

# ANTARCTIC

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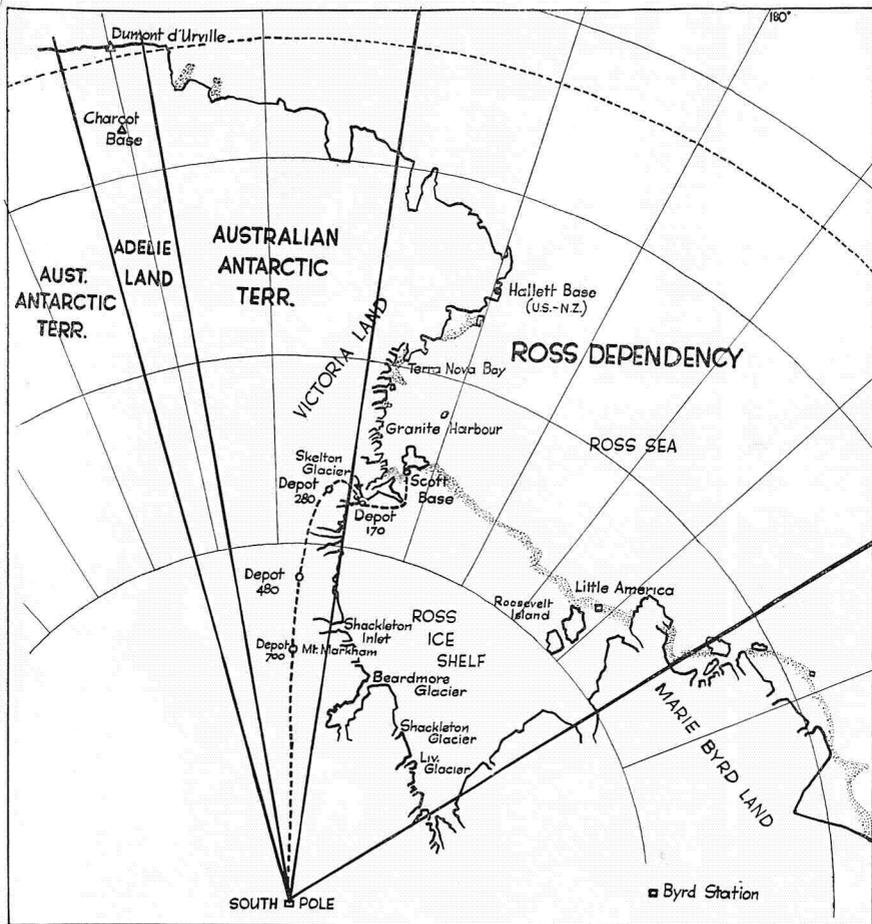


## NEW ZEALANDERS' TREK SOUTH BEGINS

Sir Edmund Hillary's tractor sets out from Scott Base, followed by the tractor driven by Dr. R. Balham.

PHOTO BY DENIS WEDERELL.

REPRESENTATIVE OF "THE PRESS", CHRISTCHURCH.



### THE ROSS DEPENDENCY

By Order in Council dated July 30, 1923, the territories of the Ross Dependency—that sector of the Antarctic Continent between 160° E. longitude and 150° W. longitude, together with the islands lying between these degrees of longitude and south of latitude 60° S.—were brought within the jurisdiction of the New Zealand Government.

The dotted line indicates the route being followed by the New Zealand expedition's southern party, with the approximate positions of the depots established and proposed.

# “ANTARCTIC”

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## ALL READY AT SCOTT BASE

The first week in September brought the first physical contacts between Scott Base and the outside world when two Dakota aircraft arrived from Little America, some four hundred miles away to the east.

The New Zealand Auster had been flying reconnaissance sorties in preparation for the field trips to the Koettlitz and Blue Glaciers, the Ferrar Glacier, and Cape Crozier.

The western areas of the Ferrar and Blue Glaciers were almost completely without snow cover, a disappointment to those planning western trips.

### TELEPHONE LINE LAID

Scott Base and the American Base at Hut Point are now connected by telephone. Mulgrew and Martin, an American technician, ran the line over the almost two miles of mountain-side at the beginning of September. The installation simplifies the co-ordination of flying activities and gives the New Zealand pilots up-to-the-minute met. forecasts.

### SPRING JOURNEYS

On September 9 Marsh and Warren, with one dog team, camped at Cape Royds, after a fast five and a half hours' journey. They then crossed thirty miles of thin bay ice to the western side of McMurdo Sound in a one-day run.

In New Harbour they joined Miller and Carlyon, both of whom were driving a dog team, and an attempt was made to force a way up the Ferrar Glacier. After several attempts they found the going impossible even for dog teams. On the morning of September 14, they moved north towards Cape Bernacchi and continued geological observations and surveying up the western coast of McMurdo Sound to well beyond Gneiss Point.

A severe blizzard which swept across Ross Island and McMurdo Sound on September 19 and 20 struck Marsh, Warren, Carlyon and Miller in a very exposed position six miles from the western shore of McMurdo Sound. For two days they endured gale and driving snow in their two small tents. On September 21 they made a run of thirty-two miles back to Scott Base.

### TRACTOR TRAIN

On September 10 Hillary, Bates, Ellis, and Mulgrew, with three tractors, set out for the western side of McMurdo Sound. They made a good journey of thirty-three miles

in two days to reach the foot of the Ferrar Glacier. En route they replenished the depot of food cached earlier in the year, and moved it to a more readily accessible spot. Sir Edmund reported that it would be impracticable for tractors to move up the Ferrar Glacier owing to the broken nature of its surface.

On September 14 they proceeded northward to Gneiss Point where they depoted 1,000 lbs. of dog and man food for the Northern Party. Two days later the laying of the depot at Gneiss Point had been successfully accomplished and the tractors were returning. They reported finding several boxes during their foot reconnaissance of the Ferrar Glacier; apparently ones left behind by Scott's team which explored the Ferrar Glacier in 1902-03.

#### **BLUE GLACIER RECCE**

On September 11 Brooke and Gunn, with a dog team, set out for the Blue Glacier about five miles south of Butter Point. They proceeded up the glacier with their team pulling a Greenland type sledge, the only type suitable for the very broken surface. A geological survey of the lower slopes and topographical mapping filled one of the obvious blanks in the map. Three days later they were having a rough trip among the boulders of the moraine. They reached the head of the glacier, however, the first party ever to have done so.

After working along the eastern face of the Royal Society Range they arrived at Base on September 23.

#### **TO CAPE CROZIER**

The Cape Crozier party, Ayres, Douglas, Balham, and Sandford (I.G.Y. party), left base on the morning of September 15. Two days after leaving they were forced to lie up for two days; they moved for a day and were again delayed by a fierce blizzard. One of the four poles of one of the pyramid tents broke and it was impossible to splint

the pole for almost two days.

When eventually a good surface enabled them to make the final day's run to Cape Crozier, a glazed ice surface over the last few miles forced them to camp almost five miles away from the penguin colony.

The tenth day, however, saw them among the penguins, and three more days brought them back to base. The colony appears to be in a much more healthy state than in the winter of 1911, when Wilson estimated the population at about two hundred birds. Now the birds, among whom are many three-week-old chicks, number about seven hundred. A further two hundred non-nesting birds and those who must be away foraging would bring the total to over one thousand, not including the newly hatched chicks.

Owing to the long time taken to reach Cape Crozier only a few hours could be spent among the penguins; consequently no banding was accomplished and no blood smears could be taken. Balham did, however, return with three unhatched eggs, two of which were discovered on the outskirts of the colony and the third covered by some broken ice, together with nine chicks, six of which were found dead, representing growth stages from newly hatched to three weeks of age.

#### **BEAVER ASSEMBLED**

On October 4 the wings were replaced on the Beaver aircraft. On October 2 Tarr had given the engine its first run up. It fired on the first swing of the propeller and roared into life.

At the beginning of October Carlyon, Gawn, Macdonald and Miller, with two dog teams, visited Cape Royds, the site of Shackleton's winter quarters in 1907-08, and Cape Evans, the site of Scott's winter quarters on his second expedition in 1911-12.

The party was away from Scott Base for two nights and three days, making good progress over the sea-

ice on each leg of their trip, which totalled a little over fifty miles. A whole day was spent at Cape Royds where much time was spent clearing snow from the hut and digging ice and snow from the doorway.

A half-day and a night was spent at Cape Evans. An entry was forced but most of this comparatively large hut is completely choked with ice and snow.

### SUMMER PARTY

Several members of last year's summer party will be with the expedition this summer also.

**Mr. Derek Wright**, Wellington, who filmed "Antarctic Adventure" last year, has joined the southern tractor party.

**Sergeant Peter H. Tate**, R.N.Z.A.F., radio technician and operator, flew south again on October 15.

**Mr. R. E. Barwick**, M.Sc., of Victoria University, Wellington, research biologist and black-and-white artist, has constructed a Petersen's Grab for use in marine biology studies in McMurdo Sound.

Other members of this year's summer party will be:

**Mr. Andrew Packard** (28), lecturer in zoology at Auckland University, Scottish born, who studied zoology at Pembroke College, Oxford. He is chairman of the Auckland branch of the N.Z. Antarctic Society.

**Mr. Bruce Broadhead**, B.Agr.Sc. (30) of the National Broadcasting Service, Auckland, who was educated at Christ's College, Christchurch, and Lincoln Agricultural College. He will be broadcasting representative with the expedition.

**L.A.C. A. M. Breese** (34), R.N.Z.A.F., airframe fitter at Wigram Station. He comes from Wales.

**L.A.C. I. J. Chapman** (24), R.N.Z.A.F., engine fitter at Woodbourne Station. His home is in Christchurch.

**Mr. Douglas McKenzie** (40), a senior reporter on the staff of the

"Star-Sun," Christchurch, who was in the Antarctic with Operation Deep Freeze for a short period. He will be the official reporter for the expedition. Mr. McKenzie was born in Christchurch and educated at the Christchurch Boys' High School.

**Dr. F. A. de Hamel** (34), tuberculosis medical officer to the Christchurch-Greymouth health district. He will be medical officer and ornithologist.

### CABINET MINISTER IN ANTARCTIC

On October 15 the New Zealand Minister of Mines, Railways and Labour, the Hon. J. K. McAlpine, alighted from the first civil airliner to land south of the Antarctic Circle. He was accompanied by Mr. F. H. Russell, the American Ambassador to New Zealand.

During their four crowded days they flew low over the huts at Cape Evans and Cape Royds, then turned westwards across McMurdo Sound to Cape Bernacchi and Marble Point; then across to Cape Crozier. After flying twice around the volcano of Mt. Erebus, they made a landing on the Ross Ice Shelf alongside Sir Edmund's tractor train before returning to Hut Point. The party also flew on this year's first Globemaster flight to the Pole. Mr. McAlpine and Mr. Russell visited Scott Base by tractor, spent a night there and were driven back to Hut Point, via Cape Armitage, by dog sledge.

Several other New Zealanders have been or will be visiting the Antarctic on special missions.

**Mr. W. F. Ponder**, Ministry of Works architect, who designed the buildings at Scott Base, flew south in an American Globemaster in November to inspect the huts.

Two Victoria University students, **R. W. Webb** and **B. C. McKelvie**, will go to the Antarctic to study geology during the summer. They will sail in "Endeavour" and help with its unloading, but will not be attached to the base.

