

ANTARCTIC

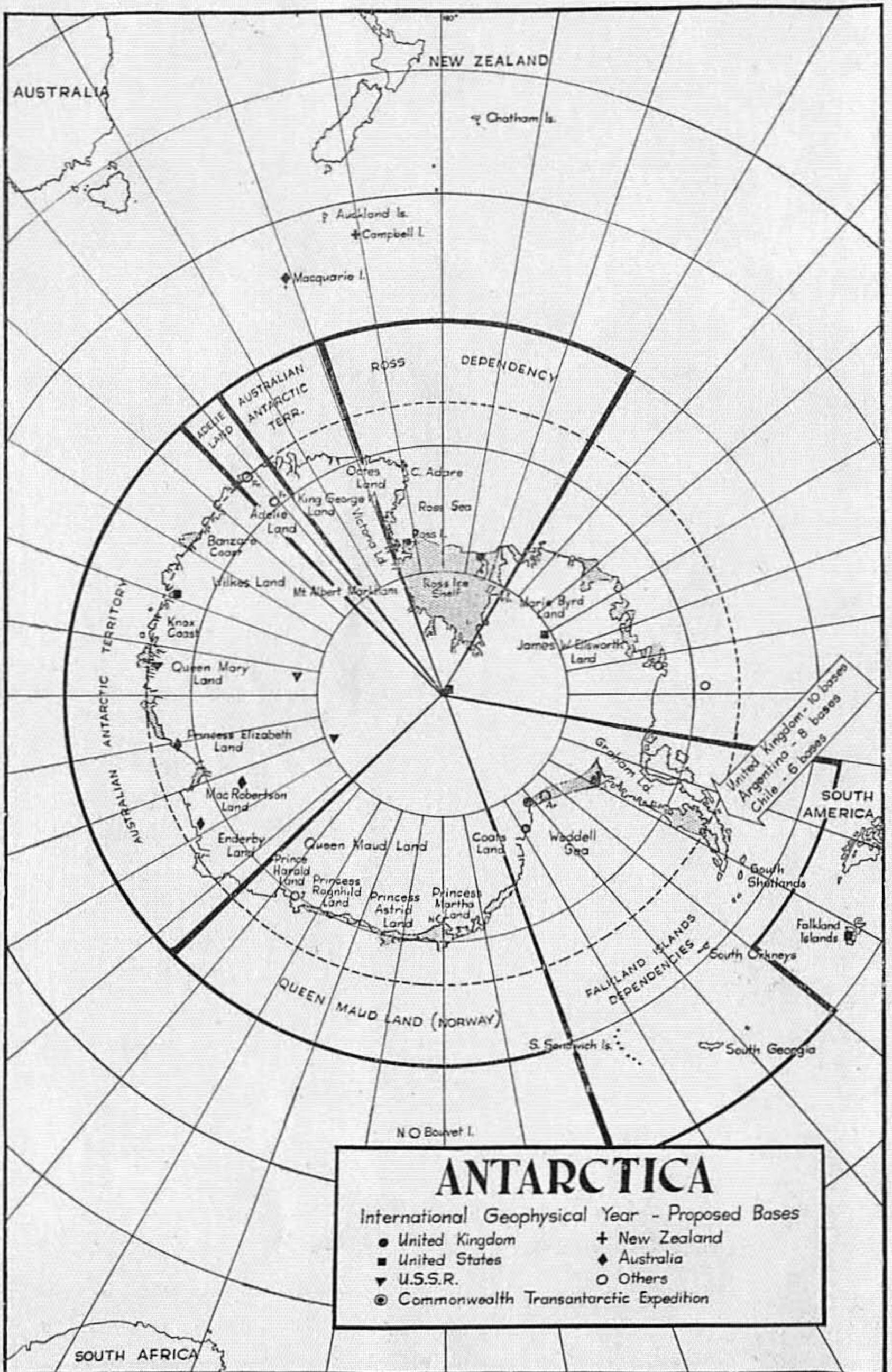
A NEWS BULLETIN
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PRAM POINT FROM THE AIR

Scott Base centre foreground: stores dump on right. Air-strip immediately beyond Pram Point. On left, Observation Hill, and the Gap, leading to Hut Point. In the distance, the mountains of Victoria Land across McMurdo Sound.

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AUSTRALIA

NEW ZEALAND

Chatham Is.

Auckland Is.

Campbell I.

Macquarie I.

ROSS

DEPENDENCY

AUSTRALIAN
ANTARCTIC
TERR.

ADELIE
LAND

Oates Land

C. Adare

King George Land

Ross Sea

Adelle Land

Banzaro Coast

Ross I.

Wilkes Land

Victoria Id.

Mount Albert

Marie Byrd Land

Knox Coast

James Land

Queen Mary Land

Elsworth Land

Princess Elizabeth Land

Graham Land

MacRobertson Land

United Kingdom - 10 bases
 Argentina - 8 bases
 Chile - 6 bases

SOUTH AMERICA

Enderby Land

Queen Maud Land

Coats Land

Weddell Sea

South Shetlands

Prince Harald Land

Princess Ragnhild Land

Princess Astrid Land

Princess Martha Land

FALKLAND ISLANDS
DEPENDENCIES

Falkland Islands

QUEEN MAUD LAND (NORWAY)

South Orkneys

S. Sandwich Is.

South Georgia

N O Bouvet I.

SOUTH AFRICA

"ANTARCTIC"

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NEW ZEALAND GEOLOGICAL SURVEY EXPEDITION

An eight-man Geological Survey expedition to the Ross Dependency was approved by the New Zealand Cabinet on July 1, and on July 12 the U.S. Navy agreed to take the party to Cape Hallett in the "Burton Island" leaving Lyttelton in late November.

The geologists are Dr. H. J. Harrington (leader) and B. L. Wood, I. C. McKellar and G. J. Lensen of the Geological Survey, D.S.I.R. Stores officer is A. J. Heine of the Dominion Physical Laboratory, D.S.I.R., who last summer worked on the Skelton Glacier with the geological field party of the Trans-Antarctic Expedition (see "Antarctic," Vol. I, No. 6). The surveyor is E. L. Fitzgerald of Lands and Survey Department, and W. G. Croll and B. Hearfield of Christchurch are assistant surveyors.

The expedition breaks new ground in that it is the first official New Zealand Government expedition sent to the Dependency (T.A.E. is a private company, and I.G.Y. is nominally organised by a Royal Society Committee). For the first time since the Dependency was handed over by Britain, the Government has accepted the responsibility for making topographic and geological maps of it.

Dr. Harrington has kindly given us this pre-view of the party's activities:

"A rough comparison may be made of South Victoria Land and New Zealand. Both lands are of about the same length, and South Victoria Land has a narrow waist in a similar position to Cook Strait. Ross Island is analogous to a large island at the eastern entrance to Cook Strait, and the geological work in South Victoria Land has been done from bases on its south-western side. There has been some reconnaissance work in the vicinity of the 'Strait,' and the mountains have been seen from a distance by men sledging and flying across the Ross Shelf Ice (which is analogous to the Canterbury Plains) and a little has been seen of the equivalent of the 'East Otago Coast.' North of 'Cook Strait' there have been landfalls at points on the mainland and on offshore islands. An inland journey to the Magnetic Pole has been done by Mawson's party, and at Robertson Bay a strip of coastline analogous to that between North Cape and Cape Reinga has been examined by Borchgrevinck, Priestley and others.

"In the 1957-58 summer the T.A.E. party, to which two geologists (Messrs. Gunn and Warren) are attached, will pass westwards through the 'Strait' using dogs, planes and tractors. It will then travel southwards along the west side of 'the Alps' to about a position west of 'Mt. Cook' (Mt. Markham). The Geological Survey expedition, using back-packs and man-hauled sledges, will be landed in 'Northland' at about the position of 'Whangaroa Harbour' (Cape Hallett and Moubray Bay) to fill in a blank on the map in that region. What we will do in detail depends on the glacier access routes that are available, but if it is possible we will try to get northwards towards Robertson Bay to link with the work that was done there by Priestley. We hope also to do a sortie inland to the west and, if there is any time left, another to the south. A few photographs taken by the Americans when they built Hallett Station do not show enough for possible access routes to be picked out, but the writer is being flown over Cape Hallett in late October in an American plane to get a bird's-eye view of the topography. The slowness of back-packing and man-hauling will limit the size of the area that can be examined on the ground. Nevertheless, we should be able to make topographic and geological maps of a fair-sized district, and to tackle some important problems such as the age of the Robertson Bay greywackes and their relations to the granitic basement of East Antarctica, and the Beacon Sandstone. If there are any dull waking moments we can meditate on the problem of how coal seams formed in a land that now has several months of darkness."

partment as well. It was Mike who 'sounded the alarm' that sent everyone dashing to witness the most splendid auroral display since the beginning of the Antarctic night."

These New Zealanders . . .

A message radioed to the U.S. Navy Information Service from the Cape Hallett Station, where three New Zealand scientists are sharing the work of an I.G.Y. station with 12 Americans, makes pleasant reading.

An account of the multifarious duties of Bob Northcutt ends:

"Among his many other accomplishments, Bob is also runner-up in the beard-growing contest, second only to Clayton "Bill" Ingham, the senior member of the New Zealand scientific staff, all other contestants having lost by default as a result of shaving. Bill's home is in Petone, New Zealand. His keen interest in, and tireless pursuit of many scientific projects is truly inspiring. Mild in nature but a human dynamo of activity, Bill is always dashing about, beard shrouded in icicles, making delicate adjustments to the sensitive seismographs or magnetic recorders.

"This versatile gentleman also has charge of the all-sky camera and spectrographs, which record auroral displays, their intensity and colour. In spite of these recording devices, visual observations must also be made. After his already busy day Bill trudges up to the observatory tower to relieve John Humphries, his New Zealand associate scientist, for his six-hour turn watching for aurora.

"John, of Christchurch, New Zealand, must then return to his own ionospheric science to compute the day's results his radio ionosphere sounder has automatically recorded on microfilm. John is as much at home at the controls of this complicated electronic giant as you would be behind the wheel of the family auto.

"John's assistant and right-hand man, technician Mike Langevad, also of Christchurch, not only assists in computing the records and maintaining this complex equipment, but also assists Bill in the aurora de-

THE SUN RETURNS TO SCOTT BASE

The mid-winter blizzard which battered the McMurdo Sound area from June 13 to 17 accumulated so much snow about the station buildings at Scott Base that it was possible to walk with ease on to the roofs of several of the huts.

The dogs rose with the accumulated snow, but this reduced the usable length of their six-foot chains to two feet or less. As soon as it was possible to work outside, twelve hours of strenuous toil shifted the dogs to a new position, once more spanned above worry-level.

