ANTARCTIC

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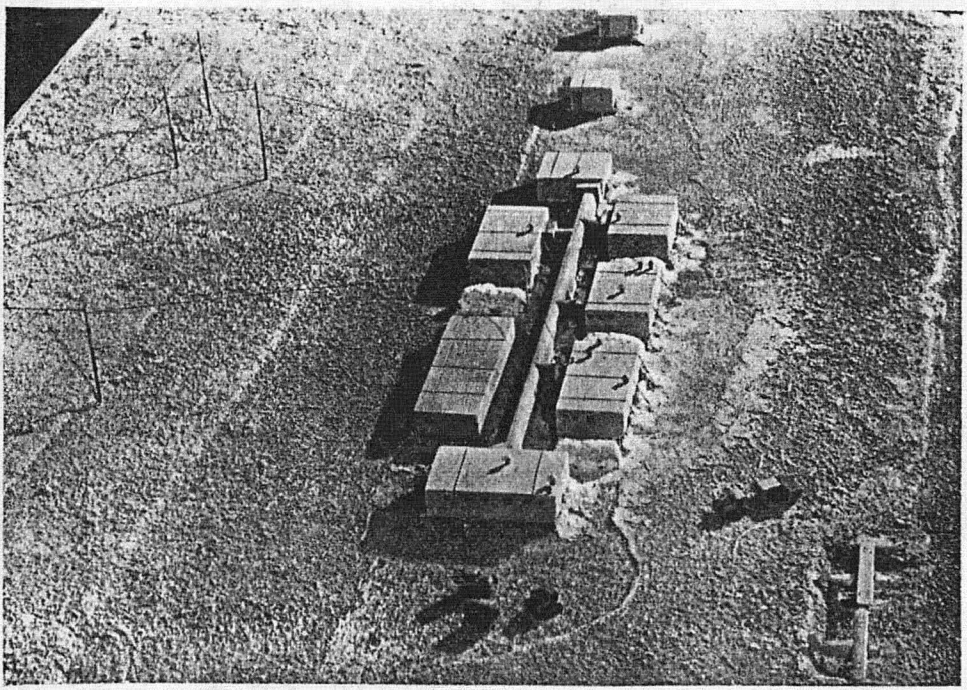

SCOTT BASE, McMURDO SOUND, as it will look from the air.

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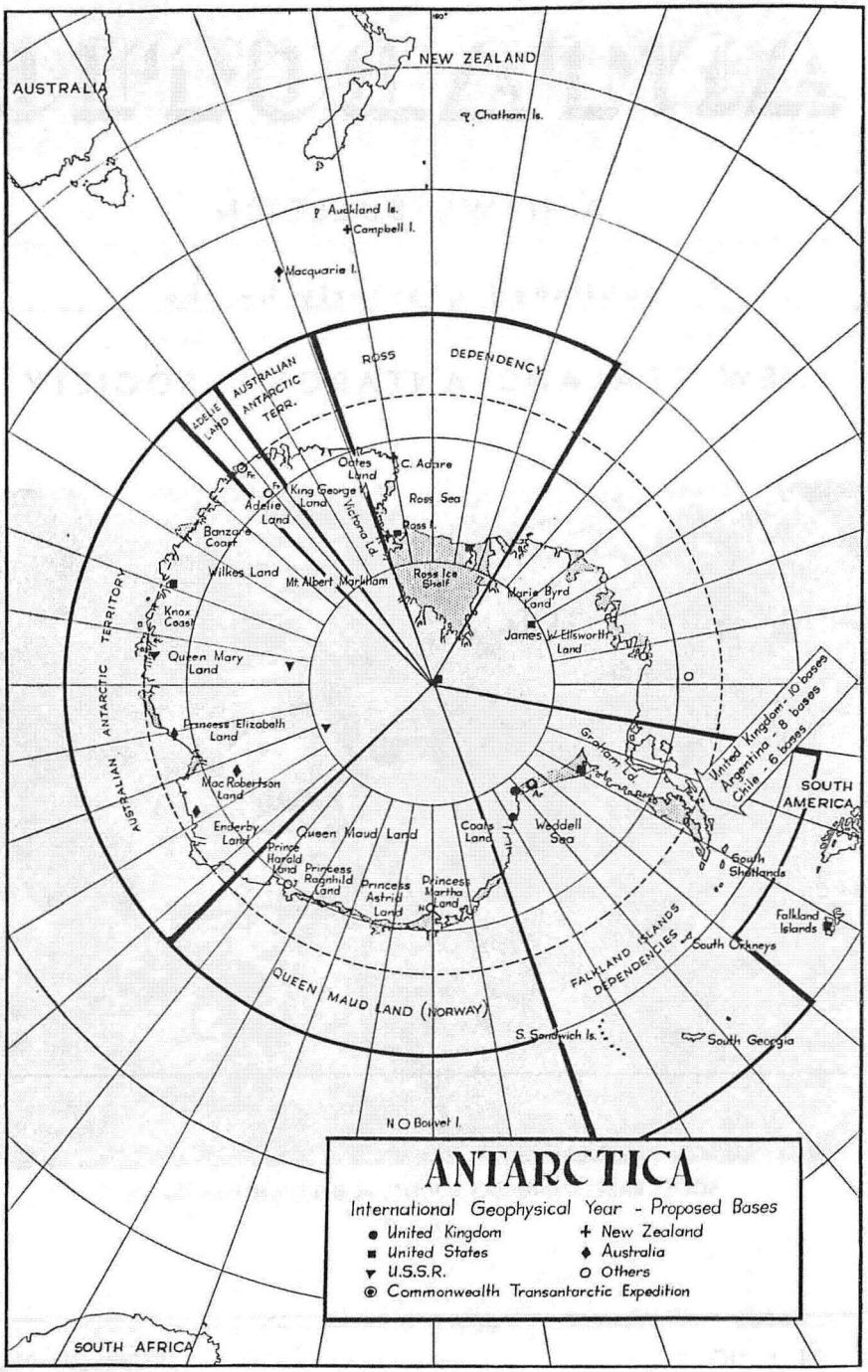
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"ANTARCTIC"