## New Zealand Expedition's Main Journeys Begin

The main field parties are three in number, with four men in each: the Northern Party with dog teams, the Southern Tractor Party, and the Southern Dog Team Party.

The Northern Party left on October 4. Brooke, leader and surveyor; Gunn and Warren, geologists; and Douglas, mountain guide, ice and dog expert, first crossed McMurdo Sound where, three days later, sixty miles out, they picked up at Gneiss Point the supplies left by the September tractor party. Then they entered the valleys of retreating glaciers which once reached to sea level but now are free from snow and ice.

This could be a geologist's paradise. In these valleys and on the ice-free beaches which, in some cases, terminate them, a biological party will later in the season do a survey. The fresh water lakes and streams will almost certainly yield a harvest of invertebrata and primitive forms of botanical life.

Radio contact was made with the party on October 8. In the six days they had covered about 90 miles and were about six miles east of Mt. Newall. Two dogs had fallen 30 feet down a crevasse after breaking the harness rings attaching them to their traces, but had been recovered.

The party on October 16 discovered at Cape Roberts, south of Granite Harbour, one hundred miles north of Scott Base, a cache of clothing and personal effects left by a party from Scott's Expedition in 1912. Among the items was a film-changing bag in perfect order, and a small kit bag bearing the name "F. Debenham," geologist of the expedition. The contents of the cache were brought back to base by Cranfield, who, with Claydon, had been

flying supplies to the Northern Party to stock a depot for use when the party returned to Cape Roberts from further north.

### HIGH CLIMBING SEALS

On October 24, Claydon flew out with Gawn to visit the party which was then camped at Granite Harbour. Since their departure from Scott Base they had explored from the foot of the Ferrar Glacier to Granite Harbour, climbing numerous peaks as they progressed northward. Gawn took with him one of the new field radio sets which had just been flown down to Scott Base.

Claydon brought back to Scott Base from Granite Harbour the carcass of an ancient Weddell seal which had been found high up one of the glaciers leading inland from Granite Harbour. The previous week the Northern Party had found another seal 2,000 feet up the slopes of Mt. Newall. Both of these seals were taken to Scott Base where Balham will make a careful study of them. Then they will probably be sent to New Zealand for radio-carbon dating.

Brooke and his party now headed north towards the Fry Glacier, travelling on the sea-ice in splendid weather. Part of the reason for the warmer temperature may be heat radiation from the rock.

On October 25 the party reported by radio that they were camped in Tripp Bay after experiencing good surfaces on the sea-ice on the journey from the Mackay Glacier. They proposed splitting up for a while in order to get the utmost coverage

of territory for their investigations. The Beaver at this date had made four supply flights to Cape Roberts, on the south side of Granite Harbour, to lay a depot for the party's return trip.

On October 26, the Northern Party was again visited by air. The weather was perfect with zero temperatures. Douglas and Gunn were proceeding up the Mawson Glacier while Brooke and Warren were exploring up the Fry Glacier.

After heading back to Cape Roberts, the party reached the head of the Debenham Glacier on November 9, proceeding through Miller Glacier to Mackay Glacier, up which they will travel to the plateau and then head north again. Reconnaissance of the Miller Glacier showed very rough surfaces, probably necessitating manhandling of sledge loads. The party was experiencing good weather and plus temperatures.

## SOUTHERN TRACTOR PARTY

The departure of the Southern Tractor Party on the first stage of the journey 700 miles southward to Mt. Markham was delayed by an 86-mile-an-hour blizzard. At 4.30 p.m. on Monday, October 14, the long trek began. Rear-Admiral George Dufek was among those who came over to Scott Base to wish the party success.

Hillary drove the leading tractor, followed by Balham and Mulgrew in the other two Fergusons. Ellis was in charge of the weasel, which was towing the caboose. The caboose can sleep two, and houses the radio and the cooking primuses. Lined with fibreboard inside, it is covered outside with green canvas and is heated by exhaust gases from the weasel. This weasel is the only totally enclosed vehicle of the four.

After casual farewells to expedition members and visitors, Sir Edmund climbed into his tractor, and set it into gear. It roared forward with its cleated rubber tracks dig-

ging into the soft snow.

The four vehicles with their seven sledges, carried a payload of ten tons, from a gas welding plant to bridging timbers. Included were thirty-six 44-gallon drums of gasoline which, together with a further thirty to be transported by the Beaver aircraft, should be sufficient to enable the tractors to reach the 700-mile Depot and still have sufficient fuel for the needs of the many vehicles of Dr. Fuchs' crossing party.

All but the leading tractor tows two sledges. This first tractor pulls a sledge on which has been erected a high platform over the space allotted to drums of fuel so that, in a crevassed area, the driver of the leading vehicle, with increased visibility, can drive the tractor with a pair of reins. The latest creation of the tractor boys is a workshop tent which consists of a framework of light piping over which a canvas cover is laced, the structure snugly covering a whole tractor. Inside, with heaters going, they can carry out maintenance and repair in the field. A stripped-down dog sledge is carried for a haul to the nearest landing strip in the event of a complete break-down.

The train travels with the weasel bringing up the rear, pulling the caboose and a sledge of food and engineering supplies. The rear seats in the weasel have been removed to make a spares department and tool shop where small jobs of repair will be undertaken.

The first objective was the Skelton Depot, at the foot of the Skelton Glacier, 180 miles from Scott Base. The route led across the ice shelf in a wide half-circle to avoid the crevassed area near White Island and Minna Bluff. The party traveled over the route pioneered by Miller and Carlyon last year with dog teams.

Late that first evening the tractor party camped about seven miles from Scott Base. One of the tractors and its sledge had side-slipped

into a hidden but fortunately shallow crevasse; hard work with draglines and heaving pulled it out unharmed.

The first thirty miles across the ice shelf was bad going, and head winds and driving snow slowed down progress. They also had a social engagement—when the Hon. Mr. McAlpine landed nearby and had a chat with the members.

### WEASEL IN TROUBLE

Meanwhile, mechanical trouble with the weasel dogged the tractor train and delayed progress still further. First there was trouble with carburettor icing and then the distributor shaft broke on October 19, when the train was about forty miles from the Skelton Depot.

It was impossible for an aircraft to make a landing near the tractors owing to heavily broken snow and ice surface. Sir Edmund decided to leave two sledges where they were and to tow the weasel with the caboose to the Skelton Depot. While repairs were being carried out, a tractor returned for the two sledges.

Claydon and Cranfield had meanwhile flown three sorties in the Beaver to the Skelton Depot, but found that the snow surface there was extremely hummocked and dangerous for landings. They flew in two dog teams to await the tractor party and also brought Bates to assist in repairing the weasel. The pilots decided not to risk any further landings there until the summer thaw smooths the surface. By the Tuesday morning, October 22, repairs had been effected to the weasel without having to call on any spares from base.

### UP THE SKELTON

Both parties left the depot on Tuesday afternoon and in four hours, travelling over a hard surface, the tractors had covered a distance of eighteen miles up the glacier. Miller and Marsh, with their two dog teams, covered the

same distance in seven hours, having thirteen capsize in the eighteen miles. The hard going did not suit the dog teams as well as the tractors.

On Wednesday, October 23, a blizzard all day pinned both tractor and dog teams to their tents. On Thursday, in the face of blinding snow, the parties set out again and covered twenty miles in difficult conditions. Six-foot-wide crevasses caused difficulties and extreme care had to be taken. Sir Edmund's party was thirty-eight miles inland from the Skelton Depot and was faced with harder conditions as they started to climb the Lower Staircase. They had left the dogs slightly behind with the understanding that if the dog teams did not catch up within two days, his party would wait for them.

Hillary was then due to enter an area where the glacier rises steeply, nearly 4,000 feet in six to eight miles. In this part, the ice flows past a huge rock island, which breaks up the smooth surface.

The first broken portion has been called the Lower Staircase, then comes a comparatively level area known as The Landing, and higher up again is the Upper Staircase.

The progress of all parties was good, and the hard conditions encountered on the Skelton Glacier were ideal for the tractor transport. It proved unnecessary to lay a depot which had been planned in the vicinity of Mt. Feather.

By October 26, despite thick weather and cold winds, the tractor train had achieved a height of 3,500 feet and a distance of fifty miles up the glacier.

### TRACTORS REACH PLATEAU

The tractor party arrived at the rim of the polar plateau 280 miles from Scott Base on October 30. The party had covered twenty miles during the day. Miller and Marsh arrived at Plateau Depot a little later with their dog teams.

Ayres and Carlyon, with their

dog teams, had been flown in to the Plateau Depot a day earlier and were awaiting the arrival of the tractors.

Earlier, Claydon had flown in to the Plateau Depot laid last year, but found it so completely covered with snowdrifts that only one drum of fuel, on the summit of the pile, was showing. The surface was so rough that landing would have been dangerous, but Claydon found a better spot about two miles further east, and here a new depot was established. The supplies at the old depot will be reserved for Dr. Fuchs and his party when they cross the continent.

Aircraft operations were hampered by bad weather for ten days, but the Beaver performed well on the plateau in temperatures of  $-40^{\circ}$  F., transporting seven tons in thirteen flights, mainly tractor fuel and man and dog food, as well as two complete dog teams with sledges and drivers.

### TWO MEN INJURED

While overhauling his tractor at Depot 280 at the top of the Skelton Glacier, Mulgrew was snatched off the tractor by a terrific gust of wind and broke a rib against the tractor tow bar. Ellis, while also working at Depot 280, strained his back.

Both injured men were flown back to Scott Base by Beaver. They were replaced in the field by Gawn and by Wright, recently arrived from New Zealand.

### DOGS PUSH ON

The four dog teams left the plateau depot on November 8 for Depot 480, blazing a trail for the tractors. They headed north-west for a start to clear disturbed terrain, but struck difficult going, with a smooth surface but dry sandy snow giving much surface friction for sledges at the ruling low temperatures.

At this stage, the teams were probably on the route of Scott's great western journey in 1903.

Hillary, Mulgrew and Balham of the tractor party now flew back to Scott Base. Balham remained there, but Hillary and Mulgrew returned to the plateau on the night of November 10.

### AT DEPOT 480

The tractor party left Depot 280 at 6.30 p.m. on November 12, four days ahead of schedule.

They passed the dog teams during a fortnight of very bad weather and arrived at Depot 480 on November 26. The party had what Hillary described as an "unpleasant time" in a crevassed area on November 25, but extricated all the vehicles safely and found a good route more to the west. Temperatures had been about  $-20^{\circ}$  or  $-30^{\circ}$  F. with the surface varying from deep soft snow to hard sastruggi. Two sledges required repairing. The dog teams arrived two days later.

On November 22 the Beaver began ferrying supplies for a relay station at the foot of Darwin Glacier, north of Cape Kerr. Tate and Chapman will be stationed here until Depot 480 has been fully supplied.

Hillary expected to remain at Depot 480 for about 10 days, but the dog teams are to push on for a further 200 miles or so to  $83^{\circ}$  S., where they will choose a site for Depot 700. This should be accomplished early in December.

Meanwhile, the air party will have made a relaying station at Shackleton Inlet, from which they will fly the stores to stock Depot 700.

If everything proceeds as planned, Miller, Marsh, Carlyon and Ayres will go on exploratory and mapping journeys with their dog teams into the area around the glaciers draining into Shackleton Inlet, and into the area of the Queen Alexandra Range.

The New Zealand and British parties were scheduled to meet on January 10 south of Depot 700, and to return together to Scott Base.