When the blizzard blew itself out, the two huts at the airfield beyond Pram Point (see cover picture) were both below snow level, and all that could be seen of the Auster was the tip of one end of the propeller. By the time man-power was available to raise the plane, the weight of snow, probably aided by tidal movement of the floating airfield, was already producing stresses on wings and fuselage. But by the evening of June 19 a hole nine feet deep in places had been dug all round the aircraft and the tail had been raised two or three feet.

Damage to the Auster was confined to numerous shovel holes in the fabric and a damaged undercarriage leg.

The necessary repairs were carried out by Tarr, and the plane was then satisfactorily flown and tested.

The fuselage of the Beaver which is tied down near the base site did not accumulate snow owing to the more exposed position and the consequent lack of drift. The rest of the aircraft is securely stowed away in the Beaver crate, together with the aircraft spares.

In the course of work preparatory to starting up the wide-tracked tractor affectionately known as "Gert," there was a flare-up due to some oil having become ignited by a blow lamp. Prompt action was taken with fire extinguishers and all that happened was that some of the wir-

ing was damaged.

Tarr worked for a whole week to dig out the air-strip workshop, buried two feet under snow consolidated to rock-like hardness. With a terracing blade fixed to a tractor he made a hole ten feet deep along one side of the workshop. A ramp twenty yards long led down at either end. Tarr cleared 300 c. yds. of snow—at a temperature of -30° F. and in total darkness. Once one side was clear, both ends were dug out and a terylene rope attached round one end of the building. A winch capable of a straight pull of almost four tons was used to pull first one end and then the other sideways until the whole workshop lay in the excavated hole at the foot of the ramp.

Further winching towed the building up one ramp and to a position more exposed, where it is less likely to be snowed in.

THE SUN RETURNS

On Saturday, August 17, just before midday, the sun was clearly seen shining on the top five hundred feet of Mount Rucker, a 12,000 ft. peak in the Royal Society Range, some fifty miles west of Pram Point. And again on Monday, while flying at two and a half thousand feet over McMurdo Sound off Cape Evans, Claydon and Miller saw the sun low on the horizon, but only through very heavy cloud; one hour later, Cranfield and Balham saw a refracted sun beneath the heavy cloud layer on the northern horizon when they were flying very low over Cape Chocolate. But on August 21, instead of a view of the surrounding mountains gilded by a long awaited sun, Scott Base experienced one of the most unpleas-

ant days of the whole winter, with the thermometer showing 65 degrees of frost, and a forty-mile-an-hour wind lifting all the newly fallen snow and thus reducing visibility at times to ten yards.

However, all the members at Scott Base were elated on August 23 when a ground fog cleared to reveal the distant peaks of the Royal Society Range and the summit of Mount Discovery bathed in golden sunlight.

It was some days later before the sun actually shone on Scott Base itself. But out on the bay ice of McMurdo Sound there is an uninterrupted sea-level horizon to the north, and dog teams went out to welcome the sun. Those who were unable to leave base climbed Observation Hill, on which the sun shone for nearly four hours.

WATCHING THE WEATHER

Conditions have in general been less rugged than anticipated. For the months March to July, the Scott Base temperatures in degrees of frost fahrenheit have been:

| | Mean Daily Maximum | Mean Daily Minimum |
|-------|-----------------------|-----------------------|
| March | 29 | 42 |
| April | 41 | 57 |
| May | 41 | 59 |
| June | — | 55 |
| July | 46 | 63 |

| | Temperature (Degrees of Frost) | Temperature (Degrees of Frost) |
|-------|--------------------------------------|--------------------------------------|
| March | 13 | 67 |
| April | 22 | 76 |
| May | 18 | 81 |
| June | 20 | 83 |
| July | 32 | 91 |

All members of the expedition have been busy preparing for the sledging season due to begin in late September or early October. Next summer it is intended that in addition to the six dog teams which will be setting out on their journeys over the ice cap, a tractor party will also attempt to reach the plateau.

With this in view, Bates and Ellis have been giving the Ferguson tractors a complete overhaul. The steel with which the tractor-drawn sledge runners are shod has been replaced by tufnol, a phenolic resin reinforced with layers of linen which sheaths the runners of the smaller dog-drawn Nansen sledges.

Almost perfect transmitting conditions recently enabled Fuchs at Shackleton and Hillary at Scott to talk for over an hour about problems affecting the planning for the trans-continental journey.

EXPLORATION AND MAPPING

Throughout the winter months, the surveyors at Scott Base have been occupied in preparing maps from data collected during their journeys last summer. Surveyors Miller, Brooke and Carlyon have produced a map of the Skelton Glacier and Neve—an area of almost two thousand square miles—from the field books of sun shots, azimuths, rounds of angles, elevations and photographs which they brought back with them from that area at the end of March. A small-scale version of their revisions of and additions to the existing maps has already been transmitted by radio facsimile to New Zealand and will be incorporated in the new map of the Ross Dependency. The projected plans for the survey parties in the coming season will give them the opportunity to map a vast amount of new country among and beyond the mountains of Victoria Land.

TENT REPAIRING

The repairing and overhauling of the eleven tents which, for almost five months, will be all that will stand between the sledgers and the fury of the chilling, bitter winds of the Polar Plateau, has been a long task for Marsh, Douglas and Ayres.

The tents are pyramid-shaped, with a stout bamboo pole at each of the four corners, meeting at the apex in wigwam style. For some

reason these poles, which are about one and a half inches in diameter, began splitting in some cases almost from top to bottom. To render them fit for use with reasonable reliability they had to be bound with twine and tape for almost every inch of their nine feet.

The sewing machine at Scott Base has whirred incessantly for the past two months, but will get no respite as all of the field men are now working on their clothing issue for the summer journeys.

ICE CONDITIONS

Claydon and Cranfield flew as regularly as possible through the winter, except while the Auster was immobilised by the June blizzard, to study the rate of ice formation over McMurdo Sound and the effect on the new sea ice of the northerly and southerly winds. This record will be valuable if and when it is necessary to carry out mid-winter navigation in the Ross Sea with a view to entering McMurdo Sound four or five months before it is normally practicable to do so.

A flight northward on August 9 as far as Cape Royds (25 m. north of Scott Base) disclosed that the Sound was freezing over from the west. A comparison with the ice-front in the latter part of July showed an increase of eight to ten miles from the west, although in a north-south direction the ice front was only seven miles further north than it was when the last vessels left McMurdo Sound in early March.

However, firm bay ice had formed all along the coast of Ross Island as far north as Cape Royds. This was reassuring for the dog sledgers who were planning visits to that area as part of their training schedule.

There was still twelve to fifteen miles of open water directly west of Cape Royds and the ice front followed in a curve southward to southwestward, from Cape Royds to a point seven miles due west of

Erebus Glacier Tongue and then north-westward towards Granite Harbour; the entire western part of the Sound was firmly frozen. It is expected that until as late as October or even early November, more of the now open water will freeze over, but the watch on the rate and eventual limits of the freezing being maintained by Antarctic Flight will be a valuable study.

AURORAL DISPLAYS

Hatherton, chief scientist and auroral observer, has made a comparison of the incidence of auroral displays with the possible times in which they might have been observed. Of all the clear days from the middle of May to the middle of August, there were only two on which an auroral display did not occur and auroral activity was present for about one-third of that same time. Assuming that the same degree of incidence was maintained during periods of overcast conditions, this shows that there are relatively few periods free from some degree of aurorae.

The displays have not been consistently colourful or sensational.

THE GEOLOGISTS

The geologists Gunn and Warren completed a detailed examination of the rocks from the Skelton Glacier area where last summer they collected samples. During this period, they climbed the 9,100 ft. Mt. Harmsworth in order to collect further samples, observe dips and strikes, photograph folds of strata and generally assemble that data which, when now integrated, gives a comprehensive picture of the geological structure of three to four hundred square miles of an entirely new portion of the Continent.

At the end of last February they brought back with them from the Skelton Glacier 150 samples of the granites, greywackes and limestones which they found in their 70-mile journey up and down the glacier. From these they have prepared 80

sections for petrological examination.

THE RADIO OPERATORS

One facet of the activities of the expedition which has, with the exception of the sledge set, been a great success, is that of radio communications.

On every day except Sunday, radio schedules are kept with New Zealand. They begin at ten each morning with a telegraphic circuit with Awarua Radio, followed by a radio telephone circuit through Makara Radio and Himitangi Radio. The same round begins at 4.00 p.m., continuing until 6.30 or 7.00 p.m. according to the amount of traffic. In addition to this stock procedure which accounts for a variety of telegrams, press despatches, personal messages and calls, as well as talks for the N.Z. Broadcasting Service and B.B.C., there are the many schedules with other Antarctic bases.

"ENDEAVOUR"

It is intended that the "Endeavour," after loading in Wellington, will sail for Dunedin on December 14. She will spend two days there and will finally leave for McMurdo Sound on December 18. It is anticipated that the vessel will reach McMurdo Sound about January 1, 1958.

Captain Kirkwood intends to give assistance in making the necessary repairs to the old huts at Cape Evans and Cape Royds. This work has been approved by the New Zealand Cabinet.

INTERNATIONAL SPORT!

Table tennis, pool and shuffleboard teams from Scott Base visited the American Base at Hut Point recently in an Antarctic International Indoor Sports Meeting.

The hard-playing Americans were victorious in two out of the three sports contested. They won the table tennis and shuffleboard, but

lost the pool.

The New Zealanders taking part were Trevor Hatherton and Richard Brooke—table tennis; Sir Edmund Hillary and Bob Miller—shuffleboard; and Harry Ayres and Murray Douglas—pool.

ANTARCTIC SOIL

When Mr. A. S. Helm, secretary of the Ross Sea Committee, returned from the Antarctic in March, he brought back a biscuit tin containing a mass of dry stones and dust gathered near Scott Base.

Chemical analysis of this material by the Soil Bureau of the D.S.I.R. indicated that the sample is a soil, though not necessarily a present-day soil: it might be a remnant from a milder climate of past ages. However, this point was resolved by the finding of organisms such as mosses, bacteria and rotifers in the sample, types that would lie dormant for most of the year and become active when surface temperatures rose above zero. During these periods the organisms would draw nourishment from the minerals as well as from the air and in return give back substances that had passed through their systems. This exchange, though small, is the necessary link with living material that is part of the requirement for soil.

Sufficient has been done to show that the material could be used to grow plants in a glasshouse. The necessary movement of water would rapidly deplete stocks of nutrients and fertilisers would probably be required after the first or second crop.

