this excessive heat (provided for engine starting in severe temperatures) was a temporary relief, again the resultant wetness was most uncomfortable.

The absence of the ship when we finally reached the shore was not surprising to us, but we did then fully realise our position. During our six hour halt we had faced the possibilities of being left and steps we might take. Some food, although of unknown kinds, was known to have been unloaded, also some tents, but we had no spare or dry clothing of any kind, no heating for

cooking, or means of heating, no cooking or eating utensils, but worst of all the bay ice was now bordered, where there had previously been open water to the horizon, by broken, hummocky pack as far as we could see. The ship's radar at about this time showed that about three miles' thickness of heavy pack had blown in and was held there by the persistent N.E. wind, now somewhat moderated.

I am afraid that, while we never for a moment doubted that the "Theron" would return, it seemed obvious that she would never be able to approach the old spot by many miles and unloading among the broken hummocks would have been impossible. Nevertheless, we then and there set to, endeavouring to mitigate the set-back, by extracting sledges and cases from the morass of icy water and high drift.

I must give full credit for the initiation of this salvage work to David Stratton, one of our five and 2 I.C. of the British Party. His previous Graham Land experience immediately indicated the urgency with which anything in the flooded area must be extracted, before all the water froze, entrapping the lot in 18 inches of hard ice.

WIND AND SNOW

With the aid of two tractors we laboured on until 3.30 a.m. when fatigue, plus the cold of the icy water, made us realise we must find some food and some shelter. We eventually found some tinned cooked ham and some sugar which we eagerly consumed, and proceeded back to Shackleton and all lay down among bundles of insulating material in the temporary shelter erected previously. All this time it had been blowing steadily with a steady snowfall. By eight o'clock next morning, when we awoke after our few hours rest, it was to find the wind had swung to the west and even south west although still snowing. The dumps at Shackleton were

almost all completely drifted up, including our shelter. Our first step was to find and erect two pyramid tents for any further use, and among the food dump we found a case of sardines and a case of tinned tomatoes, some dried milk, and margarine. Our diet was becoming more varied, but needless to say all still in the deep freeze. It was at this time that Peter Jeffries (meteorologist) remembered the survival kit in the aircraft (which was ashore now on skis on a landing strip in the Bay Ice) and among the contents of this kit was a primus and fuel.

Imagine our amazement on returning to the shore in mid-morning, to find open water bounding the bay ice. Miraculously the S.W. wind was beginning to drive the pack out again. I would never have believed such to be possible in such a short time. We now knew that the return of the "Theron" was only a matter of time. Visibility was now up to almost a mile but yet no sign of the ship. We found the much needed primus and fuel and 2 p.m. brought our first warm drink (hot milk) for twenty-six hours. The dogs were immensely pleased to see us back at the shore and let us know this in no quiet way. We were proceeding with feeding them, and the further salvage work, when about 4 p.m. the "Theron" appeared forcing her way toward us along the ice edge. To us this meant dry clothes and a warm meal, both of which luxuries we were soon to enjoy. And so ended a brief but most useful experience in the vicissitudes of Antarctic weather, its hazards, and precautions to be taken.



It is announced from Oslo that Scandinavian Airlines proposes to make the first commercial flight over the South Pole later this year to take visitors to the Olympic Games in Melbourne.

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