## I.G.Y. TEAM

The New Zealand I.G.Y. parties to winter over at Scott Base and Cape Hallett were assembled in Wellington in November.

The Scott Base men under Mr. L. H. Martin will sail for the Antarctic in the "Endeavour" on December 14. The three-man Hallett team under Mr. K. J. Salmon will leave Lyttelton on U.S.S. "Arneb" on January 5.

Mr. R. M. Robb and Mr. A. L. Burrows of next year's wintering-over party have already joined the present I.G.Y. party at Scott Base.

An Italian naval scientist, **Lieutenant Franco Faggioni**, will join the New Zealand team for the second period of the I.G.Y.

Lieutenant Faggioni was appointed by the Italian Government after talks with the New Zealand Government and I.G.Y. authorities. He will take a full part in the scientific programme for 1958.

Three men have been selected for a summer support party to the I.G.Y. team:

**Mr. J. Hoffman** of the Geophysics Division, Wellington, who was with the summer party helping to erect Scott Base last year, as drilling expert.

**Mr. A. F. Davidson** of the Meteorological Office, Wellington.

**Corporal L. O. Duff** of Christchurch, A Grade I Army mechanic.

During this summer there will be 31 Government scientists and technicians at work in the Ross Dependency.

**Dr. E. I. Robertson**, chairman of the Inter-Departmental Committee for the I.G.Y., flew to Scott Base and Hallett Station early in November to discuss future I.G.Y. work with Dr. Trevor Hatherton and the American authorities.

## GEOLOGICAL SURVEY

The eight-man party of New Zealand geologists under Dr. H. J. Harrington left Lyttelton on the American ice-breaker "Atka" on November 20 to spend two months exploring, mapping and investigating the mineral resources of the northern part of Victoria Land, in the Ross Dependency. The expedition has been organised by the Geological Survey, D.S.I.R.

The party, all experienced mountaineers, will work in a 50-mile radius from the I.G.Y. Hallett Station. The expedition is not an I.G.Y. project, but its findings may influence considerably the scale of the scientific activities to be carried out in New Zealand's Antarctic territory during the 1958-59 season.

The members of the expedition had two weeks' intensive training in the Tasman Glacier area of the Southern Alps early in November, including a long trek to complete the "toughening-up" process. In Victoria Land they will be covering long distances over unknown but certainly difficult terrain, man-hauling sledges.

To cross stretches of water they will have two reinforced fibre-glass outboard-motor-powered dinghies designed by Mr. J. B. Brooke, director of the D.S.I.R. industrial laboratories in Auckland. The boats, built in Petone, are light but strong and stable. One measures 12ft. 6in. with a beam of 5ft. 4in. and weighs 200 lb; the other 10ft. with a beam of 4ft. 10in. and weighs 150 lb. They are claimed to be unsinkable.

Both are fitted with stainless steel standards over which canvas covers can be fitted for protection against icy spray. Should the outboard motor fail, the standards can be quickly reversed to bring up rowlocks for oars. For ease of transport, one boat can be filled with stores and fitted inside the other.

When Dr. E. I. Robertson visited Hallett Station on November 1 he

WEASEL: A ———— heap of ———— powered by a coffee-grinder, useful for field trips for walking home from.

(Australian's Definition.)

flew with Dr. Hatherton over the coastal portion of the area in which the party will be working, and sighted at Tucker Inlet, about 30 miles south of Cape Hallett, what appears to be a suitable access route to the interior. United States authorities have been most generous both in providing transport and in making photographs of the area available to the expedition.

## NEW ZEALAND ALPINISTS

### PLAN ANTARCTIC CLIMBS

The New Zealand Alpine Club is hoping for Government sponsorship of a mountaineering expedition by New Zealand alpinists in the Ross Dependency during two or three months of the 1958-59 summer.

The interim organiser, Mr. P. Gardiner of Levin, envisages a party of not more than ten experienced mountaineers, including a doctor and some members competent to carry out geological and survey work. Possible locations are (1) the Cape Hallett area and (2) an area some 30 miles west of Scott Base which includes Mt. Lister.

The estimated cost of the expedition is £3,000. Each participant would be expected to make a financial contribution, gifts in kind would be welcomed, and the Club would be prepared to make a substantial contribution from its funds.

Applications have been called for and some have already been received.

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### ALWAYS AT HOME

Jules Madey, a sixteen-year-old radio amateur, was "working" the South Pole for correspondent Walter Sullivan, and at the end of the conversation asked the men at the Pole to wait while he disconnected the phone hook-up.

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

## HALLEY BAY RELIEF

The m.v. "Tottan" (540 t.) left for the Royal Society base (75° 31' S., 26° 36' W.) on November 18. The stores and personnel will arrive at Halley Bay probably during the first week of January. The "Tottan" is carrying sufficient supplies for 1959 in order to insure against the possibility of not being able to reach the men in January 1959 if the ice conditions should be worse than usual.

The ship is being shared with the Norsk Polarinstitutt, Oslo. Consequently, "Tottan" will, after leaving South Georgia, call first at Norway base, and then proceed to Halley Bay, where the remainder of her cargo will be unloaded.

The new personnel for Royal Society base are:

Flight Lieutenant B. K. Brooker, R.A.F. (25), medical officer.

Bernard G. Ellis (27). Mr. Ellis served during 1952 at Deception Island.

John A. Smith (30), meteorologist.

Sergeant Edward John Gane, R.A.F. (27), senior wireless operator.

The above four men will join the party which will be led during 1958 by **Joseph MacDowall**. Mr. McDowall, who is 31, is senior scientific officer at the Meteorological Office, London. He spent last winter at Halley Bay.

Lieutenant John F. Glennie, R.N., will make the round trip to Halley Bay and back as a Royal Naval observer interested in ice navigation.

The first eclipse of the sun to take place during the I.G.Y. occurred on October 23. At Royal Society base, scientists studied its effects on the ionosphere.

Halley Bay is the nearest I.G.Y. station to the region of total eclipse.

## WINTER AT NORWAY STATION

The Norwegian base in Dronning Maud Land ( $70^{\circ} 30' S.$ ,  $2^{\circ} 32' W.$ ) is located 30 k.m. from the ice-front and at an altitude of 55.7 metres above sea level.

About 1,000 equipment cases form a passage some 60 m. long. Tarpaulins have been placed on a frame-work above the cases and a row of lamps light the passage. The station comprises, in one building the radio and meteorological room, surgery, mess-room, pantry, offices and a dark-room; and in a second building separate bedrooms for each member. The buildings measure 7.2 x 7.2 m. and 7.2 x 10.82 m.

The garage houses one of the three tractors. In the garage is also a small room for snow melting. In another building two motor dynamos, each 14 kilowatt, are lodged, and a mechanical workshop is established.

All these buildings are under one roof, enabling the members to be sheltered when passing between them. But there are other houses and huts not connected to the passage: the rawin house, the hut for magnetical observations, the instrument screen and a small house on pillars, 2 m. high, where is mounted the film camera for aurora photography. NW of the instrument screen is the highest building, a 26 m. high tower of tubular steel construction. On top of the tower a red light is installed, for guidance during the dark months and in snowy weather. At the entrance to the passage a white lamp is mounted, and to most of the above-surface buildings a rope is stretched to serve during storms and poor visibility. The dogs are kept in the open air.

### LIFE AT THE STATION

The expedition leader, Sigurd Helle, writes: "Suppose a visitor

was suddenly to turn up, he would not catch sight of so very much of the establishment, but here it lies, nevertheless, hidden under the snow. High, well-guyed chimneys are vomiting smoke, and the exhaust gas from the aggregate is emerging from the narrow tube in rhythmical puffs. But whoever would imagine that living beings were lodged here? What is left of the roofs above the surface is too small to give an impression of habitation, and so far we have hardly done with the first winter.

"Now we are welcoming another summer. As yet the sun is rather powerless, but outside it is getting a fine light. But in all weathers, in howling storms and drifting snow, so dense as to make outdoor activity quite impossible, or on an icy night bright with stars and flickering southern lights—in the station under the snow we are always safe and sheltered.

"The weather has proved much better than expected. Of course we have had storms and bad weather at times. June was worst in that respect. During 28 days strong breeze or more was measured continually, but on the whole we have long periods with extremely fine weather, with a minimum temperature so far of only  $-46.5^{\circ} C.$

"The houses are well built and warm, and require less fuel than anticipated. In free hours the favourite pastime is chess. Other entertaining activities are competitions with arrows and air-guns. We have an excellent radio, and much reading is being done. For entertainment there is also walks to the secondary station at the shore. From here the radio connection to the

main base is very good.

"We have a much better fellowship than was to be expected among men with such disparity in interests and temper, and under the restraint of having to keep company day and night. We shall for a long time to come call to mind how we enjoyed ourselves discussing all topics conceivable. We have high spirits at Norway Station."

### SCIENTISTS BUSY

In March the general meteorological observations were started as well as observations of temperature and wind along a 25 m. high mast, and observations of radiation; and an all-sky camera was mounted. Magnetic observations were started in April and a subsidiary base was built near the ice front at a distance of 40 km. from the main base in order to take simultaneous photographs of the aurora from two stations. Such photographs were taken on September 13 for the first time. Glaciological work was begun. The first radio sonde balloon was launched on June 9, and since July 1 the entire programme has been in operation.

The radio operators have regular communication with a number of the other IGY stations in the Antarctic, and also a direct link with Bergen Radio. Twice a day meteorological observations are sent to Mawson for further transmission.

The topographical party has carried out reconnaissance trips eastwards from the base, but on the first trip they were halted by broad crevasses. They have succeeded in finding a passage farther north, but for the moment they are not certain whether they will be able to proceed along this route to the mountains lying east of the part of Dronning Maud Land surveyed during the Norwegian-British-Swedish Expedition, 1949-52.

In October, Helle, Grytoyr, Hochlin and Lunde planned to start on a six months' expedition to the mountains in the inner part of Dronning

Maud Land, for the purposes of surveying and of geological and glaciological research. They will have two diesel tractors, six sledges and two dog teams.

The glaciological programme is less extensive than that of the last expedition. One man, however, will be principally engaged in glaciological work, including a closer examination of interesting glacial-morphological features in the inland mountainous regions, revealed through aerial photos from flights in earlier years. The relative movement of the ice around the main base will also be examined.

This year Norsk Polarinstitut has joined with the Royal Society in chartering a Norwegian sealer, M/S "Polarsirkel" of Tromsø. The ship is going to visit the Norwegian base, Norway Station, and the English base at Halley Bay. Two Norwegians are accompanying the vessel to relieve men now at Norway Station as steward and mechanician.

## Chilean Bases

The twelfth Chilean Antarctic expedition comprising the transport "Angamos" and the tenders "Lientur" and "Lautaro" sailed under the command of Commodore Gustavo C. Caceres. The ships carried troops and scientists relieving Arturo Prat, O'Higgins, Gonzalez Videla and Aguirre Cerda bases and the Risopatron base built earlier this year, where ten scientists spent the winter. At Risopatron the complement will be increased by eleven university students who will collaborate in I.G.Y. work.

On this occasion the Navy carries its own helicopter for exploration work and for the relief of personnel in otherwise inaccessible posts. The expedition is expected to return to Chile in March.

It is reported from Santiago that Chile intends to establish a sixth base.