Six dog teams and three tractor parties are to set out during the latter part of September in preparation for the coming long spring journeys. Seals will be killed to replenish meat supplies and information on routes will be gathered. Men and dogs, Hillary reports, are "fit and keen to go."

I.G.Y. PROGRAMME

The five New Zealand scientists who form the I.G.Y. component of the party at Scott Base have been carrying out their planned programme in Aurora, Geomagnetism, Ionosphere, Seismology, Radio Propagation and Meteorology.

Twelve men have been selected from 80 applicants to relieve the I.G.Y. personnel at Scott Base and at Cape Hallett:

SCOTT BASE

The Scott Base party will be increased to nine and will be in sole charge of the base when the Trans-Antarctic Expedition returns to New Zealand.

Mr. L. H. Martin, 36, Dunedin, Leader: Mr. Martin is district engineer of the N.Z. Broadcasting Service in Otago and Southland. He was a member of the summer party at Scott Base last year.

Mr. D. C. Thompson, 24, Assistant Meteorologist: completing his M.Sc. in physics at Victoria University College, Wellington.

Mr. G. G. Midwinter, 24, Dunedin: completing his M.Sc. in physical chemistry at Otago University.

Mr. A. L. Burrows, 38, Technician at the D.S.I.R. Magnetic Survey, Christchurch, who has had wide experience in magnetics at field stations throughout the Pacific.

Mr. I. M. Gibson, 22, Radio Technician with the Post and Telegraph Department, Wellington.

Mr. R. H. Henderson, 31, Instrument Development Technician at the D.S.I.R. Dominion Physical Laboratory, Wellington.

Mr. R. M. Robb, 29, Diesel Engineer, Timaru.

Mr. P. A. Yeates, 36, Ship's Radio Officer, Wellington.

Mr. M. J. H. Speary, 30, Palmerston North, Cook.

Burrows and Robb will fly south in a U.S. aircraft early in October to strengthen the present Scott Base party when the members of the Trans-Antarctic Expedition are in

the field. The rest will travel south in H.M.N.Z.S. "Endeavour."

CAPE HALLETT

This year the leader of the scientific party at the joint U.S.-N.Z. base at Cape Hallett will be a New Zealander. He is—

Mr. K. J. Salmon, 34, Radio Engineer with the Civil Aviation Administration, Wellington. He has had wide experience in the maintenance and operation of radio, radar and navigational aids. Mr. Salmon has left for the United States for two months' specialised training in the use of American scientific equipment of the type installed at Hallett Station.

The other New Zealanders at Hallett will be:

Mr. G. A. M. King, 28, Geophysicist at the D.S.I.R. Geophysical Observatory, Christchurch.

Mr. K. A. Bargh, 34, Senior Technician at the Division of Nuclear Sciences, D.S.I.R.

All three men will travel by U.S. transport early in the New Year.

Japanese Plans

The names of members of the wintering party, J.A.R.E. 1957-58, were announced on August 28. The leader is M. Murayama (39), a noted mountaineer, who was a member of the 1956-57 summer party. His party will comprise 4 meteorologists, a seismologist, a geographer, a geomagnetist, 2 ionosphere observers, an aurora observer, a cosmic ray physicist, with 2 carpenters, 3 engineers, a radio operator, a cook and a doctor.

The expedition ship "Soya" is due to leave Tokyo on October 21, and travelling via Singapore and Capetown, is expected to reach Showa Base about January 8. The new summer party will total 33, under Prof. Nagata as expedition leader. One or two new huts will be constructed.

SLEDGING FROM F.I.D.S. BASES

Sea ice has been more abundant and reliable this year than last and more field work has consequently been possible, but severe gales restricted activities in May and most bases reported damage to roofs and aerals during this period.

One sledge party from Hope Bay made two journeys to the eastern end of the Detroit Plateau and laid a 30-day depot. The contents of an old F.I.D.S. depot laid there in 1946 were found to be in perfect condition. Parties have been staying at View Point throughout the winter, and a survey party was landed on James Ross Island, by the "Shackleton" in March.

From Admiralty Bay, survey parties have visited the southwest corner of King George Island and the adjacent Nelson Island, and another party from Signy Island spent a fortnight on Coronation Island.

As soon as Base J was established on the Graham Coast, work was started on triangulation and geology. Reconnaissance trips have shown that there is no easy route up on to the plateau in this locality as the plateau edge here forms an unbroken north-south scarp face.

On Anvers Island a three-man party spent three weeks in April on a survey and glaciological trip to Lapeyrere Glacier, and another three-man party worked in the northwest of the island in May.

HUTS ERECTED

From the Danco Coast base, two refuge huts at Cape Reclus and Wilhelmina Bay have been occupied and a depot laid in Andvord Bay. Another refuge hut has been erected on Bryde Island, and a survey and geological party spent several weeks in April and May working at Paradise Harbour, Bryde Island and Bruce Island. A possible route up on to the plateau was observed. It was originally intended that three men should winter at Cape Reclus and the rest at the main base, but the main base has been temporarily

vacated as all personnel have been working in the field.

On the Loubet Coast, a four-man sledge party from Base W occupied the Andresen Bay refuge hut in March and April. Another survey and geological party left base at the end of May but their progress was held up by the May gales. A ten-day blizzard in June forced the geologists to return to the refuge hut without completing their programme, but the surveyors were able to sledge south along the plateau, down into Bourgeois Fjord and so on to Base Y, where they celebrated Midwinter's Day. They then returned to W with two men from Y, reaching base on June 28th. During the course of these journeys, the triangulation schemes of the two bases were linked up.

From Base Y a refuge hut was established on Blaiklock Island at the beginning of March, and has since been used by several field parties, including geologists who commenced work in this area almost immediately. Surveyors have been working on Pourquoi Pas Island.

I.G.Y.

The I.G.Y. programme has kept Bases A and F very preoccupied. New ionospheric aerals have been erected at A (Port Lockroy) and special measurements made on three "World Days" in June, in addition to the daily ascents.

At Base F, the F.I.D.S. geophysical station in the Argentine Islands, all the equipment except the tide-gauge is now in operation. In April some magnetic recordings were made, the solarimeters operated and the ozone spectrophotometer re-calibrated. The seismometer was also re-calibrated and put into operation. In May, the

Dewcell and Dobson Brewer frost point hydrometers were installed.

Two successful sonde flights were made on "World Days" in June, but the highest sonde flight in recent months was one of 78,000 ft. in March. In the same month, winds were measured by pilot balloon and theodolite up to 60,000 ft. Tidal waves were reported at this base on March 10—unfortunately before the tide gauge or seismometer had been installed. Surges in Stella Creek produced a rise and fall of 9 ft. at intervals of 5 minutes for four hours, and there was still some slight disturbance on the 11th. Surges were also reported at South Georgia on the same day.

At other bases, in addition to routine met. and sea-ice observations, the following work is in progress:

Permafrost observations and building research readings at several bases.

Medical research (chiefly physiology) at Bases D and W, and the re-testing of dog diets at W. Bird-ringing at several bases, chiefly Giant Petrels at Base H in the South Orkneys. A number of interesting recoveries have been reported from Australia and South Africa.

Glaciology which is also included in the I.G.Y. programme. The glaciologist at Base G, King George Island, has been working on the ice-cap and on two glaciers in the Admiralty Bay area, and has made measurements of snow accumulation and glacier movement.

Good progress has also been made with the glaciological programme at South Georgia.

SHIP MOVEMENTS

"Biscoe": In addition to relieving the bases and helping with the establishment of Base J and the refuge hut on Blaiklock Island, the "Biscoe" also visited the south of Marguerite Bay. She sailed from Stanley on May 3, via South Geor-

gia, the South Sandwich Islands, Tristan da Cunha and St. Helena, and arrived at Southampton on June 4.

"Shackleton": After assisting the "Biscoe" in the relief of the bases, the "Shackleton" carried out some hydrographic survey, and arrived back at Stanley on March 23. She then visited Montevideo and returned to Stanley, finally leaving on May 1 and arriving at Southampton on June 5.

H.M.S. "Protector" visited several bases during the course of hydrographic surveys.

"Oluf Sven" also visited a number of bases while landing the surveyors, providing ground control for the aerial survey.

BYRD'S SUCCESSOR

President Eisenhower on July 17 designated Rear-Admiral George Dufek, U.S.N. (ret.), as U.S. Antarctic Projects Officer. Admiral R. E. Byrd was, until his death in March, 1957, Officer in Charge, U.S. Antarctic Programs.

Admiral Dufek is a veteran of Antarctic exploration. As Lieut. Dufek he was navigating officer of the "Bear" in 1940, and on a spectacular flight discovered the mountain ranges of the Thurston Peninsula. Back with Byrd on Operation Highjump, 1946-47, as Captain Dufek, he commanded the Eastern Group exploring the same area. He served as Commander, Task Force 43, during Deepfreeze I and II.

In addition to and independent of being U.S. Antarctic Projects Officer, Admiral Dufek will again be Commander of the Naval Support Force, Antarctica. He will this season maintain headquarters both at Christchurch and at McMurdo Sound. His wife and two sons will reside in Christchurch during the current season's operations. The Dufek family will be warmly welcomed in New Zealand.

Busy Winter at Shackleton

When field activities ceased at the Trans-Antarctic Expedition's base, Shackleton, on the Filchner Ice Shelf at the head of the Weddell Sea, on March 25, the British explorers under Dr. V. E. Fuchs completed their vehicle workshop and began the systematic overhaul of every vehicle.

The weasels were surrounded by steel cables so that if tilted in a crevasse the vehicle can be moved sideways. Safety belts were fitted and other modifications made which experience had shown to be necessary.

The Otter plane was protected by being slid into a pit dug in the snow. The edges of the wings and the tail plane were protected by sloping timber wind-breaks, and the aircraft safely weathered winds of over 60 knots.

Much digging was required to retrieve items buried under the drift which in a few days completely covered anything left on the snow surface. At Shackleton any object, no matter how small or large, raises the snow surface to its own level in a very short time. As winter advanced, therefore, the camp area became a low dome on the surface of the ice-shelf.

The snow becomes packed hard by the winter winds and provides no shelter for the dogs. So a tunnel had to be dug for them: here electric lighting is installed and the temperature is constant between 0° and 10°F.

MOUNTAINS DISCOVERED

Air reconnaissance has shown that the Filchner Ice Shelf extends 200 miles south from Shackleton, as far as the western foot of a range of mountains lying beyond the Theron Range discovered in 1956 and reached by Blaiklock and Goldsmith, dog-sledging, last December. The highest peak, Mt. Faraway, is in 79°12'S., 28°56'W. The Theron and the newly-discovered Shackleton Range both lie in a general east-

west direction. They are separated by the Slessor Glacier, named after Marshal of the Royal Air Force Sir John Slessor, chairman of the Trans-Antarctic Expedition Committee. This glacier, one of the greatest in the world, is 25 to 30 miles wide and over 90 miles in length.