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NEW ZEALANDERS PREPARE

An icefield high in the Southern Alps has been the training ground for New Zealand's Antarctic team which is to go south to McMurdo Sound in December.

Late in July Sir Edmund Hillary and J. H. (Bob) Miller, his second in command, and chief radio officer Peter Mulgrew, arrived at the Hermitage to join dog-trainers Dr. George Marsh, Lieut. F. R. Brooke and Harry Ayres. Early in August the full field party assembled, and by the middle of the month they had been joined by the members of the Antarctic Flight and other expedition members.

Malte Brun hut, perched at 5.700 feet on rock slopes above the upper Tasman Glacier, represented "Depot 300",, the supply dump which Hillary will set up near Mt. Albert Markham, between Scott Base and the South Pole, during the 1957-58 Trans-Antarctic crossing.

To provide training in smoothly co-ordinated radio communication between aircraft, sledge parties, forward depot and headquarters, the radio equipment to be installed at Scott Base was set up at the stores assembly depot at Gracefield in the Hutt Valley, 300 mile away. Conditions at Gracefield were not ideal for radio reception on account of its being in a heavily industrial area, but this added more realism to the trials. With scientific experiments being carried out at Scott Base, it will often happen that the radio operators will be faced with similar conditions down South.

Dog-sledge training, ski work and camping techniques were practised on the glacier. The pilots established a glacier air-field, carried out long flights with constant maintenance of the radio links, and practised solo emergency landings, spending nights on the glacier to gain experience in the use of emergency gear and in solo takeoffs next day.

FINAL EXERCISES

On August 22 the full team, with most of the I.G.Y. scientists who will also occupy Scott Base, assembled for the final ten-day exercises. They spent nights on the glacier in tents, using field rations. Tractor driving on ice and snow, rope and

COVER PICTURE

New Zealand's proposed Scott base as it will appear from the air. This photograph, from a model made by the Ministry of Works, shows (bottom right) the aircraft bay on the edge of McMurdo Sound and (left) the radio aerials.

Trans Antarctic Expedition.

ice-axe techniques for rough conditions and crevasses, aerial supply dropping and the use of explosives were all practised.

Drums of fuel were dropped from approximately 50 feet at 120 knots and fell on firmly compacted snow on the glacier. The 33 gallon containers buried themselves some three or four feet in the snow while the 12 gallon drums penetrated a mere six inches. No damage or leakage was evident after the dropping and no difficulties were encountered.

The purpose of these free drops (without parachute) was mainly to test the drums and to give experience to the Expedition members in recovering the containers after the dropping. The drums were painted a bright orange colour. It is intended to use this type of free drop as emergency supply to the sledging parties and re-supply to depots established along the Scott Base—South Pole route.