## At Showa Base

The Japanese wintering-over party at Showa Base on Ongul Island continued routine observations in meteorology, cosmic ray intensity, sea ice and land ice. The average air temperature in August, the coldest month, was  $-21^{\circ}\text{C}$ . Up to early October, the average maximum wind velocity was 33 m/sec. and the maximum gust was estimated at about 50 m/sec. The minimum air temperature,  $-36^{\circ}\text{C}$ ., was recorded on August 31. These figures indicate that, contrary to expectations, the climate of Showa Base is rather mild. Dog-sledge and vehicle parties explored the southern part of Lutzow-Holm Bay as far as Lang Hovde, Padda Island. An attempt to reach Botnnuten Mt. (4,854 feet) in  $37^{\circ}47'\text{E}$ .,  $70^{\circ}18'\text{S}$ ., was unsuccessfully made by dog and vehicle parties. The survey parties are primarily concerned with general geomorphology, geology, and ice conditions.

A radio message on November 13 reported that three men had succeeded in making the first ascent of Mount Botnnuten.

Regular radio communication was maintained with Japan and with the other Antarctic bases. Photographs were transmitted by the "telephot" apparatus to Japan.

The wintering men will be replaced. But 19 dogs and five pups, also, probably, one tortoise-shell male cat and two canaries will be left for the relief party.

### PLANS FOR 1957-58

Leader, Prof. T. Nagata.

Deputy leader and leader of wintering party, M. Murayama.

The wintering party of 20 men will comprise in addition four meteorologists, two ionospheric specialists, and experts in seismology, geography, geomagnetism, aurora and air-glow, and cosmic rays; also a civil engineer, an architect, two

mechanics, a doctor, a radio operator and a cook. Ten of these were in the 1956-57 party.

The whole expedition will number 50.

About 400 tons will be carried by the "Soya." For transportation seven weasels and a tractor will be used. Six panel-system huts will be constructed at the base in addition to the four huts already constructed. A non-magnetic hut will be constructed for geomagnetic observation. A "Beaver" plane equipped with floats and skis is carried, also two Bell helicopters.

The "Soya" was slightly modified and now has a displacement of 4,652 tons. The propelling force was increased by 20 per cent., giving the ship an ice-breaking capacity for ice up to 1.5 metres thick. Three marine meteorological observers are included in the crew of 79.

Last year the ship was icebound on the return voyage, so the plan for this year is aimed at an earlier season. The vessel left Tokyo on October 21, and after calling at Singapore and Cape Town is expected to reach Showa Base on January 8, 1958. It is expected to leave on the return to Japan on February 1.

Meteorological, ionospheric, aurora and night air-glow observations, studies in cosmic ray and geomagnetic intensity, also earthquake recordings, will be made. If the circumstances permit, geological and geographic survey, and glaciological prospecting will be carried out.

### CONGRATULATIONS

C.P.O. Peter D. Mulgrew, senior radio operator with the New Zealand Antarctic Expedition, has passed in practical mathematics for a professional commission in wireless, with an 85 pass mark. He sat the examination at Scott Base.

worth prepared to fly a rescue mission as soon as an aircraft could be assembled.

At Shackleton men worked throughout the 24 hours to prepare the Otter for flight. A pit 8 feet deep was dug around the embedded plane and behind the tail a long ramp was constructed so that the machine could be dragged to the surface by a sno-cat. By undercutting and sawing the snow beneath the skis the aircraft came free and the wings could be de-iced. In seven days she was ready, but the blizzard was followed by a white-out and flying was still impossible.

Lewis and Stratton took off on September 30, but were forced down to fifty feet over the sea and had to return to Shackleton.

Next day a search was made, but the stranded airmen were not found. On October 2 the weather was unsuitable at Shackleton but satisfactory at Halley Bay, and the Otter took off again. Climbing through 2,000 feet of icing conditions into better weather, the aircraft was over Halley Bay two hours and twenty minutes later. They then flew south for 40 miles along the edge of the ice shelf, as Haslop had reported landing within 50 yards of the ice edge.

As no trace of the stranded men was found the rescue plane returned to Halley Bay, refuelled, and set up a "Sarah" radar beacon; then flew north along the coast. Haslop was told to switch on the stranded Auster's "Sarah" beacon, which was picked up 20 minutes later.

Shortly after, the Auster was sighted. Haslop was sending up green Very lights. The Otter landed and the rescuers found Rogers and Haslop living in a hole protected by their Auster's engine-cover. The Auster was re-fuelled while the rescued men made soup for their rescuers, and within an hour the two aircraft flew back to Halley Bay—and a great welcome.

Haslop said: "We dug a hole the size of a two-man coffin and covered it with a cape for a roof. As time progressed we enlarged the hole until we had living space and could lie down in our sleeping bags. Eventually we could stand up and stretch. We were working on slim rations."

The men insisted that they owed what comfort they did get, and possibly even their lives, to the fine quality of the New Zealand-made down clothing which they were wearing.

### MAIN JOURNEY BEGUN

The commencement of the actual trek across the Continent was announced in a message received in London on November 25:

"Six vehicles left Shackleton 2145 G.M.T. November 24."

And a few hours later:

"Main party departed in grand style. Three sno-cats, two weasels, one Muskeg pulling 20 tons."

Fifty miles south of Shackleton on November 30 the leading sno-cat, with Dr. Fuchs and David Stratton, deputy-leader, broke through the ice and hung suspended, with its track pontoons at grotesque angles, for five hours on the lip of a crevasse 60 feet deep. Two other sno-cats held the vehicle from dropping until it was heaved back to safety.

Next day a snow bridge collapsed after all but one of the vehicles had used it. The rear vehicle stopped three feet short of the wide chasm revealed.

On December 3 the party covered 43 miles and reached a spot 110 miles south of Shackleton.

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Mr. L. O. H. Tripp, a close personal friend of Sir Ernest Shackleton's, and his agent in New Zealand for his Antarctic Expeditions, died in Wellington recently. Tripp Bay and Mt. Tripp are named after him.

## SOVIET MOVES

The flagship of the third Antarctic expedition of the U.S.S.R. Academy of Sciences, the diesel-electric ship "Ob," left Kaliningrad on September 27.

In an interview, Mr. Vasily Burkhanov said that Soviet glaciologists had established that over a considerable area the ice-cover of the Antarctic lies on the sea bottom, much below sea level. As this data is supported by the findings of scientists of other nations, "there is every reason to suppose that the Antarctic is not a continent but a large group of islands. Mirny is evidently situated on one of the islands."

The scale of research is to be greatly expanded this year, with many new instruments. Soviet explorers are to build two scientific stations, Vostok and Sovietskaya, deep inland, at a distance of 1,500 kilometres and more from the coast.

The experience of past years has shown that vehicles which operate faultlessly on the Antarctic coast are little adapted for inland work, where the ice crust is covered with dry, crumbling snow lying 100 metres deep, in which caterpillar tractors get stuck as in desert sand. Moreover, at high altitudes the engines lose about half their power owing to rarefaction of the air, so that tractors move with the greatest difficulty.

### NEW TRACTORS

Soviet engineers have designed new types of tractors which they think will work well in Antarctic conditions. Fifteen of the new tractors are being handed over to the expedition by the staff of the Chelyabinsk Tractor Works. Three of them, called "leaders," have caterpillars one metre wide. All the tractors are equipped with devices for pumping air into the engines, so that they operate normally even at an altitude of 3,000 metres and more.

On these tractors, Soviet scientists hope to reach Komsomolskaya station, 880 kilometres from Mirny. The rest of the way will be made on "Penguin" tractors which will also be tried in the Antarctic for the first time. These are very light and powerful machines. They have heated cabins equipped with instruments for scientific observations, so that the scientists will be able to conduct observations uninterruptedly, without having to stop the tractors.

Pressure is expected to be very low at the inland stations so that the content of oxygen in the air will be comparatively low. The staffs of the stations are therefore provided with oxygen masks and will have had special training in pressure chambers.

### INLAND STATIONS

Moscow has reported that a team of 27 men set out from Mirny on October 8 on the 875-mile journey inland to establish a new station in the area of the southern magnetic field. The team will have to cross an unexplored area lying over 9,000 feet above sea-level.

The report states that the half-way camp, Komsomolskaya Station, has been established on a high plateau. Fuel supplies were air-dropped on November 8, before the team left to cross the remaining 400 miles toward the geomagnetic pole.

Moscow radio stated on November 25 that about 18 miles of thick ice was cutting off the "Ob" from Mirny. The "Ob" is to launch meteorological rockets to investigate the upper strata of the atmosphere.

The m.v. "Co-operatzia" (3,767 t.) left Kaliningrad on November 1, carrying 166 members of the expedition.

Tass has reported that a party left Vostok I, 390 miles south of Mirny, on December 1, on the further 340-mile journey to the Geomagnetic Pole.

# Australians Prepare to Trek South from Mawson

At the main Australian station, Mawson, spring activity has centred on route finding and vehicle testing as preparations are hurried on to start out on the main journeys of the summer.

On August 21, the day after the fire which destroyed the tent at Taylor meteorological station, a blizzard developed. The box caravan was snatched away and its remnants were found scattered far and wide over the sea-ice outside the harbour. Two of the diesel generators failed and the station relied upon the third until repairs were effected.

Thirty-seven aircraft flights were made in August. Gravity measurements made stretch from Mirny, 800 miles east, to about 100 miles west of Mawson.

## PROBING SOUTH

The corridors between the mountain ranges south of Mawson—the Henderson group, Masson, David and Casey Ranges—were further examined with the object of mapping a safer route through the crevassed zones. "The old inland route," reports Mather, "swings eastward to the Prince Charles Range whereas we want to follow a route due south during the 1957 summer trip."

All flights to Davis were finished by mid-September, leaving only sufficient fuel there for one emergency flight. Johnston, doing the first post-winter run, struck carburettor trouble en route and touched down at Davis with only 20 minutes of fuel left after a four-hour twenty-minute flight. He had to shorten his route by cutting across Prydz Bay. Clemence piloted the second flight and took the Beaver on a further 400 miles to the Russian base at Mirny. By the time the plane was back at Davis, the second

Beaver at Mawson was assembled.

The difficult 50-mile sea-ice journey to Taylor to establish the permanent auroral and meteorological station was accomplished without incident between September 3 and 9. The party of four travelled in two weasels, each pulling two heavily-laden sledges.

The numerous field trips left Mawson depleted in numbers. At one stage 10 men were away from base. Stinear, the Davis geologist, joined the Mawson party for the remainder of the year.

## FLIGHTS WEST AND EAST

The third Emperor penguin rookery in two months was found near Cape Boothby, just west of King Edward Gulf. This was a by-product of the Enderby operations for which both Beavers were used to fly Fisher and Stinear to Magnet Bay on the 25th. Although a coastal reconnaissance as far west as Amundsen Bay had shown sea-ice to be sound at all localities where landings were required, when the aircraft attempted to put down at Proclamation Island nine days later it was found that a break-out of ice had occurred. However, Pinn and Goodspeed on the same flight succeeded in getting magnetic and gravity measurements at Magnet Bay.

A flight eastwards will cause a substantial change in the maps of the Sandefjord Bay region.

## BIG JOURNEYS AHEAD

Forty-two aircraft flights were made from the sea-ice in Mawson

Harbour in October. A second weasel run was made to Taylor to dump fuel. Sledges and caravans have been strengthened for the tasks ahead. Prolonged good weather, rising temperatures (approaching freezing point on many days) and low wind during the afternoon, have given men an opportunity to work outside unhampered, even without gloves.