Future flying operations will depend on the weather. Temperatures are expected to remain below zero until late October, with wind, drift, snow and low cloud. Tentative plans are as follows:

September 1: Fuchs, Stratton, David and Geoffrey Pratt, Homard and Rogers with four vehicles and supported by the Auster plane will push 50 miles south from Shackleton, testing last season's trail. A cache of fuel will be laid and seismic sounding and gravimetric traverses carried out. The party will then move westward to examine chasms in the ice shelf.

September 10: Two men will be flown to South Ice to relieve the men wintering there.

September 27: Stratton, Blaiklock, Stephenson and Williams with two dog teams will be flown to the western end of the Shackleton Range, to find a route from the heavily crevassed ice-shelf up on to the steeply descending glacier ice to the south. They will carry out survey and geological work in the mountains, and will then be flown to South Ice on October 21.

September 30: A ground party, Fuchs, David and Geoffrey Pratt and Homard, will leave Shackleton for South Ice, arriving there probably about October 20. They will fly back to Shackleton, leaving the four vehicles at South Ice.

SOUTH ICE

South Ice lies 290 miles to the south of Shackleton in $81^{\circ}57'S.$, $24^{\circ}48'W.$ The route is a difficult one because it lies against the grain of the country.

Here three men, Lister, Blaiklock and Stephenson, have been living since the end of March. Their only outward link with the world beyond their limitless snow-field has been the daily radio contact with Shackleton Base. They have been carrying out regular meteorological observations and considerable glaciological work which has involved digging a pit 50 feet deep. Hand bores were also made to test the temperature at various depths: at 50 feet the average snow temperature was $-22^{\circ}F.$

Radio contact with them, reports Dr. Fuchs, has shown that they are "in excellent spirits" despite their isolation and the severe conditions under which they have been living. The average wind speed for May, for example, was 30 knots, while the temperature on July 29 was $-71^{\circ}F.$ At Shackleton on the same day it was $-64^{\circ}F.$

CROSSING PLANS

The South Ice depot will meanwhile be built up by air, with a small fuel depot at about $84^{\circ}S.$, 130 miles from South Ice. Except for the two men remaining at South Ice, the whole party will concentrate at Shackleton on October 22 to prepare for departure on the main trans-Antarctic journey on November 16.

On November 5 Lewis and New Zealander Haslop with Weston will fly the two aircraft to Halley Bay, the Royal Society base 200 miles north of Shackleton. There the Auster will be dismantled, the men returning to Shackleton in the Otter on November 8.

On November 29 the crossing party will leave South Ice with eight vehicles, arriving at the advanced depot on December 3. Here the air-

French Bases Active

Early in June a six-man journey from d'Urville Base across the continental plateau made possible seismic soundings on the ice-cap which revealed an ice thickness of 675 metres at an altitude of only 500 metres, 13 kilometres from the coast. The rock bed at this point is therefore clearly below sea level.

On a second winter journey, on August 21-27, six men with three weasels and sledges carried 3.5 tons of fuel and gasoline to Carrefour Depot, 20 miles in the direction of Charcot, and made glaciological and seismic observations.

This year's expedition is due to leave France on the "Norsel" about November 1 and will travel via Hobart to relieve the expedition led by B. Imbert. It will as previously comprise 20 men at Dumont d'Urville and 3 men at Charcot, where R. Garcia will be the leader.

At d'Urville Station a study is being made of the correlation between variations of geomagnetic field components and auroral activity: many echoes are obtained on ionospheric clouds between 250 and 750 miles in North sector.

The weather at Pointe Geologie is better than at Port Martin (the previous base site). Ionospheric soundings were possible on 40 nights prior to July 1.

At Charcot Station the electric generator has been working since July 11. The lowest temperature recorded in July was $-62^{\circ}C.$

craft will join them, refuel, and fly on to Scott Base.

The British team expects after crossing the Pole to make contact with Sir Edmund Hillary's New Zealand party about January 10, and to arrive at Scott Base with them about February 8.

RECORDS BROKEN AT HALLEY BAY

The main party of the Royal Society Expedition at Halley Bay are now working extremely hard, the base having been fully prepared in time for the opening of the I.G.Y. on July 1. This event was celebrated with a small party on the evening of June 30.

The winter weather established local records and the approximate 100 days of total darkness provided the background for lunar haloes with mock moons, snow pillars and tangential arcs. The weather summary is:

| 1957 | Minimum Temperature |
|------------|---------------------|
| May | — 41.2°C (8 May) |
| June | — 40.9°C |
| July | — 50.6°C |
| | Maximum Temperature |
| May | — 7.8°C (15 May) |
| June | — 7.8°C |
| July | — 10.3°C |
| | Maximum Wind Speed |
| May | 52 knots |
| June | 55 knots |
| | (gusts of 77 knots) |
| July | 60 knots |

On June 17 the wind speed dropped from 44 to 16 knots in one hour. In June there were 7 gale days and 21 drift days with 8 cms. (about 3 inches) accumulation of snow. In the first week of July the longest continuous gale period to that date of 42 hours was experienced, with gusts of up to 60 knots. A heavy snow fall on July 21-22 was reported with temperatures around —30°C. East winds on July 29 brought the lowest temperatures recorded at Halley Bay (—50.6°C) and gusts up to 75 knots were recorded on July 30. There were 8 gale days in July.

The ice near the shore at Halley Bay opened up at the end of June but by mid-July it had closed again for a south-west wind once more brought in the pack ice.

The first Emperor penguin eggs were seen on June 22.

Colonel Robin Smart constantly reports that all members of the party are "fit and well."

The relief ship, M.V. "Tottan," will sail from London or Southampton about November 16, 1957.

Chileans Lose Lives

Chile has suffered the first loss of life at her Antarctic bases since Sergeant G. Rojas strayed in a blizzard in 1949.

On August 12 a sledging party was out in poor visibility. At about 11.30 a.m. two guides noticed a suspicious snow-surface and signalled to the sledgers to stop. The dogs, however, carried on in the tracks of the guides and the signals were apparently not seen or heard. A snow-bridge gave way under the sledges and two officers, 1st Lieut. O. A. Inostroza, aged 27, and 1st Lieut. S. Ponce, aged 25, were precipitated into a crevasse estimated to be 35 metres deep. Both men were unmarried. Bad weather impeded attempts to recover the bodies.

The body of Lt. Inostroza was later found to be lying on a snow ledge over 100 ft. down the crevasse. Captain Ovando, the officer in charge of the party, was lowered to recover the body, which will be returned to Chile on the relief ship "Angamos." It is not thought likely that the body of Lt. Ponce will be recovered. The body is probably buried under the snow which fell into the crevasse at the time of the accident.

The twelfth Chilean Antarctic flotilla is scheduled to leave Valparaiso for the Antarctic bases about the middle of October. The flotilla comprises the transport "Angamos" and the patrol vessels "Lautaro" and "Lientur." In command will be Captain Gustavo C. Caceres.

AUSTRALIA OPENS REMOTE WEATHER POST

Australia has set up a remote Antarctic weather station at Taylor Glacier, 60 miles west of Mawson. Although subsidiary weather stations have been operated before at Mount Henderson, 25 miles S.E. of Mawson, and at Van Hulssen Island, five miles N.W. of Mawson, the new station is the first to be manned continuously and the first where synoptic observations, involving the recording of wind speeds and directions, atmospheric pressure, temperature and humidity, have been taken.

The data collected at Taylor Glacier will show whether records made at Mawson are typical of the climate along the coast of MacRobertson Land.

Throughout July, instruments and equipment (including heavy bottles of hydrogen for pilot balloons) were landed by Beaver aircraft, and later a weather observer and a radio officer were flown in to man the station.

It was planned to operate the station for six weeks with relays of men, changed over each week by aircraft. Later in the month auroral apparatus was also to be operated from Taylor Glacier.

The men lived in tents, sleeping in thick eiderdown sleeping bags and cooking their food—mostly canned and dried field rations, but also some fresh food—on a fuel pressure stove.

Although the temperatures in the area averaged about 20 degrees below freezing point, and blizzards blew for a few days early in August, the men were well protected by special heavyweight clothing.

A fire at 10 p.m. on August 19, caused by a failure in a fuel lamp which ejected burning fuel inside the tent, destroyed the sleeping tent at the new station. Shaw and Nilsson escaped unharmed and spent the night in an igloo they had previously built. They rescued most of their gear and radioed base.

Clemence picked them up by Beaver next day and returned them to Mawson.

EXPLORER'S CAIRN FOUND

Australian explorers in MacRobertson Land have discovered a cairn and a message left by Sir Douglas Mawson 26 years ago when he was Leader of the British, Australian and New Zealand Antarctic Research Expedition (B.A.N.Z.A.R.E.).

The cairn was situated near Cape Bruce, about 60 miles west of Mawson and adjacent to the Taylor Glacier. It was surmounted by a pole which originally had a copper plaque wired to it. This plaque, in excellent condition, was found lying at the foot of the cairn. It bore the inscription "The British flag was hoisted and British sovereignty asserted on the 18th day of February, 1931." A handwritten message inside a copper cylinder was also found in the cairn, asserting sovereignty over the area.

The party which found the cairn comprised Johnston (pilot), Mellor and Fisher. They took off from Mawson in the Beaver on July 3 to inspect a line of glaciological stakes (designed to enable the movement of ice to be measured) at the Taylor Glacier.

Johnston landed on the sea ice to the western side of the glacier and

taxied the plane to a camp site near the rock coast. By a remarkable coincidence this site was only 40 yards from the cairn, which was seen immediately. Many previous landings of the Beaver aircraft had been made in the vicinity, but to the eastward of the Taylor Glacier.

JUNE BLIZZARD

June was a wretched month at Mawson. Sufficient twilight for at least four hours' flying daily remained through June, although the planes actually only took the air for six sorties. The restriction was due not to poor light but to stormy weather and persistent drifting snow which cut visibility below the bounds of safety.

Since early in the month, when Mawson was struck by one of the worst blizzards on record, the men often speak of events as happening before or after the blizzard, the period from the 5th to the 8th. For the 24 hours of June 7 wind speed averaged 70 m.p.h. and over a three-day period averaged 65. However, the speed of wind gusts far exceeds the average and it is, of course, the impulsive gust force which does the damage. The wind rose steadily during the 5th, the Pitot-type anemometer registering 109 m.p.h. early that evening. Unfortunately, the instrument then choked with snow so there were no measurements of subsequent gust speeds. Meteorologist Hannan estimated speeds between 120 and 140 m.p.h. at the height of the storm.

The worst effects were felt on the exposed area east of the camp where the new radiophysics hut is situated. On the night of the 5th (probably while the occupants Shaw, Nilsson and Callow were at dinner) one of the two small auroral huts located on top of the main radiophysics building broke loose and was carried away. Its brother, containing the valuable auroral camera, must have narrowly escaped a like fate while even the main building vibrated dangerously.

DOGS IN TROUBLE

"By the 7th," writes Mather, "even the dogs, which usually curl up and sleep out a blizzard, were in serious trouble and very unhappy. All were heavily coated in ice, and some were blinded by snow congealed over their eyes. They were brought into camp and distributed among the store huts, where they all made rapid recovery—too rapid. On the following day it looked as though the blizzard had been inside the huts. One happy husky chewed through his rope, found an eider-down quilt and worked through that too. Dog and store were full of feathers. It was only after the blizzard, when the avalanche of cutting snow had ceased, that we could begin to assess the full damage outdoors. It was considerable.

"Unfortunately, after a break of a few days the wind resumed its wild run and the work of reconstruction has been hampered. Today (the 30th) the anemometer in the met hut is shooting up to 65 m.p.h. Frank tells me that the wind speed has averaged 29.9 m.p.h. for the whole of June which equals the record registered in July, 1955. Who called Mawson a Riviera in the Antarctic? By way of comparison, the windiest spots in Australia would average about 15 m.p.h. during a month."

The blizzard also moved most of the sea ice near Mawson. Fortunately it remained intact in the harbour and aircraft can still operate, but stretches of open water westwards will prevent any weasel trips in that direction for some time to come.

PENGUIN-WATCHING MISSION

Flying operations continued at Mawson even when it was nearly mid-winter. On June 10, Johnston flew the expedition's "Beaver" 50 miles west of Mawson to carry Willing and Shaw to the Emperor penguin rookery at Taylor Glacier.

I.G.Y. BEGINS

The official commencement of the I.G.Y. passed virtually unnoticed at Mawson: July 1 was just another day in the well-established routine.

On July 5 Clemence flew 150 miles to King Edward Gulf to inspect the dump of aviation fuel left for the Australians' use by Captain Vetrov of the Russian oceanographical research vessel "Lena" early this year. He had sighted the old ANARE depot there and generously contributed fuel and provisions to it in accordance (as he said) with an old polar custom. Goodspeed took his gravity meter along on the same flight to get a reading at the gulf. It was in connection with the gravity work also that a reconnaissance was flown 100 miles east to where Scullin and Murray rock monoliths rear above the ice cliffs. Though it was very desirable to find a landing area on the plateau thereabouts, white-out conditions developed on this occasion and only a preliminary survey was achieved.

Both pilots made their first plateau landings south of Mawson during July. Unfortunately the Auster undercarriage was slightly damaged during a rough take off across sastrugi surface. It has since been repaired and strengthened.

The Director-General of Australian Civil Aviation took part in discussions in Washington in June between Australia and the United States. It is reported that the United States asked for the grant of routes across Antarctica linking South Africa and South America with Australia in return for new landing rights in the United States for Quantas.

WHAT'S IN A NAME?

One of the New Zealand scientists to winter-over in the Antarctic next year is **C. G. MIDWINTER**.

One of the American radio-men at Wilkes Station is **KENNETH J. HAILSTORM**.

NEW ZEALANDER TO HEAD MAWSON PARTY

Mr. Ian Leonard Adams, who led the ANARE party at Macquarie Island in 1956, has been appointed Officer-in-Charge of the 1958 expedition to Mawson.

Born in New Zealand in 1925, Mr. Adams was a member of the New Zealand Air Force during the Second World War and has had considerable experience in mountaineering and deep-sea yachting.

Before joining the Macquarie Island expedition, he was in charge of airways operations at Rongotai airport, New Zealand. He is married with one child.

The expedition will sail from Melbourne late in December, 1957.

C.S.A.G.I.

A fourth I.G.Y. Antarctic conference was held in Paris on June 13-15, attended by delegates from all 12 countries actively engaged in Antarctic I.G.Y. work except Norway.

The question of an extension of I.G.Y. for the Antarctic area was referred to a special committee of I.C.S.U. (International Congress of Scientific Unions), to meet in Stockholm on September 10 to consider the desirability of continuing scientific investigations of all kinds in the Antarctic.

A New Zealand invitation to an Antarctic Symposium in New Zealand in March, 1958, was enthusiastically accepted, all delegations approving and several on the spot declaring their intention of being present.

Four weather maps were radioed to Washington on June 3 for the I.G.Y. conference in Paris. Technicians redesigned and constructed transmitter components from equipment and parts at Little America. Washington reported excellent quality.

Great Emperor Penguin Rookery Discovered

Mawson reports the discovery of a new Emperor penguin rookery which is very large, probably the largest yet discovered in Antarctica.

The find was made on August 6 by Flight Lieutenant Johnston and physicist Jim Goodspeed. They were returning from a reconnaissance flight to Scullin Monolith, 100 miles to the east, where they had been searching for a landing area so that Goodspeed could make gravity measurements. The main purpose of the flight was unsuccessful but on the return trip they flew well off the coast to examine sea-ice around the Douglas Islands, another locality which had been selected for gravity survey.

When only half an hour's flying from Mawson and approaching the Douglas group from the south east their attention was attracted to a deep brown stain covering an extensive area in the lee of a group of huge icebergs. This is an interesting region of shoaling water which has, over the years, stranded numerous drifting bergs. Closer inspection from the Auster at low altitude revealed a huge Emperor rookery. The information was reported to base by radio.

On August 7 Johnston flew Mather and Dr. Willing, who has been carrying out detailed penguin studies this year, to the new rookery. They landed on the sea-ice after taking aerial photographs and taxied to within 200 yards of the birds. The number of Emperors was so great compared with the other two rookeries, Taylor and Foldoya, which the Australians have examined that new counting methods will be called for. Rough sampling indicated a very conservative figure of 12,000 birds now occupying the rookery. However, some

estimates range much higher than this figure. Assuming 12,000 strength implies a total (male plus female) of some 24,000, since only one or other sex is generally present at this time of year.

It may seem remarkable that a rookery of such a size could remain undetected only 30 miles from Mawson. However, it is shielded by icebergs and would only be seen by aircraft flying approximately overhead. Emperor rookeries are always located on very stable ice, sometimes where it is held by groups of islands as at Foldoya, or as in the present case by grounded bergs.

The latest discovery brings the number of known Emperor rookeries to eight, of which three have been discovered by Australian parties based at Mawson. Foldoya was found in 1956 and Taylor in 1954. Only the Haswell Island rookery near the Russian base of Mirny compares in strength with the new find. (Incidentally, the Haswell rookery was discovered by Sir Douglas Mawson's expedition in 1912.) In the near future the expedition intends to carry out low level aerial photography from the Beaver to determine the number of Emperors at the new rookery more exactly.

The great festival of Midwinter's Day, June 21, was celebrated at the Royal Society's base at Halley Bay by the publication of the first number of the local newspaper, the "Halley Comet." "Antarctic" sends fraternal greetings.

WINTER DAYS AT DAVIS

Dingle reports the maximum June temperature at Davis, Australia's Vestfold Hills base, as 31.2°, minimum -16°: the weather generally fair with occasional blizzard periods. The entire area was snow free except for large drifts on the southern and western slopes.

The sea-ice conditions within the perimeter of the outer islands was unchanged but an extensive area of open water lay beyond, with the Rauer group and the ice front of the Sorsdal Glacier in open water. The sea-ice thickness in the vicinity of the Davis airstrip was 40 inches. The main drift in the station area had finally sealed the eastern wall of the community hut, and the emergency exit was now via the snow tunnel. One snow petrel was observed by Stinear whilst measuring sea ice ablation stakes on mid-winter's day.

The limited hours of daylight restricted outdoor activities. However, Stinear, occasionally accompanied by Hawker and Lucas, continued his geological excursions to nearby islands.

July maximum temperature was 25°, minimum -19°. July was a blizzard-free month with the weather generally fair. Dense drifting snow was frequently observed on the plateau to the south and east whilst the station enjoyed relatively calm conditions. Apparently the extensive area of the Vestfold Hills nullifies the effects of katabatic winds and associated weather, although the amount of cloudiness at Davis is considered excessive. Open weather persisted within a few miles of the coast.

Complete snow coverage during part of the month discouraged sledging, but Stinear and Lied hit the trail with an energetic team of huskies immediately "country" rock surfaces were sufficiently clear for geological work. Islands in the vicinity of Crooked Fiord were visited and towards the end of the month

a rather cautious pair sledged over new sea ice along the section adjacent to Sorsdal Glacier tongue.

Elephant seals are normally regarded as a sub-antarctic species, so the discovery that the Vestfold Hills area is a regular summer hauling-out ground for elephant seals is a matter of great biological interest. Over 70 were counted on February 19, over 400 on March 6 and over 250 on April 2. Most of them were moulting bulls. Skeletons and carcasses on the beach showed that it must have been visited regularly for a number of years.

A later message states that thirty-four elephant seals, mostly adolescents in prime condition, were observed on the Mule Island group on July 8. A visit to the same island group on August 1 gave a negative "seal" result. One giant petrel was observed for a brief period on the twenty-seventh.

WHALING COMMISSION

The International Whaling Commission which ended its sitting in London on June 28 decided that the Antarctic pelagic catch limits should remain unchanged, at 14,500 blue whale units.

During 1956-57, twenty factory ships with 225 catchers were engaged. The total production was 2,245,435 barrels of oil, a decrease of 61,734 barrels.

Among the 56 whale marks recovered during the season was one which had been in a whale for 22 years. Another showed that a blue whale had moved 1,900 miles in not more than 47 days.

OPERATION DEEP FREEZE III

Plans have been announced by the U.S. Department of the Navy for Operation Deep Freeze III. Over 4,000 men in ten ships will leave American ports from late August to early December to re-supply the seven U.S. Antarctic stations established during Operations Deepfreeze I and II. Navy and Air Force planes will fly to New Zealand in September, leaving here for the Antarctic on or about October 1, to ferry personnel and air-drop material to the various stations.

Navy long-range aircraft are scheduled to arrive at Wigram aerodrome, and U.S.A.F. cargo planes at Harewood, both in Christchurch, New Zealand, from about September 15. On or about October 1, depending on weather conditions, one P2V-7, two R4D-8 and the Air Force planes will commence lifting cargo and personnel to McMurdo Sound.