The men participating in the southern trip will be Mather, Goodspeed, Collins, Mellor and Willing. Shaw will be radio man for about a week, then King will be flown in to replace him. The train will consist of two caterpillar tractors and ten cargo sledges, four of which will carry fuel alone, and one weasel which will scout ahead of the main train. Including vehicles, the total weight exceeds forty tons. After negotiating the local ranges, the train will head south approximately along the 62nd meridian.

The main purpose of the journey is to measure ice-thickness along a southern profile. The large hydraulic drill is mounted on one sledge, and the control cab on another. A ton of explosives will be carried. Mellor will also make general glaciological observations en route, and the party will take meteorological data and release pilot balloons. The six men will sleep in two caravans.

### FLIGHTS SOUTH

In preparation for the tractor operation, two long flights have been made southwards. The first, lasting nearly seven hours, on October 16 was for about 350 statute miles south, examining the snow surface for signs of crevassing. On the 25th a flight of nearly nine hours was made through the Prince Charles ranges, refuelling at Depot Lake, then down to and beyond their south-western extremities, and back along the southern route. This flight established the highest peak in the Prince Charles as 12,000 feet.

Later, a flight was made circling

over the line of ice domes about 50 miles south of Mawson, a crevassed zone which may be one of the first obstacles. The huge glacier which flows down among the ranges to feed the Amery Ice Shelf may be larger than the Beardmore. The camps which are to be established in the ranges shortly will be for the purposes of examining the so-called East Range, parts of which are geologically distinct, and of extending the accurate survey of the eastern groups.

October saw the completion of the work round the Enderby coast. After many reconnaissance flights, in several instances with both planes out together, Stinear, Fisher and Pinn camped for five days at Amundsen Bay, carrying out geological study, survey work and magnetic observations.

### AT DAVIS

At Davis observations from aircraft in August indicated that the ice-edge was orientated north-south along the Vestfold Hills coastline to the Sorsdal Glacier tongue; from there it ran to the outer islands of the Rauer group, to the outer islands of the Svenner group and westwards across Prydz Bay to the Amery Ice Shelf. The thickness of the sea-ice on the airstrip was 58 inches.

Stinear, Fisher and Lied spent 13 days at the Larsemann Hills to obtain an astrofix and complete a geological survey. The party were pinned for six days inside their pyramid tent while storm to hurricane force winds with drifting snow discouraged their activities outdoors. The party was flown back to Davis on August 24.

Three men flew to Sandefjord Bay to fix the position of Mount Caroline Mikkelsen and to collect geological samples and obtain gravity measurements. The party visited Lichen Islet for geological and gravity purposes and during the return flight to Davis discovered a small Emperor penguin rookery which they

estimated had a population of 3,000 birds, midway between Larsemann Hills and Ranvik Glacier.

By the end of September sea-ice thickness at the airstrip had increased to 63 inches whilst the ice-edge gradually receded towards the outer islands. No elephant seals were sighted in September in spite of regular sledging runs along the coast towards the approaches of Crooked Fjord.

In October destructive winds charged with snow, sand and grit scoured most of the paint from the weather-side walls of the community hut and workshop and toppled one mast. However, radio communications were maintained without interruption and the mast was finally hauled back in position.

Once the customary calms returned the sea-ice reached a maximum thickness of 65 inches (mid-October).

#### WILD LIFE

Occasional elephant seals had been observed by the end of October in the vicinity of Mule Island whilst several groups of Weddells with their pups were located within Long Fjord. Adelie penguins first returned to the local rookeries on the 14th, apparently unhampered by weather conditions which blasted them unmercifully during their trek from the ice-edge to their nesting sites.

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the first aircraft to land on the new runway six miles from the base. Other New Zealand visitors were Dr. E. I. Robertson, chairman of the N.Z. I.G.Y. committee, and Dr. Trevor Hatherton.

Although the open sea was, at the time of Mr. Wederell's visit, still some 40 or 50 miles away, crab-eater seals had been seen on the ice near the cape. With a huge penguin rookery on its doorstep and innumerable skuas, the station probably has more wild life around it, says Mr. Wederell, than any other on the continent.

## Hallett Station

The Station Scientific Leader at the joint United States-New Zealand base at Cape Hallett this year will be a New Zealander, **Mr. Kenneth J. Salmon**. Born in England in 1922, Mr. Salmon came to New Zealand in 1950 and lives at Johnsonville, Wellington. He is married and has three sons. He gained his diploma in electrical engineering, with telecommunications as his specialty, at the London Polytechnic. He is a member of the staff of the Civil Aviation Administration, serving as a radio engineer and specialising in design and installation of special types of ground navigational aids.

Mr. Salmon was in the United States in September and October this year studying the special types of instrument being used at Hallett. During this period he visited Thule, in Greenland, and spent four days at the I.G.Y. auroral and ionospheric observatories there.

With Mr. Salmon at Hallett will be two other New Zealanders, Mr. G. A. King, physicist, and Mr. K. A. Bargh, electronics technician. They will leave Lyttelton for the Antarctic on the "Arneb" on January 5.

The worst winter storm at Hallett lasted ten days, in June. "During the lulls," commented Dr. Shear, the present Scientific Leader, "the wind dropped to about 30 knots." During a shorter but fiercer storm in October one gust of 99 knots was recorded. A weasel had a wind-screen shattered by the flying grit and gravel and the vehicles lost their orange paint on the windward side.

The scientific team, Dr. Shear and New Zealanders Ingham, Humphries and Langevad, completed their winter programme almost 100 per cent. The station has been supplying ionosphere observations regularly for the New Zealand radio propagation service.

Mr. Denis Wederell of the Christchurch "Press" visited the station at the beginning of November on

# Operation Deep Freeze III

## Off to an Early Start

Three United States Navy aircraft left Harewood airport, Christchurch, between 5.10 a.m. and 6.32 a.m. on October 1 on the first flights to the Antarctic this season. A Skymaster (R5D), Lt-Cdr. Hanson, landed on the ice runway at Williams Field at 5 p.m., a Neptune (P2V), Cdr. Coley, at 5.21 p.m. and a Dakota Skytrain (R4D), Lt-Cdr. Frankiewicz, at 6.2 p.m.

This was fifteen days earlier than the first fly-in last year, while in 1955 the first aircraft did not take off from Christchurch till December 20.

Half an hour prior to the landing of the first plane fog enveloped the runway, reducing visibility to one-eighth of a mile, but by the time the third plane arrived wind had dispersed the fog and visual approach and landing were possible.

The destroyer escort U.S.S. "Brough" was on station at approx. 60° S. to provide weather reports and radio direction for the pilots.

Ten sick and injured men were brought out by the Skymaster on its return flight to Christchurch. The five stretcher cases included Lieutenants Anderson and Fridovich, who were injured in the helicopter crash on July 12.

### GLOBEMASTERS FLY IN

The first Globemaster of the season flew south on October 3, leaving Christchurch at 10 p.m. and touching down at McMurdo Sound at 8.57 a.m. on October 4.

The earlier start of flight operations was partly nullified by the heaviest spring blizzard Operation Deep Freeze has encountered. The air-strip was battered on October 7 by winds up to 83 m.p.h., which caused severe snow drifts.

A second Globemaster, however, flew south on October 11 carrying Brig.-Gen. Wade Hampton, Com-

mander 63rd Troop Carrier Wing. The ice runway was not wholly up to prescribed specifications, but General Hampton waived the strict width and marking requirements and authorised the eight Globemasters at Christchurch to take off.

Admiral Dufek arrived at McMurdo Sound aboard a Skymaster on October 12. With him was veteran 69-year-old Antarctic explorer Sir Hubert Wilkins.

Globemaster 117, piloted by Captain de Cesare, was flying south at 12,000 feet 900 miles from Christchurch at 11.30 p.m. on October 16 when the port outer engine failed. The aircraft turned back, but 15 minutes later the outer starboard engine also began to lose power. Captain de Cesare could not jettison the major portion of his load, two heavy trucks, and the aircraft continued to lose height, passing over Dunedin at 4,000 feet in a lightning sky. Within sight of Christchurch airport the second engine finally failed, but the aircraft was making a high approach and landed safely on two engines.

### N.A.F. McMURDO

The first commercial aircraft to fly to the Antarctic landed at McMurdo at 8.13 p.m. on October 15. Chartered by the U.S. Navy, the Pan-American Airways Stratocruiser carried 36 Seabees and three correspondents. Also aboard were the U.S. Ambassador to New Zea-

land and the New Zealand Minister of Labour.

Popular attention, however, was focussed on the two stewardesses, Patricia Hepinstall and Ruth Kelly, who now hold the furthest south women's record. The girls had merely three and a half hours on the ice, but in that time they traveled as passengers in a U.S.-N.Z. dog-sledge race from air-field to camp, judged a beard competition, saw the Chapel and other sights, and were entertained at a midnight supper.

### AT LITTLE AMERICA V

The long winter isolation was broken on October 12 when a Neptune arrived from McMurdo. After the unloading of a cargo which included over 800 lbs. of mail, "the camp was strangely silent for a while," says one message.

A two-day blizzard on August 30-31 with gusts up to 79.5 m.p.h. almost demolished an Otter aircraft. Double-strength wind tie-downs parted and the plane cartwheeled on a port wing. The starboard wing was torn loose and crushed beneath the plane which flipped over and alighted on its back 25 yards downwind.

The 400-gallon fuel-tanks of two R4D aircraft were half-filled with snow. The wind blew snow into one-and-a-half-inch discharge pipes with such force that it penetrated about 20 feet up an ascending 20° angle, around four 90° turns and into the tanks.

### ICE SHELF TRAVERSE

After bad weather had made the proposed October 15 start impossible, the Ross Ice Shelf traverse was further delayed by near-blizzard conditions on October 23. The sno-cats had to be dug out before a start could be made.

The party, comprising seven men with Dr. Albert P. Crary as leader, got away on the 24th. The three sno-cats are each towing a two-and-a-half-ton sled loaded with provisions and equipment. The 1,500-

mile traverse is expected to take until February 15.

The proposed route is: Little America via Roosevelt Island to McMurdo Sound, south to the Beardmore and Shackleton Glaciers, and back to Little America following roughly the southern and eastern edge of the ice-shelf as far as 82° 45' S., 155° 20' W., and then turning west to 80° 20' S., 176° 55' W. to avoid the crevasse-area known to lie across the direct route, along the 81st parallel.

The purpose of the traverse is to gather detailed information about the formation and present character of the floating ice sheet that makes up the Ross Ice Shelf as well as to determine ice thicknesses and water depth by seismic methods. Ice surface elevation will also be determined.

Measurements will be made of the earth's magnetic field strength and magnetic compass variations. Gravity studies will be made throughout the traverse, as will meteorological measurements of temperature, pressure, humidity, and wind, and wind drift patterns. The party will also survey mountain peaks and ranges along the route of the traverse.

A Navy plane will land beside the party every ten days with fuel and provisions. Travelling every other day, the five scientists will set up 50 stations about 30 miles apart.

On October 28 an Otter landed alongside the party eight miles short of Roosevelt Island and gave Dr. Crary aerial photographs of the terrain ahead of him. The previous day the plane had landed on the island, and a cairn was erected to guide the ground party on to it.

Dr. Peter Schoeck, a German glaciologist, who was second in command of the traverse, fell 62 feet into a bridged crevasse near Roosevelt Island on October 31. Schoeck fractured two ribs. He was taken by Otter plane to Little America and then flown to Christchurch

where he was admitted to hospital on November 10.

A daring landing was made alongside the traverse party when it was marooned by about five miles of crevasses. Philip Smith, who was crevasse expert with the Byrd trail-finding party last year, was flown out to help the traverse men find a way through. An aerial reconnaissance of the area ahead was made.

### ICE DEFORMATION STUDY

During late 1957 and early 1958 a four-man party from Little America is to map, measure and study a portion of the Ross Ice Shelf. Standard geological field methods are being used; air photography and boring will be included, and crevasses will be descended.

The camp site of the advance reconnaissance party of the group was visited on November 14 by U.S. senator J. P. Saylor. The camp is situated between Little America III (site of the 1939 expedition) and Roosevelt Island.

Dr. James Zumberge is in charge of the deformation studies.

### ELLSWORTH

The first flight of the season was made on September 24. The Otter had to have a wing-change before it became operational owing to the crushing of the original wing by the heavy weight of accumulated snow. Extensive digging out was required also to clear the eight sledges.

On September 30 a flight was made to the British base, Shackleton, some fifty miles distant.

### MOUNTAINS DISCOVERED

On October 25 a seven-hour exploratory flight probed the unknown area of Edith Ronne Land to some 300 miles south of Ellsworth Station. At 82° S., 47° W. the aircraft climbed to 10,000 feet through haze which limited visibility to ten miles. When the haze suddenly disappeared formidable mountain ranges bathed in sunshine came into view. The moun-

tains spread for a hundred miles or so in an east-west direction, and south beyond the horizon. Lofty peaks, some bare and some snow-covered, rose to 11,000 feet between 48° W. and 51° W.

Another flight, on which Captain Finn Ronne was observer, scouted for a route for the traverse party. An apparently easy trail was discovered. The traverse party is to rendezvous in the Ellsworth Highlands with another party doing seismic and glacial studies from Byrd Station. The nearness of the route to the newly discovered mountains may permit the collection of rock specimens.

The aircraft headed almost due south. At 79° S., approximately 60 miles south of Gould Bay, elevated land rose from 700 feet to a smooth surface elevation of 2,500 feet. Radio altimeter readings in conjunction with the contours indicate either an island or a peninsula jutting in from Edith Ronne Land and covering a large section of the Filchner Ice Shelf. These features were not observed on Ronne's 1947 flight in this area.

Turning west at the southernmost point of the flight, the highest and most massive mountains were seen about ten miles due south. They appeared smooth and rounded, with little sign of erosion, and connect with the range first sighted at 81° S., 38° W. on a flight last March.

The range runs about 25 miles in a north-east, south-west direction, and is heavily weathered with deep rifts and sharp, lofty pinnacles grouped together in clusters. Other pinnacles stand majestically single. Steep, snow-covered slopes cling to the mountain-sides, and the foothills show no crevasses, indicating no glaciation.

The aircraft, which set out at 9.20 a.m., arrived back at Ellsworth at 5.30 p.m.

### TRACTOR IN CREVASSE

About mid-November the traverse party met a stretch of undetected

crevasses about 100 miles south of the base. The front of the leading tractor fell into a crevasse. The men wedged the tractor on the solid surface, and when it was removed from the crevasse the universal joint was found to be damaged.

The Argentinians at Belgrano Station have given their American neighbours three month-old husky pups.

Captain Finn Ronne was in a plane flying at 5,000 feet some 80 miles west of Ellsworth when he sighted a rookery of several thousand penguins. The aircraft dropped to a few hundred feet above the birds and photos were taken. The plane came down on the sea-ice and half an hour was spent among the penguins.

### WILKES

September at Wilkes Station featured stormy weather with nine days of winds over 50 knots climaxed by a new Base "high" of 91 knots on the 30th.

An Emperor penguin captured on the sea-ice near the base was three and a half feet in height and weighed 90 lbs., the finest Emperor Eklund has seen. The irate bird was released.

Two men on a short man-hauling geological field trip to the south were caught by a storm for two days. After the storm a party from the base went out to ensure that they were safe. They searched the area as far as the intended destination without success, but late in the day the two men were sighted returning from further south.

The search party located a steel cylinder left as a cairn by Russians from Mirny who had flown into this area in October and November, 1956.

A note in a vodka bottle was photographed and returned to the bottle, plus a map of the area published in the United States a short time before the Russian party arrived there. A party of American surveyors was landed there in 1948

to record ground control points for aerial mapping purposes.

By early November penguins were returning in great numbers. Eklund's census-taking was made difficult by the tendency of the thousands of penguins to charge, pecking furiously at the census-taker's legs.

A tractor towing fuel made a trip to the ice-cap station. The ice pit there has reached a depth of 115 feet, with a hand-drilled hole at the bottom extending to 200 feet.

### BEARDMORE STRIP

On September 9 two R4D's were flown from McMurdo to establish a new three-man weather station and emergency landing strip at the foot of the Beardmore Glacier, 314 miles from McMurdo and 122 miles from last year's station at Liv Glacier.

Ski landings were made on smooth snow in  $-32^{\circ}$  temperatures. The flight last year to select the Liv Glacier site was not made till October 28.

A Dakota flying supplies to the strip on September 12 made a forced landing on the ice-shelf 90 miles south of McMurdo when the port engine failed owing to the icing of strainers in the fuel lines. The crew of a rescue plane, working in  $-36^{\circ}$  and a 35-knot wind, cleared the fuel system four hours after the forced landing. The plane was only aloft five minutes before it was forced to land again, on a rougher surface. The two crews worked alternately for 33 minutes before the aircraft could take off again. By this time the rescue plane's skis had frozen to the snow and 20 minutes' digging with shovels was required to free them.

When Father Darkowski, chaplain at McMurdo, introduced the two stewardesses to the wintering-over group he stammered a bit and then with a big smile said, "Don't let my grey hairs fool you. I am just as excited as you are."

## Drama at the Pole

The first mail to reach the South Pole in exactly eight months landed at the back door of the world's most isolated scientific station at lunch-time on October 17.

A Globemaster took off from McMurdo Sound at 8.45 a.m. and picked up the Pole station on radar at 1.7 p.m. Eight minutes later, Lieut. Tuck, the Pole station military leader, said over the radio: "We have you in sight. You're nice and big and beautiful."

On the first run ten bundles of four drums of diesel oil each were dropped from 750 feet entirely within seven seconds, making the distance from first bundle to last not more than a quarter of a mile. As the elevation of the base above sea-level is 9,600 feet, the drop was made from an altitude of approximately 10,400 feet. On the second run mail, parcels from home, food, and urgently needed radio parts were dropped. Attached to this bundle was a New Zealand flag, dropped with the compliments of Mr. McAlpine, who was in the aircraft.

The mail bundle nearly hit a weasel coming out to pick it up.

The "ground" temperature at the Pole Station was  $-60^{\circ}$  with a sixteen-knot wind. Temperature at drop altitude was  $-45^{\circ}$ , a normal temperature inversion.

### STRANDED

After making the earliest spring landing ever at the Pole, five days earlier than last year, a Neptune piloted by Cdr. V. T. Coley which touched down on October 26 was unable to take off when two seals in an oil-cooler blew out. The ten unexpected guests, five members of the new wintering party and five passengers, including two pressmen, were made welcome although accommodation at the base was severely strained. Some had to live in the emergency shelter some dis-

tance from the base.

Four aircraft-engine heaters were air-dropped on October 29, but three were extensively damaged when parachutes failed to open. The crew built up one complete heater from the damaged three.

A spare engine was taken on a Dakota which left McMurdo on November 7 but engine trouble forced the plane to land at the Liv Glacier air-strip, about half-way to the Pole. The aircraft was left there for an engine change.

After another unsuccessful attempt on November 8, a P2V-7 took off for the Pole on November 16 and landed safely. The stranded men were brought back to McMurdo after 23 days' "detainment" at the Pole.

### FREAK ACCIDENTS

On October 31, twelve drums of oil about to be air-dropped at the Pole tore loose from their moorings and smashed through the unopened drop doors of the Globemaster when the aircraft was 13 miles from the drop zone. The drums, weighing two and a half tons, ruined the automatic mechanism used to close the drop doors.

Five men working on a narrow catwalk over the open hatch, with nothing but 750 feet of 60-below-zero air between them and the Polar ice, managed to close the doors only by lowering a hook on a cable to pull them back into place.

### NEPTUNE ENGINE AFIRE

On November 8 Lieut. Bolling in a Neptune was climbing steadily with both jets and reciprocating engines and was five miles from the air-strip when a fire broke out. He

turned steeply back and made a ragged landing as first the starboard and then the port wings dipped steeply.

The heavily-laden aircraft came to a stop in a flurry of snow, mistaken by watchers as smoke. The crew and passengers dashed clear.

On November 10 a seven-ton tractor, the heaviest item to be dropped at the Pole, tore loose from its parachutes and plummeted twenty feet into the snow. The tractor made a crater fifteen feet deep in the snow, and caused a "snowquake." A meteorologist watching the drop was knocked down by debris and broke a crown in a tooth.

The first clear signs of twilight were seen on August 10. Many attempts were made to get twilight photographs of the base, but the low temperature froze cameras in a few moments. It was found that the nose of a man standing facing a 12-knot wind at 95° F. froze between twenty seconds and two minutes.

Sunrise on September 23 ended the six-month winter night. During the winter two weekly lecture series were held. Dr. Siple and Lieut. Tuck covered the history of Antarctic exploration and general geography, while science subjects have been dealt with by specialists at the bases. Dr. Taylor gave a weekly medical lecture and, with Dickey, conducted Divine Service each Sunday. Movies were screened three nights a week.

### DOWN IN THE SNOW

The deep snow pit reached a depth of 50 feet on October 1. The successive levels of snow laid bare form an unspoiled record of climatic and other history. And the snow itself is melted for the station's water supply.

Snow in the pits is now so hard that even saws cannot be used. The snow must be chipped loose with mattocks or ice axes and then shoveled into bags and hauled to the surface. Each man at the station

spends a minimum of two hours every week either cutting or hauling snow, despite the rapid onset of fatigue in the sub-zero temperature. An 18° ramp is maintained to provide access to the pit.

The temperature in the pit is nearly constant at -60° F., while at the surface a record temperature reading of -102.1° F. was recorded on September 17. During the period from May 11 to September 17 South Pole temperatures were lower than -95° F. seventeen times.

### MORE DIGGING

Digging out of the garage entrance was necessary before the air-drops began, as the entrance was completely blocked to roof height by snow drift.

September was the coldest month in the Antarctic winter. The average temperature for the first 17 days of the month was minus 83.

Station Scientific Leader at Pole Station for 1957-58 will be Mr. Palle Mogensen, who was technical advisor to the Marie Byrd Land trail party last year. The military leader will be Lieut. V. Houk, a Navy doctor. Among the scientific personnel will be Mr. Paul Dalrymple and Mr. Mario Giovenetti, an Argentine glaciologist, who both wintered at Little America this year.

Lieut. Houk, who back home is a part-time cotton grower, intends to grow cotton—with water cress, carrots, potatoes and beans—at the Pole. He has seeds and earth with him: all he wants now is well-rotted animal manure and worms. He will mix plant food with the manure, and use infra-red violet and ordinary tungsten light bulbs to encourage his plants.

During one of the Byrd air-drop flights the navigator reported having picked up the base on his radar screen, but a few moments later cried out, "Hell, it's moving!" It was the tractor-train, then only five miles from the base, which he had really picked up.