The proposed composition of the air units is:

Navy Planes

- 4 P2V7 (Neptune), ski-rigged (with jets).
- 2 R5D (Skymaster), wheel-rigged.
- 4 R4D (Skytrain), ski-rigged.
- 2 R4D-8 (Skytrain), ski-rigged.
- 2 UF (Albatross), ski-rigged.
- 9 UC-1 (Otter), ski-rigged.

Thirteen helicopters will also be taken south, eight of them aboard the icebreakers. Commanding Air Development Squadron Six (VX-6) will be Commander V. J. Coley.

Air Force Unit

The eight C-124 (Globemaster) cargo planes will be under the command of Brig.-Gen. E. W. Hampton, U.S.A.F. They will be in New Zealand in sufficient time to commence flying to the Antarctic by October.

Navy aircraft will also support the I.G.Y. field traverses and furnish search and rescue if needed. Upon the completion of the fly-in of cargo and personnel, they will drop approximately 350 tons of material at Pole Station, 350 tons at Byrd Station and 50 tons at a temporary camp for six men to be established

at or near the base of the Liv Glacier. In all, 44 aircraft will be engaged in the operation.

Upon completion of the air-drops, about November 15, additional VX-6 aircraft will fly in. Two or more Globemasters will remain in New Zealand to furnish air-lifts to and from the Antarctic. The others will be flown to the United States.

The majority of the wintering-over personnel in the Ross Sea area will be flown to New Zealand and air-lifted to the United States owing to lack of berthing space aboard ships assigned to the area.

The re-supply of all the bases and exchange of personnel should be completed by the latter part of February, when the remaining ships and aircraft are expected to depart for the United States.

Ship Units

One task-group under Captain G. L. Ketchum (Deputy Task Force Commander) will supply the Ross Sea Stations and Wilkes Station (Knox Coast). It will comprise the ice-breakers "Glacier," "Burton Island" and "Atka," the cargo ships "Greenville Victory," "Pvt. John R. Towle" and "Arneb," the tanker "Nespelen" and the destroyer escort "Brough."

"Brough" will take station between New Zealand and the Antarctic during fly-ins to provide weather data, communications guard and homer navigational facilities.

"Glacier" and "Greenville Victory" are expected to arrive at Little America V, Kainan Bay, on December 1. "Burton Island" is due there

on December 8. On the return trip "Burton Island" will tow YOG70, which has been frozen in near Hut Point since Operation Deepfreeze I, back to the United States. "Atka," "Pvte. John R. Towle" and "Nespele" are due at Little America on January 1, 1958. "Arneb" is expected to reach the joint U.S.-N.Z. base at Cape Hallett on January 15, later going on to Wilkes Station, arriving approximately February 1.

Weddell Sea Group

Another task group under Captain E. A. McDonald will sail via Capetown to the Weddell Sea area, returning via South America. This group comprises the Coast Guard ice-breaker "Westwind" and the cargo ship "Wyandot." Both are scheduled to arrive at Ellsworth Station on January 10.

Ross Sea Bases

Captain E. H. Maher, U.S.N., will command the specially trained battalion of Seabees which is to relieve the unit now wintering-over in the Antarctic under Captain W. M. Dickey. A Seabee unit under Lieut. Cdr. H. E. Stephens will conduct a field reconnaissance in the McMurdo Sound area.

During October-November, a trail party will investigate and repair as necessary the trail through the crevasse area at mile 183 on the Army-Navy trail from Little America to Byrd Station. Following the completion of off-loading the ships at Little America in late December, a heavy tractor train will proceed to Byrd Station, followed by additional tractor trains if needed. Earlier trains may be staged to Byrd Station if it is found that the crevasse area is suitable for passage before October 15.

En route between Little America and Byrd Station approximately 200 tons (14,000 cubic feet) of drummed fuel will be dropped in air-lifts from the McMurdo Sound air-base.

The planned operations will require an estimated 25,000 tons of cargo and 666,320 gallons of bulk

petroleum products to be transported to the Antarctic.

All materials, food, fuel, etc. (approximately 400 tons and 25,000 cubic feet) for the station at the South Pole will be air-lifted from N.A.F., McMurdo Sound (the Williams Air Operating Facility). The bulk of this material will be air-dropped, but delicate instruments and other items not deliverable in this way will be flown in on ski-equipped Navy aircraft. The largest single item to be air-dropped at Pole Station will be a D-2 tractor weighing 14,000 pounds.

Ellsworth Station

A limited number of tractor trains will be operated by the Ellsworth Station on the Weddell Sea coast to establish fuel caches in support of I.G.Y. traverse parties. All materials will be surface-lifted by the ship group.

Hydrographers aboard the ten surface ships will continue the surveys of ocean bottoms, the checking of water and ice samples, and the studies of sea life which they began in Operation Deepfreeze I. Geomagnetic survey aircraft will be used in the Antarctic areas.

SERVICE

Mr. Paul M. Blum, a senior buyer for the General Electric Co. in Syracuse, U.S.A., and four amateur-radio friends have handled over ten thousand radio messages to and from U.S. stations in the Antarctic. After his day's work and three hours' sleep, Mr. Blum rises at midnight and begins a seven-hours' vigil in his cellar radio-room. The latest RAGS service is to radio photographs of recently-born babies and their mothers to the eagerly-awaiting fathers in the Antarctic. Well done, Mr. Blum.

"What good is Antarctica?" a cynic asked the late Admiral Byrd.

"What good is a baby?" was the Admiral's significant reply.

AT SEVEN AMERICAN BASES THROUGH THE WINTER NIGHT

Three hundred and eighteen men are wintering over at the seven U.S. bases in the Antarctic as follows, service personnel being stated first, then I.G.Y. scientists.

| | | | | | |
|-----------------------------|-------|-----|----|-------|-----|
| Little America | ..... | 85, | 24 | Total | 109 |
| Byrd | ..... | 10, | 13 | | 23 |
| McMurdo | ..... | 87 | — | | 87 |
| South Pole | ..... | 9, | 9 | | 18 |
| Hallett (U.S.-N.Z. Station) | ..... | 11, | 4 | | 15 |
| Wilkes | ..... | 17, | 10 | | 27 |
| Ellsworth | ..... | 30, | 9 | | 39 |

McMURDO

A storm began on June 13 and lagged through the 17th, paralysing the base in blinding snow blown by winds approaching record velocities.

The storm raged for a total of 114 hours, with the highest hourly average of wind velocity, 69 m.p.h. The entire period average velocity was 43 m.p.h., with gusts up to 97 m.p.h.

McMurdo, unlike most Antarctic bases, is not protected by a tunnel system, and personnel performing daily tasks outside are exposed to the weather. During the storm snow drifts piled to the roof tops and over the buildings, while other areas remained brushed so clean the bare earth was visible. Many entrances to the buildings were kept open only by constantly shoveling a narrow passageway.

There was no great damage done, but some serious inconveniences were felt.

Airman Killed

Nelson R. Cole, an aviation machinist's mate, was killed in a helicopter crash half a mile from the base on July 12. Five other men were injured in the crash, three of them critically. Two others were injured during rescue operations.

The helicopter was on a routine flight in -36° weather. Returning to refuel, the pilot's vision was impaired by suspension of ice crystals

in the air and frost on the outside of the windscreen. The plane crashed into the ice and burst into flames on impact. All except Cole succeeded in crawling or jumping from the aircraft.

In a memorial service the entire base paid respects to the late Nelson Cole.

Early in August, of the three men admitted to hospital with serious injuries one had been discharged and the other two had been removed from the "critical" list.

LITTLE AMERICA V

Radio contact was made on June 9 with a floating ice-island, T3, then 400 miles south of the North Pole and 500 miles north-west of Thule. Next day Little America talked with KL7FBE on another ice-island about a mile square and 10 to 15 feet thick, 600 miles south of the North Pole and 700 miles north of Pt. Barrow.

An unseasonal heat wave caused the thermometer to skyrocket to $+25^{\circ}$ F. on June 15, surpassing the former all-time June high of $+21^{\circ}$. Wind raged 47 miles per hour, with gusts to 59 m.p.h. The former June record was 42 m.p.h.

The storm brought continuous snowfall with mountainous drifting. All camp exits were snow-blocked except for one windswept skylight trapdoor. Several heater stacks were engulfed and fires were snuffed out. Constantly dripping water made the ice decks of the inter-connecting tunnel treacherous.

In the most serious winter accident at Little America to date, R. L. Molla, construction mechanic, sustained first and second degree burns

on both legs and buttocks.

At 4 a.m. on July 22, working the night shift in the garage, Molla was cutting the metal track on a D-8 tractor with an oxygen torch. A flying spark ignited his heavy wind-proof trousers which had absorbed oil and hydraulic fluid during routine garage work. Flames blazed up, enveloping his body and singeing his heavy beard.

On August 26 he was reported to be recovering satisfactorily.

R4D and UC-1 flights were made in the winter darkness for the purpose of practising GCA (ground control approach) landings and familiarising pilots with Antarctic night flying.

First Spring Flight

A dispatch dated August 26 said that the VX-6 detachment had completed a three and a half hour reconnaissance flight in a temperature of -53° F. The crew of an R4D aircraft inspected the Ross Ice Barrier edge for a distance of approximately one hundred miles, from the Bay of Whales to Okuma Bay. They were surprised to find no sea ice anywhere, except for bay indentations into the barrier face, which were still fast with ice. There was open water as far as the eye could see, approximately 35 miles seaward.

The flight proceeded over Little America III to the foot of Roosevelt Island, searching for a possible route which the forthcoming I.G.Y. traverse party can follow safely through the numerous crevasses fanning out from the foot of the island. A probable route was located.

The airmen next scouted the trail to Byrd Station for approximately 60 miles. They discovered that last year's marker flags and fuel caches were clearly visible. A tractor train could probably follow the old trail.

BYRD

The station was hit for seven days early in August by the worst

storm in its history. The winds out of the north-east rose to 72 knots.

All but the most essential work outside the shelter of the main buildings and connecting tunnel was curtailed. Snow pelted faces so hard men could hardly see. Horizontal visibility was zero. Blowing snow, officially recorded as "violent," entered every crack in the station structures. Damage was negligible, however.

High winds aloft warned of the storm several hours before it struck. A jet-like flow of air at 27,000 feet reached 70 knots during the radio-sonde flight released at midnight the day before the storm. By the next evening gusts of 41 knots were registered at the surface.