## By Tractor Train to Byrd Station

Belching billowing clouds of steam in a  $-46^{\circ}$  temperature, seven tractors and two weasels roared out of Little America V at noon on October 1 for a 645-mile run to Byrd Station.

Last year's trail was found in good condition and by October 5 the train had already covered 197 miles on the Army-Navy Drive.

This was the third trans-continental tractor train to make the hazardous run since the trail was first opened in November 1956. The 19-man crew had three living wagons, spare parts, fuel and nine 20-ton and three 10-ton sleds for hauling more than 300,000 lb. of cargo.

The greatest obstacle expected was the cold, as temperatures on the high wind-swept Rockefeller Plateau may be as low as  $-50^{\circ}$ .

### AMONG THE CREVASSES

Another danger was the seven-mile crevasse area, beginning at mile 183, untried since last February, but it was passed without mishap. At the time, the temperature was  $10^{\circ}$  F., wind 15 knots and visibility only a quarter of a mile.

The train commander, Lieut. R. K. White, reported when 222 miles out, "Halted 20 hours blizzard. Visibility zero. Temperature zero F. Heavy blowing snow. No sign let-up. All equipment operational. Fuel food adequate. Morale excellent."

Engine trouble halted one of the tractors 380 miles from Little America and a mechanic was flown out with tent and sleeping bag and two weeks' rations.

Little America provided round-the-clock air support to replenish trail fuel caches and also to be available in case of emergency.

The train reached Byrd Station on October 22, three weeks after leaving Little America, and arrived back at Little America on November 7.

Two Skytrains replenished the

fuel cache at mile 380 for use by the tractor train on its return journey. The 10-ton sleds and one wanigan will be left at Byrd for use by the I.G.Y. ice-drilling team.

### LIMPING HOME

A Globemaster limped back to the McMurdo ice-strip early on the morning of October 27 after one engine failed and the generator of another caught fire while on a supply drop mission to Byrd Station.

It was the same aircraft and the same crew which returned to Harewood on two engines on October 17 after setting out for Antarctica.

The Globemaster was carrying 15 tons of diesel fuel on an 1,800-mile round trip to the Marie Byrd Station when No. 2 engine failed 40 minutes (150 miles) from its destination. Captain de Cesare continued to the station in overcast weather and made a perfect drop by radar.

Three hours later, on the return flight, the No. 4 engine generator began overheating and the Globemaster began to lose height.

350 miles from McMurdo Sound the generator caught fire but the blaze was quickly put out by automatic extinguishers. Captain de Cesare radioed for an escort, and a rescue Dakota took off. The Globemaster made a perfect landing.

### TWO HOURS ON TWO ENGINES

On November 2 a Globemaster piloted by Captain Thomas had completed a drop at Byrd but on the way back was forced to feather its No. 1 engine when the generator overheated. It reached McMurdo Sound to find visibility only 200 feet in a blizzard blowing 30 knots.

The squadron commander ordered

the crippled machine to go on to Cape Hallett, 300 miles away, but the sky closed in with the blizzard before the Globemaster could land. The aircraft was now encountering heavy icing and the No. 4 engine failed with generator trouble.

It came back to McMurdo where G.C.A. is available and made two passes over the ice runway without sighting it. On the third attempt it made a successful approach and landed in a cross-wind of 30 miles an hour. The weather was so thick that the control tower could only tell by its radar that the plane was safely on the ground.

The Globemaster was aloft for two hours on two engines. As a precaution, the U.S. dog teams were alerted for the first time in three seasons' operations.

At midnight on November 6 two R4D Skytrains took off from Little America to make the first landings of the year at Byrd Station. One plane remained at Byrd long enough to fly an aerial reconnaissance on the route of the proposed Byrd Station traverse. This flight covered an area much of which has never before been seen. (The only previous flight in the area was Ellsworth's in 1935.) The plane left Byrd at 1.38 p.m. on November 10 and returned at 5.30. An aircraft will be kept at Byrd, contrary to the usual practice, to support the traverse.

Two tons of deep-drilling gear which were carried south by Globemaster for Byrd Station were brought from Thule in northern Greenland, where less than two months previously it was in use at the I.G.Y. station there. The gear has been modified as the result of Arctic experience. It will be used to bore 1,000 feet into the ice.

A 25-year-old New Zealander, Mr. A. J. (Tony) Gow, B.Sc., lecturer in Geology at Victoria University, Wellington, will be an assistant glaciologist with the Deep Core Drilling team.

## For Adelie Land

The 600 ton "Norsel" left Le Havre for Dumont d'Urville base on October 31 with 150 tons of supplies, including tractors and a helicopter, and expects to call at Dunedin, December 23-26.

The new expedition, led by G. Rouillon, will relieve the party under B. Imbert which manned Charcot Station (69° 25' S., 139° 02' E.) 317 k.m. inland, as well as Dumont d'Urville station. Two additional helicopters are being taken south this year. Twenty men under Rouillon will winter at the main base on l'Ile des Petrels and three at Charcot under R. Garcia.

An attempt will be made to reach the magnetic pole.

Seismic soundings on the ice-cap in June revealed an ice-thickness of 675 metres at an altitude of 500 metres 13 k.m. from the coast. This indication of a rock bed below sea-level further confirms the hypothesis that the Antarctic "continent" is in reality an archipelago.

It was reported on December 4 that relief supplies have reached Charcot Station, which had been isolated for more than 300 days.

## BELGIAN PLANS

The Belgian expedition to Queen Maud Land was scheduled to leave Antwerp on November 12 on two Norwegian sealers "Polarhav" (650 t.) and "Polarsirkel" (600 t.). The two vessels will each carry 225 tons of cargo.

Leaving Capetown about December 10, the expedition will scout for a suitable disembarkation site. Norwegian crews will assist in the unloading. Seventeen men will winter over at the new base, which it is expected will be at Breid Bay, on the Princess Ragnhild Coast, 70° 30' S., 23° E. The expedition plans to survey a mountain chain situated 150 k.m. inland, revealed on air photographs.

## RELIEF SHIP HITS ICE FLOE

When the F.I.D.S. relief ship "Shackleton" (1,100 tons), which left Southampton on October 1, struck an ice-floe "at speed" on November 30 while making towards the Hope Bay station, her No. 2 hold filled and some cargo was jettisoned.

The F.I.D.S. guard vessel, H.M.S. "Protector," raced to the "Shackleton's" assistance, and took off the scientists on board. On December 2 the two ships stopped while repairs were carried out in the lee of an ice-berg, before proceeding to South Georgia, where some dry-dock facilities are available.

Among those on board "Shackleton" is the Governor of the Falkland Islands, who joined the ship at Port Stanley.

On the "Biscoe," which left on October 21, in addition to new recruits for the bases, is Professor Cragg of Durham University. Professor Cragg, who is an ecologist, will be carrying out field work at several of the bases. Dr. Adie, F.I.D.S. chief geologist, will also tour the bases this summer. The two ships carried a total of 50 new personnel.

### FIELD WORK

Routine work, including special I.G.Y. observations, has kept all the bases busy, but this has not precluded extensive field work.

Parties from Hope Bay have visited Cape Longing, James Ross Island, Vortex Island and the East Russell Glacier, and preparations have been completed for a journey southwards along the plateau.

From the Graham Coast base (Base J) the triangulation scheme has been extended northward as far as Nunez Point, but field parties were forced to return in early September by the rapid break-up of the sea-ice. One party was forced to follow a very difficult overland route. An easy route up on to the plateau has still not been found, and lack of sea-ice has prevented further

reconnaissance.

Surveyors and geologists from Base O (Danco Coast), using boats, recently spent two months working in the Paradise Harbour area and on Bryde and Lemaire Islands. Routes on to the plateau were reconnoitred and glaciological observations made. The party at the Cape Reclus refuge hut spent seven weeks surveying up on the plateau, returning on September 19.

### WEATHER PERMITTING

At Base W (Loubet Coast) local dog-training trips have been made, whenever weather has permitted. The medical officer has used these journeys for testing new dog-rations and continuing work on dog physiology.

The two Base Y (Horseshoe Island) men who arrived at W at the end of June left again a few days later and reported their arrival at the Base Y refuge hut on Blaiklock Island on July 14. On the way they had experienced unusually low temperatures down to  $-44^{\circ}$  F.

Base W surveyors continued working in Lallemand Fjord, making an astrofix (in July), and measuring a new base-line (in August) after one of the survey beacons had been blown away.

Base G (Admiralty Bay) and H (Signy Island) have also been hampered by bad weather. On one trip in August, Base G surveyors were able to travel on only six out of seventeen days spent in the field, and observations were prevented on three of the six days by fog and on a fourth by drift. The weather improved later in the month and several depots were laid and a two-man party set out for the north-west of the island.

## Argentina Operates from Eight Antarctic Bases

To develop its programme of investigations in the Antarctic, Argentina is relying upon eight stations in the Graham Land area.

**The Orcades** (60° 40' S., 44° 46' W.), a magnetic and meteorological observatory since the year 1904; in 1958 it is proposed to instal an automatic tide gauge. The station is equipped with radio sonde.

**General Belgrano** (77° 58' S., 38° 50' W.), which among its equipment uses an automatic camera for photographing auroras; it is an ionospheric station.

**Esperanza** (Hope Bay) (63° 19' S., 56° 50' W.), a meteorological observatory with an automatic tide gauge.

**Teniente Camara** (62° 36' S., 59° 55' W.), a meteorological observatory.

**Deception** (62° 59' S., 60° 42' W.), a meteorological, seismographical (since 1950) and ionospheric station (since 1951).

**Melchior** (64° 19' S., 62° 58' W.), a meteorological centre.

**Almirante Brown** (64° 52' S., 62° 43' W.), a meteorological observatory with an automatic tide gauge.

**General San Martin** (68° 08' S., 67° 06' W.), a meteorological observatory.

The proposed base which it was intended to establish on Thule—Southern Sandwich Islands—could not be established owing to various local difficulties of the terrain.

The difficulties which beset the installation of an important electricity generating plant on Deception had the result that the cosmic ray station intended for Deception is being set up on Ushuaia (Tierra del Fuego).

Included in the equipment destined for the studies of the I.G.Y. are the ice-breaker General San

Martin and the oceanographic ships Bahia Blanca and Capitan Canepa.

The fields of geophysics to which especial attention will be given include aurora, geomagnetism, glaciology, oceanography, ionospheric physics, meteorology, seismology, ozone content of the air, solar radiation, atmospheric electricity and gravity.

In addition, Argentina is taking part in the plan of banding and ringing the Antarctic skua, to be carried out in collaboration with bases of other countries. It is a question of observing the migratory habits and distribution of the skua. Those taking part in this will capture adult and young specimens, band and ring them. The ringing will be carried out in numerical order, and the banding with bands of colours already agreed upon for each station. Records are to be kept of all observations of place, age, date, sex, etc. The U.S.N.C.I.G.Y. is correlating the observations.

Various Argentinian institutions are taking part in the Antarctic activities connected with the I.G.Y. as follows:

**The Argentine Antarctic Institute**, on the staff of which a prominent position is occupied by the geologist who specialises in glaciology, Senior Cesar Augusto Lisignoli, a graduate of the National University of La Plata, and a participant in the S.I.P.R.E. polar programme carried out in Greenland in 1956; the geologists, R. E. Dalinger and J. P. Di Lena, both with much field geological experience; the topographers, C. O. Mejias, O. Freitaj, E. Ricci, and S. Mangione; in addition to

technical staff.