Most concern was for the 31-foot auroral observatory. Part of the \$10,000 equipment was demounted to prevent possible damage. Valuable cameras and lenses in the science building below the auroral tower were removed. The tower, stabilised by a system of 16 cables, rode out the storm.

By the time the storm had blown itself out, five-foot drifts partially blocked the tunnel. Access doors to the outside were covered repeatedly, regardless of efforts to keep them shoveled clear. The engine of the D-8 tractor was a solid mass of snow.

SOUTH POLE

During the first three months of the "sunless six" the temperature averaged close to 70° below zero, and on May 12 hit 100° below.

Coupled with this world's record temperature was an almost constantly blowing wind averaging about 15 knots. During May there were only 13 hours during the entire month that were calm. One hundred per cent. of the time the winds were higher than 25 knots and at times reached maximum gusts of nearly 50 knots.

Mining is underway at the South Pole Station—for snow to meet the

water requirements of the base.

Earlier in the year sled loads of snow were hauled from an undisturbed area behind the camp by weasel or tractor to the snow melter; but once the temperature dropped lower than 70° below zero, further use of the mechanical equipment for hauling snow became impracticable.

A subterranean snow mine was begun, digging down in about a 20 degree slope from a point in the tunnel near the chute to the snow melter. This slope will be maintained to also provide the glaciology deep pit which it is hoped will reach a depth possibly as great as 100 feet beneath the surface. Snow blocks are cut and loaded on small sleds. An average of 10 loads are needed each day. At first the sleds were man-hauled to the surface, but now an electric motor and a small winch do this part of the job.

All camp personnel work as miners in weekly shifts, four men at a time. The snow is carved into blocks by hand sawing; no mean task in snow nearly half as dense as solid ice. Whenever the saw sticks in an especially hard snow layer, the men vainly hope that they may have struck Amundsen's tent or a Scott relic of 45 years ago.

The Pole Station's youngest inhabitant celebrated his first birthday on August 14. Born last year in Dogheim at NAF McMurdo, the pup, Bravo, went to Pole Station on December 29 last year with the first eight Navy wintering-over personnel.

Bravo has gone from less than one pound at birth to his present weight of nearly 110 pounds. His omnivorous appetite includes wood scraps, paper, rubber and glass wool insulation and in general anything he can get his teeth into. Bravo's birthday was the occasion for a holiday with dinner featuring a birthday cake. Bravo's only reaction to the cake was a sniff at the lone candle and an inquisitive lick of the frosting.

WILKES

Communications between the station and **SITE TWO**, 54 miles inland, have improved considerably by the installation of a Vee antenna at the ice cap station. Carl Eklund, scientific leader, and Charlton, chief electronics technician, installed the antenna and assisted in taking a series of celestial observations to determine the exact location of the outpost. During their stay the temperature reached -51° F.

The glaciological pit at Site Two had reached 90 feet by mid-August.

An attempt by Charlton and Honkala to reach the site by weasel was halted almost five miles from the main base. A sudden furious storm dropped trail visibility to almost nothing. The two men managed to make about two miles back when they luckily stumbled on seismologist Dewart, who was on his way to change records in the weather recorders. By now none of the three could see anything but the enveloping whiteness.

A scant three miles separated them from the base but they dared not move about on the icecap blind. The three men climbed into the weasel with the engine running, until about 8 o'clock next morning the storm subsided.

Honkala went over to the second weasel. As soon as it fired off, black smoke began to pour from the engine covering. Charlton and Dewart rushed over with an extinguisher. Hitching the burned weasel to the back of the usable vehicle, they towed it back to base.

A short time later, Site Two sent out a call for mechanical assistance. Their generator had ceased to operate. McIntyre and Honkala this time made the trip up without any interference from Mother Nature. McIntyre fixed the generator and tuned up the spare weasel, so the satellite base was in good shape again.

Eklund and Charlton set out in their weasel to determine the bay

ice's ability to support the weight of the vehicle. Eklund had been taking measurements of the ice previously by using the dog team. With the ice averaging about 30 inches in thickness, they felt it would be quite safe to hold their two-ton load. Charlton also had a small portable direction finder which he wanted to put to a real test. At intervals of 1,000 yards they would stop and take an ice-thickness reading and at the same time radio a relative bearing back to the base. These tests were made out to a distance of five miles.

ELLSWORTH

By the middle of June many flights had already been made, with one extending over 200 miles inland. The main air support programme will begin during the spring. No later than November 1 the I.G.Y. members will begin their several hundred miles of traverse inland.

Radio communications are bad in almost every section of the Antarctic, but Ellsworth Station, owing to the formidable ice conditions, is far isolated from open waters, and situated as it is on the fringe of the auroral zone, maximum ionospheric disturbances occur.

On August 11 VX-6 members began digging out their single-engine UC-1 Otter aircraft from under 30-foot snow drifts. Because of the delicate digging involved most of the work was done by hand shovels during the lengthening twilight hours. In temperatures of -51° F., digging continued both by hand and a D-4 Caterpillar tractor with a bucket device on the front. Two days' work was obliterated by 35-knot winds which filled the shoveled areas with blown snow.

With daylight increasing each day, several men got outdoors and walked the mile and a half to the edge of the iceshelf. The first seal of the season, a 12-foot long Weddell, was stretched out on the ice floes at the barrier's edge.

SUB ANTARCTIC ISLANDS

BOUVET

There now appears no hope of a station being set up on Bouvet Island during I.G.Y. It was hoped that the U.S.S.R. would carry out an aerial survey by helicopter but this could not be undertaken.

MARION (S.A.)

An ionospheric recorder has been set up by the Telecommunications Laboratory of the Council for Scientific and Industrial Research, and a radio theodolite has been installed for upper wind observations. S.A.S. "Vrystaat" is on her way to bring back those who have been installing this equipment.

KERGUELEN (F.)

The relief ship "Gallieni" left Tamatave on May 6 for Kerguelen. When the new men arrived the Kerguelen population totalled 117. Nine of the new-comers are I.G.Y. scientists.

The seal-oil refinery has been completed and it is expected that production will begin about the end of the year.

CAMPBELL (N.Z.)

The three main buildings of the new station are now operative.

A successful air-drop on August 30 brought mail and urgently-needed spare parts for the generators.

The relief vessel "Holmgren" is due to leave on November 1 with G. H. Timpson, officer in charge, R. A. Flahive, E. L. Clague, A. J. Greene and K. R. Thower. Thompson, Farmer, Warren and Stewart are staying for another year.

MACQUARIE (A)

July weather at Macquarie was rugged with the coldest conditions and heaviest snowfalls for some years, icy winds to 93 m.p.h., and mountainous seas. The island was rocked one night by an earthquake.

What Russian Scientists Have Found

We are indebted to the Academy of Sciences of the U.S.S.R. for the following outline of the results of Soviet I.G.Y. investigations in the Antarctic during 1956-7.

During last year a party of 92 men, comprising the Soviet Antarctic Expedition of the U.S.S.R. Academy of Sciences, worked on the Antarctic mainland, with Dr. M. M. Somov at the head of the expedition.

The main U.S.S.R. Antarctic station, **MIRNY**, was officially opened on February 13, 1956. This station is located in the region of the Haswell Islands, 66°33' S., 93°00' E. It has magnetic, seismic and aerological buildings and an ionospheric station, as well as geological, glaciological and aerophotogrammetrical laboratories.

At present there are two more scientific stations in operation. One of them is **PIONERSKAYA**. This station has on its staff six men, and is located 233 miles from Mirny further out into the mainland at an altitude of 8,850 ft. above sea level. Its co-ordinates are 69°44' S. and 95°30' E.

The second station is the "**OASIS**." It has three men on its staff, and its co-ordinates are 66°16' S. and 100°44' E.

On May 1, 1956, scientific work began at Mirny. The most interesting conclusions about geophysical phenomena in the area are as follows:

1. Atmospheric pressure in the Antarctic is relatively low during the whole year and its yearly "march" is opposite to that of the Northern Hemisphere since in winter the pressure is lower than in summer. The average pressure for the three winter months in Mirny is 987.5 millibars (= 29.161 ins.), which corresponds to the pressure in the centre of a very deep cyclone over the European part of the U.S.S.R. 941.6 millibars (= 27.803 ins.) was the minimum pressure

registered at Mirny during the whole period of observations.

2. The troposphere in the Antarctic is colder in winter and summer than in the Arctic on the same latitudes. Quite unlike the Arctic the base of the stratosphere in the Antarctic in winter is higher than in summer.

3. In winter at an altitude of more than 11-12 miles several periods were observed with clearly evident western air currents, the velocity of which exceeded 200 knots.

4. The frequency of storm winds which can be explained by the influence of the sea (cyclone formation), and the strong run-off (katabatic) winds down the steep slope of the ice plateau which in this region comes up close to the coast, are the characteristic features of the wind regimen of Mirny. The region is one of the most tempestuous on the Antarctic coast. One hundred and thirty-two storm days were registered at Mirny, nearly as many as at Cape Denison and at Port Martin in Adelie Land, known as the "Wind Pole" of the globe. Average wind velocities are rather less in Mirny than in these two places. But judged by the average wind velocity and the average temperature of air Mirny has the most severe weather of any station in the Antarctic now in operation.

Four temporary field meteorological stations were organised to study the run-off or glacier wind which is of great importance to the wind regimen in the region of Mirny and to its microclimate.

The run-off or glacier winds develop owing to the fact that the air over the ice plateau becomes very much colder and owing to its weight runs down the slope to the coast. It is characteristic of these winds

that their velocity decreases with altitude; thus near the surface of the glacier the wind is a hurricane, while 1,000-500 ft. above the surface of the ice it is faint or disappears altogether. The run-off winds comprise from 40 to 60 per cent. of all the storms registered at Mirny. Their penetration into the sea does not exceed 10-15 km.

5. At Mirny aurorae are observed mainly in the northern part of the sky. Mostly they are of one colour. Aurorae in the zenith are of very weak activity.

6. Diurnal variations of the magnetic elements on days free of magnetic disturbances (as determined by the hourly values) are characterised by the following values: amplitude of the variation of the magnetic inclination, about 12'; variation of the total horizontal component of the magnetic force, 30 gamma; variation of the vertical component, 40 gamma. The magnetic field of the earth is mostly disturbed in daytime about noon.

The most intensive magneto-ionospheric storm occurred during the period from September 1-3, 1956. On the day of the greatest disturbance of the magnetic field (September 2) the reflection from the ionosphere completely disappeared for two days. Amplitude of the magnetic incline variations was more than 3°. Amplitude of variations of components of the full force of geomagnetism was for the horizontal component 1,000 gamma and for the vertical—1,500 gamma.

7. Ninety-eight earthquakes were registered from June 23 till November, 1956. Eight of them were probably due to ice cracking. The foci of six earthquakes were found to be located in the Antarctic area.

8. Meteorological observations at Pionerskaya, which began operations as a second-class station (probably surface observations only. Ed.) from May 27, gave preliminary data on the climatic conditions of the mainland regions of the Antarctic.

Thus the average temperature of air at Pionerskaya is about -39° F., which corresponds to the temperature 50-65 ft. deep in the ice. The monthly average temperature of the air in June is -47° F., in July -58° F., in August about -61.5° F. These temperatures are the lowest average temperatures registered in the Southern Hemisphere.

The average temperature of the warmest summer month is about -16° F.. In Pionerskaya in July the temperature fell to -83° F., in August to -87° F. At that time the temperature on the snow surface was -88° F. In August temperatures lower than -76° F. continued for a week. Taking into consideration the air temperatures which were registered during flights to the Geomagnetic Pole, the progressive lowering of the temperature in the snow en route between Mirny and Pionerskaya, and the lowering of temperature in Pionerskaya if the south wind blew, we can conclude that in the region of the Geomagnetic Pole and the "Pole of Relative Inaccessibility" the average temperature of the coldest winter months must be minus 75-85° F. and the minimum minus 95-100° F.

9. Glaciological investigations were carried out in the region from Mt. Gauss (south-western coast of the Davis Sea) to Knox coast, and along the route of the weasel-sledge party. Most of the glaciological investigations were carried out on stations in the region of Mirny. As the result of observations and the study of the repeated aero-photo-surveys, the character and dynamics of the ice formation of the investigated region have become clearer. Thus the velocity of the movement of glaciers flowing around Mirny varies from several centimetres to several dozens of centimetres per month. In the immediate vicinity of Mirny the movement of the mainland ice to the sea is insignificant.

Determinations by seismic methods

of the thickness of the ice cover carried out in different locations along the route from Mirny to Pionerskaya showed that on the third mile from the coast the thickness of ice is 1,850 ft., on the 14th mile 2,750 ft. and on the 30th mile 3,310 ft. Comparing this data with the barometrical determination of height we can see that the bed of the glacier in this region is below sea level.

Besides stationary observations the scientific party of the expedition conducted aero-photo-surveys over an area of more than 17,870 sq. miles. Aero-photo-surveys with ground geodetic basis were carried out along the coast from Mt. Gauss to the Shackleton Shelf Ice, and on the territory along the fast ice adhering to the glacier, on the Bunger Oasis and at "Oasis" itself.

BUNGER OASIS

During January-February, 1956, a complex investigation of the Bunger Oasis was carried out. The Oasis is an area of 290 sq. miles of mainland rock uncovered by ice or snow. On all sides the Oasis is surrounded by land and old-sea ice. The territory of the Oasis is a part of the Eastern Antarctic platform composed of gneiss and granites. The investigations revealed that everywhere at a certain depth under the surface by the end of the summer season of thawing the rocks remain frozen. This contradicts the theory of some scientists that such "Oases" develop as a result of the surface warming by an internal source of heat (volcanic processes, radioactive decay, or underground coal fires).

Two circumstances cause the existence of the Oasis:

1. The mainland ice flows along the sides of the Oasis due to the peculiarities of its relief.

2. The wind blows off the snow cover from the ground, which completely changes the thermal regimen of the surface thus leading to predominance of ablation over accumulation of atmospheric precipitation

in the Oasis. The relief of the Oasis comprises low cone-shaped hills that have an average height of 200-300 ft. The summits of some hills reach 600 ft. Lowered parts of the ground form lakes. The largest lake is 100 ft. deep.

At present the station Oasis is carrying out meteorological observations on the basis of a second-class station.

During October-November, 1956, the Grierson Islands were investigated and their aerial survey carried out.

In order to study the ice conditions in the Davis Sea and in the southern part of the ocean 22 reconnaissance flights were carried out. They resulted in collecting data about the northern border of ice distribution in the sector from 80° to 100° E. and about the general iceberg drifts.

In March, 1957, the winter party was changed. The new staff of the mainland part of the Soviet Antarctic Expedition is now headed by a well-known investigator of the Arctic, A. F. Treshnikov.

In 1957 the new winter party continued observations at stations Mirny, Pionerskaya and Oasis according to the I.G.Y. programme, and carried out work for establishing stations Vostok and Sovietskaya further out into the Antarctic mainland.

SOVIET PREPARATIONS

Moscow radio announced on August 20 that the research ship "Ob" will leave in December to relieve the personnel at the Russian Antarctic stations.

Professor H. C. Webster, Australian rational convener for I.G.Y., states that Russia is preparing to start firing missiles from rocket-launching sites near Mirny in the Antarctic "any time now." The Russians, he said, would make vertical firings of rockets, to reach a planned height of 125 miles.

Russian shipyards are reported to be building a giant whaling factory

"Norway Station"

Dr. H. U. Sverdrup, Director of Norsk Polarinstittutt, sends us the following outline of work at "Norway Station," January to July, 1957.

The site of "Norway Station" was selected on December 31 1956. The location is in 70°30'S., 2°32.2'W., 55.7 m. above sea level and 30 km. from the ice front. On January 20 the two small transport vessels left after having unloaded all equipment. Some had been transported to the site where the crews of the vessels had assisted in putting up the three main buildings. The transport of the bulk of equipment, provisions and fuel had to be undertaken by the wintering party of 14 men, who also had to complete the buildings and undertake all installations, a work which required nearly two months. The radio station was put up last and started operation on March 11.

In March the general meteorological observations were started, as well as observations of temperature and wind along a 25m. high mast, and observations of radiation. An all-sky aurora 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 aurora photographs from two stations. Glaciological work was begun. The

ship with a cargo capacity of 45,000 tons and capable of processing more whales than any factory ship of another nation. The ship is to be ready in 1959.

The Russian research-ship "Vityaz" arrived at Rabaul on July 30 from Vladivostok. The vessel is equipped with modern instruments for oceanography and the other phases of research to be covered by the geophysicists this year.

first radio sonde balloon was launched on June 9 and since July 1 the entire programme has been in operation.

In the coming summer season a party of four is expected to make a field trip to the south-east in order to undertake topographic and glaciological work. The station will be visited by M/S "Tottan" on her way to or back from a visit to the British Station, Halley Base.

Meteorological Data

| | Temperature, °C. | | |
|-------------|------------------|--------|---------|
| | Max. | Min. | Average |
| April | — 6.2 | — 31.1 | — 16.3 |
| May | — 9.9 | — 41.0 | — 22.9 |
| June | — 9.1 | — 34.2 | — 17.6 |
| July | — 11.8 | — 45.8 | — 26.7 |
| | Wind, Knots | | |
| | Average | Max. | |
| April ..... | ..... | 15 | 45 |
| May ..... | ..... | 14 | 52 |
| June ..... | ..... | 24 | 62 |
| July ..... | ..... | 16 | 60 |

We deeply regret that Dr. Harald V. Sverdrup died suddenly at the age of 69, on August 21, only two days after he had posted us this information. Dr. Sverdrup was Amundsen's scientist in 1916. He was Sir Hubert Wilkins' adviser during the attempt to reach the North Pole by submarine in 1931. From 1936 to 1948 he held various oceanographical posts in the United States, returning to Norway in 1948 to become Director of Norsk Polarinstittutt, a position he held until his death.

Dr. Sverdrup was the Executive Director of the Norwegian-British-Swedish Antarctic Expedition of 1950-52, and visited the expedition base, Maudheim, in January, 1951.

TEDDY EVANS

By the death on August 20 of Admiral Lord Mountevans at the age of 75 another link with the Scott era is broken. To everyone interested in Antarctic history, the name of "Teddy" Evans is legendary.

Edward R. G. R. Evans was a Sub-Lieutenant in the Royal Navy when he was selected as navigating officer of the "Morning," which in 1903-04 was the relief vessel for Scott's first ("Discovery") Antarctic expedition.

He returned to the Antarctic in 1910 with Scott's last expedition as Second-in-Command, and was navigator for the polar journey to within 150 miles of the Pole. From here, 87°34'S., he returned to base with Lashley and Crean in January, 1912, contracted scurvy en route, and was invalided home.

In 1914 he was back on naval duty with the famous Dover Patrol. He was Commander of the flotilla-leader "Broke" when "Broke" and "Swift" engaged six German destroyers in 1917 and "Broke" sank two of the enemy vessels, at a cost of 40 casualties.

After the war, on the China Station, Evans won credit for his salvage of the Hong Bok. He took personal charge of a small motor-boat and swam to the wreck with a line, saving 221 of the 350 still-surviving passengers.

Promoted Rear-Admiral in 1928, he commanded the Australian Squadron for two years and in 1933 became Commander in Chief of the Africa Station. In February, 1934, he briefly renewed his acquaintance with the Antarctic when on the 1,060-ton sloop "Milford" he visited Bouvet Island to check its exact position. He was created a Peer in 1945.

Lord Mountevans' first wife was a New Zealander, a daughter of Mr. T. G. Russell of Christchurch. She died in 1910.

As a writer, Evans will be remembered most for his excellent

account of the "Terra Nova" expedition, "South with Scott," first published in 1922 and frequently reprinted. In more recent years he wrote several books on the history of Antarctic exploration (e.g., "The Desolate Antarctic," 1950) and he also wrote adventure stories for boys.

Although he may have seemed at times to enjoy being in the public eye, those who knew him best insist that he remained to the end "unspoilt and modest." He was popular with the Lower Deck wherever he commanded. His greatest interest in later years was for youth, and he was specially interested in schools and associations seeking to give boys a better chance in life.

Bookshelf

"TWELVE CAME BACK," Peter Lancaster Brown: London, Robert Hale Limited, 223 pages, ill., N.Z. price 18/-.

A detailed, intimate, personal account of a year (1952) on Australia's Heard Island, this book is successful in helping the stay-at-home reader of high adventure to live in imagination with the fourteen men who endured, and enjoyed, their isolated existence on this ice-griped and relentless island. Tragedy struck this party, and the story of how Forbes and Hoseason met their deaths is told with grim realism by one of those who found their bodies.

It is a pity that the author has not realised the value, in narrative, of reticence, both in detail and in language. The pages reek with expressions like "shrieking madness" and "sticky masses" of congealed blood: while a little consideration for the feelings of his companions, and their friends, would have led him to leave some things unsaid. One wonders what some of them thought about him.

Brown, a keen naturalist, has much of interest and real value to say about the wild-life on the island, and his photographs are good.

The New Zealand Antarctic Society

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