**Maritime Meteorological Service**, with a staff of observers and computers.

**National Meteorological Service**, which is co-operating with various meteorological observers.

**General Staff of the Army**, with numerous specialists.

**General Staff of the Navy**, which has also appointed men with special technical and scientific knowledge.

The Argentine Antarctic Institute, founded in 1951, was transferred in January 1956 to the Marine Ministry as an autonomous scientific and technical organisation, to study the nature of the Antarctic. To carry out its purposes, there are under construction in Buenos Aires two chemistry laboratories, two for geology, one for biology, a refrigerating chamber for the preservation of biological specimens, a taxidermic workshop and a museum, a photographic laboratory, a map room, a library, a conference hall, work-rooms, a depot for instruments and equipment, and the administrative offices.

The Army Ministry has announced that a new refuge-hut has been constructed on the Roca Islets (67° 49' S., 68° 40' W.) in Marguerite Bay, Graham Land. The new post, which was inaugurated on October 26, is located about 6 k.m. from the General San Martin base.

A press report from Buenos Aires says that the Argentinian Government has announced that 10-day tours to the Graham Land area next January and February are to be promoted by the merchant marine. Each trip will be limited to 50 people, who will fly to Ushuaia, Tierra del Fuego, and then go by sea. The tour will "closely follow" the boundaries of the South Shetlands and Graham Land. Sledges are to be used where needed. The cost to passengers will be 12,000 pesos (about a hundred guineas).

## The Sub-Antarctic

### KERGUELEN (FR.)

The "Gallieni" left Tamatave on November 2 to carry out the annual Kerguelen relief. The vessel visited the Crozet Islands on November 10-12. Aerial photographs of the group were taken from the Djinn helicopter.

"Gallieni" was due to arrive at Kerguelen on November 16. In addition to the relief party there are about 15 experienced men for the seal-oil plant in course of erection.

France foresees not only scientific research at Kerguelen but economic exploitation of the archipelago.

### ANTARCTIC HONEYMOON

The factory-manager and his fiancée are also on board, and are to be married on their arrival at Port aux-Français: the first wedding on Kerguelen. The young couple will leave Kerguelen on the "Kista Dan" when it returns from Mawson.

On October 23, at the island of Nouvelle Amsterdam, like Kerguelen under the control of Terres Australes et Antarctiques Françaises, a meteorologist fell from a cliff overhanging the sea and was drowned. His body could not be recovered.

### MARION ISLAND (S.AF.)

The S.A.S. "Vrystaat" sailed from Simonstown for Marion Island on August 12 and returned on August 21. Mr. du Toit of the Weather Bureau and five other passengers were brought back from the island. Dr. J. F. Nagel and Mr. A. B. Crawford accompanied the "Vrystaat" and carried out a number of radio sonde ascents.

### MACQUARIE ISLAND (AUST.)

Major Frederick V. Baines (40), a Victorian, has been appointed Officer-in-Charge at Macquarie Island for 1958.

Two giant petrels banded at Macquarie as chickens in February were recently recovered in Chile.

Macquarie's domestic live-stock are flourishing. Five lambs were born in September. Geese, ducks and fowls are laying well. A snow-white bull calf was born on October 6. The party has five gallons of fresh milk daily.

### CAMPBELL ISLAND (N.Z.)

The "Holmglen" carrying out the annual relief left Wellington on November 7 and returned on November 18, the actual relief operation being completed in the record time of 21 hours. The new Officer-in-Charge relieving Mr. G. Kape is Mr. George Timpson (35) of Blenheim.

The new station is practically completed, but another carpenter has gone to the island to put on the finishing touches. There are now ten men on the island, including five scientists. Four are second-year men.

Dr. A. M. Bailey, American ornithologist, with one or two Wellington scientists, will spend about two months on Campbell Island to gather specimens for an exhibit at the Denver Museum.

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### ROSS SEA MAP

A map of the Ross Sea region has recently been published by the Department of Lands and Survey, Wellington. The map is on a scale of 1:4 million with two insets, Antarctica in its relation to Australia, New Zealand, etc., and an enlargement of the area in which the New Zealand party will do most of its work.

The map, folded in a neat cover, or flat, is printed in six colours. It is available from book sellers, district offices of the Department of Lands and Survey, or at Head Office, Lands and Survey, Wellington. Price 5/- per copy.

### MORE VETERANS PASS

**DR. WILHELM FILCHNER** died at Zurich on May 7 aged 79. Filchner in 1911-12 led a German expedition in the "Deutschland" (Captain Vahsel) to the Weddell Sea. Land, the Luitpold Coast, was discovered. Halted by what is now the Filchner Ice Shelf, the 35 Germans built a base on a section of the ice-shelf which on February 18 broke out to sea. Most of the stores were reloaded just in time. On March 6 the "Deutschland" was frozen in and drifted for nine months, a prisoner of the ice. Filchner, Konig and Kling made a hazardous eight-day sledge journey of over 60 miles in mid-winter (1912) across the ice, proving Morrell's "New South Greenland" to be non-existent.

In later years Dr. Filchner carried out extensive exploration in Asiatic Russia, China and Tibet.

**PROFESSOR R. N. RUDMOSE-BROWN** was naturalist to the Scottish Antarctic Expedition under Dr. W. S. Bruce in the "Scotia" in 1902-04, during which a magnetic observatory was erected on Laurie Island and land discovered on the east of the Weddell Sea, between 16° 30' W. and 37° W., north of Filchner's later discovery. This was named Coats Land after the expedition's sponsors. Rudmose-Brown wrote an account of the expedition, "A Naturalist at the Poles." He was 77 when he died on January 27.

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When the Hallett radio man was "working" an amateur in Los Angeles his penguin stories were received with incredulity till he said, "I'll open the door and let you hear them." He then played a tape recording he had made a few days before of the penguins' raucous cries. "Man!" exclaimed the amazed operator 10,000 miles away, "how do you keep them out of the place?"

## The Whalers

The Norwegian Whaling Gazette reports that the 1956-57 Antarctic pelagic whaling season was eleven days longer than in 1955-56, chiefly owing to the great decline in the catch from March 1. The average catch per day dropped to 127.8 blue whale units, whereas the average from the beginning of the open season until February 28 was 237.6 units.

The total number of whales processed was 32,723. The percentage of blue whales to the total catch continues to drop. In 1932-33 it was 80.7 per cent.; in 1955-56, 6 per cent., and last season only 5.5 per cent.

The total catch of 32,966 whales comprised 14,008 by the nine Norwegian expeditions, 5,281 by the three British expeditions, 8,093 by the five Japanese expeditions, and 1,596, 1,434, and 2,554 by the single South African, Dutch and Russian expeditions respectively. In addition, 3,128 whales were caught from land stations in South Georgia.

Twenty expeditions are now headed for the Antarctic whaling grounds for the season which opens on January 7: nine from Norway, six from Japan, three from Britain, and one each from the U.S.S.R. and the Netherlands.

### IN MEMORY OF BYRD

Of all the tributes paid to the late Admiral Byrd, perhaps that which he would most appreciate was offered by the men at the South Pole itself.

Dr. Paul Siple, scientific leader at the Pole Base, reports that the men there decided to keep their flag at half-mast beyond the official mourning period and until the annual sunset, when the flag was lowered for the duration of the winter night. "We thought this was the one spot where he would have liked to have a special observance," Dr. Siple said.

## BOOKSHELF

Walter Sullivan's fine book "Quest for a Continent" (reviewed in "Antarctic," June, 1957) has now been published in England by Secker and Warburg and retails in New Zealand for 30/-.

Admiral Dufek's book "Operation Deepfreeze" is unfortunately not published in England. The American edition (Harcourt Brace and Co. \$5.00) has been deservedly well reviewed.

"ANARE," *Australia's Antarctic Outpost*, by Phillip Law and John Bechervaise, 152 pages, ill., Melbourne, Oxford University Press, N.Z. price 54/-.

This beautifully produced volume is of both immediate and lasting value. It opens with a 14-page sketch of the history of Antarctic exploration, which naturally stresses Australian activity and Australian interests but rather cavalierly dismisses the explorations of Wilkes, the Thorshavn expedition, Ellsworth and others in Australian Antarctic territory.

The major portion of the book consists of nearly 130 splendid photographs, 16 in full colour, with really explanatory text. The arrangement is rather confusing: what are pictures and text descriptive of Davis Station doing under "The Journey South"? But it all adds up to a magnificent panorama of the Antarctic landscape and of life in Antarctica. The few maps are helpful and the index adequate. Take one look at "ANARE" and you will want it.

"EXPEDITION SOUTH," W. Ellery Anderson: London, Evans Brothers Ltd., 200 pages, ill., N.Z. price 22/-.

Anderson was leader of the F.I.D.S. party at Hope Bay, Graham

Land, in 1954-55. In this personal story he gives a good picture of life at a permanent Antarctic base, highlighted by an eleven-week sledge journey to Cape Alexander, some 300 miles south, which showed that the Antarctic can be as savage and unpredictable as ever.

Major Anderson remained the "officer and gentleman" and one senses strained relationships. The man who took his dinner-jacket with him and never quite became accustomed to taking his turn as gash-hand must have been an unusual person to serve under in the Antarctic. He is a little critical of his associates—not ungenerously—and of the F.I.D.S. organisation.

Major Anderson has a fitting sense of historical association, and on the whole writes well. But there is no index and the maps are inadequate.

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**"GLACIER ISLAND,"** George Sutton: London, Chatto and Windus, 216 pages, ill., N.Z. price 21/-.

This account of the British South Georgia Expedition—1954-55—is primarily a mountaineer's book. But South Georgia is Antarctic in character, and of special interest because of its associations with Shackleton. So not only alpinists will enjoy this unusually well-written account of a small but dauntless party's adventures.

After four months of frustration their mood was one of grim determination ("The climbing of a high mountain had become no longer a pleasure, but a duty"); but Sutton did not lose his sense of beauty and he transmits to the reader much of the loveliness of the rugged alpine country as well as its relentless cruelty. Even the non-mountaineer never loses interest although there is no spectacular climax of either achievement or disaster.

New Zealanders may in this book get a preview of the conditions our

own geologists and mountaineers may face these next two summers in Victoria Land. One point to be seriously pondered is Sutton's implied support of Sir John Hunt's dictum "Science and mountaineering do not mix."

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### PENGUINS HIT BACK

Many bird-lovers will rejoice to know that the much publicised airlift of 66 penguins to American zoos was not quite a one-sided battle.

During the preparations for loading at McMurdo one side of a box dropped off spilling 16 Emperors on to their native ice. In a last bid for freedom they made off in all directions with flippers flailing wildly. In the ensuing chase many amateur wrestlers fared badly and chief penguin-catcher Marks caught an upper-cut on the chin which inflicted a long cut. All the birds were re-captured, unharmed.

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### GIRDERS AWAY!

When Walter Sullivan in a direct radio-telephone conversation with the men at the South Pole on March 21 asked whether they had made any trips away from the camp "there was," he says, "a general laugh." This is why.

One of the last drops of the season was a bundle of girders for the barracks building. Normally, they pursued the falling parachutes in their weasel and cut the parachute shrouds before the cargo was dragged far afield. On this occasion the weasel battery was dead and a stiff breeze blowing. Parachute and girders disappeared over the horizon before the vehicle could be started. It took a day of travel before the girders could be found—twenty-five miles away.

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