Two Ferguson tractors were made available with an instructor to give advanced driving tuition and general operational experience to the team. These tractors are similar models to the ones which are to be used in the Antarctic.

PLANE DAMAGED

Minor damage was done to the Auster aircraft during a trial landing on the glacier on August 19. Experiments were being made with the Auster's landing wheels protruding through the skis. The pilot, Squadron - Leader Claydon, made four touch-downs to test the surface but on the fifth run-in he apparently struck a patch of soft snow, and the aircraft overturned. The pilot was unhurt, but the propeller, canopy and tail unit were damaged. Repairs were carried out on the spot, and a few days later the aircraft was flown out safely. The Expedition Beaver was also used on the glacier.

Early in September the party moved to Burnham military camp near Christchurch for a first-aid course, inoculations and final medical and dental checks.

FAREWELL FUNCTIONS

The Expedition is expected to leave Wellington on board the "Endeavour" on December 15, following a farewell function at the Town Hall at 11 a.m. Arriving in Lyttelton Harbour next day, Sunday, Sir Edmund Hillary will lay a wreath at the foot of the Scott statue on the banks of the Avon, and the members of the Expedition will then probably join the Canterbury Pilgrims Society in an Anniversary Day service in the Christchurch Cathedral. There will later be farewell functions at Dunedin and Bluff.

PARTY COMPLETE

The entire Scott Base wintering party of the Trans-Antarctic Expedition has now been selected. The final appointees are:

Mr. Guyon Warren, M.Sc., Christchurch, aged 23; assistant geologist.

Mr. Warren, who was educated at Christ's College and Canterbury University College, graduated M.Sc. with second class honours in geology in 1955. With two years' experience in geological mapping, he has recently been on investigations in the Burke's Pass-Fairlie area for the Geological Survey. Mr. Warren is also a capable surveyor and a "reasonably accomplished" cook and photographer.

Mr. Ernest S. Bucknell ("Buck"), Upper Hutt, aged 29; cook.

Mr. Bucknell, a former pupil of Upper Hutt primary school and the Hutt Valley Memorial Technical College, Petone, served his apprenticeship as a turner at Hutt railway workshops before joining the wildlife division of the Internal Affairs Department, in 1950, as a deer culler. For the past three years he has been engaged in opossum research. Mr. Bucknell, an enthusiastic skier and tramper, was for

some time in charge of the wild-life division's Orongorongo research station and its catering and cooking. He is also experienced in the parcelling of supplies for airdropping to isolated camps, and is a capable fitter and mechanic.

SUMMER SUPPORT PARTY

A summer support party of 17 men will accompany the Expedition to the Ross Sea in December. The party will return to New Zealand in March after helping to erect the Scott Base buildings and carry out various tasks.

The names of six members of this party have been announced:

Mr. Murray H. Douglas, The Hermitage, Mt. Cook, aged 29, alpine guide, who will be an assistant dog-handler, tractor-driver and mechanic.

Mr. Derek Wright, Wellington, aged 28, of the National Film Unit, who will be official cine-cameraman.

Corporal Peter H. Tate, Wigram, Christchurch, aged 37, an R.N.Z.A.F. wireless operator - mechanic, who will assist in the preparation and maintenance of the two aircraft of the R.N.Z.A.F. Antarctic Flight.

Mr. Arthur S. Helm, M.A., F.R.G.S., Wellington, aged 42, Secretary of the Ross Sea Committee and of the N.Z. Antarctic Society, who will be responsible for administrative liaison during the settling-in period and will also supervise heavy postal and philatelic demands.

Mr. Geoffrey Lee Martin, Auckland, aged 29, a senior reporter of the "New Zealand Herald" staff, who will be official journalist with the party to cover the establishment of Scott Base and Expedition activities up to the departure from the Ross Sea of H.M.N.Z.S. Endeavour.

Mr. R. E. Barwick, M.Sc., Wellington, aged 26, of Victoria University College, who will be research biologist and black-and-white artist.

The temporary group will also include a seven-man construction unit from the Services under the supervision of a Ministry of Works foreman, a medical officer, and two of the "second - year" International Geophysical Year scientific group that will occupy Scott Base during 1958.

H.M.N.Z.S. ENDEAVOUR

The former F.I.D.S. survey ship "John Biscoe", originally the "Pretext" was re-named "Endeavour" and commissioned in the Royal New Zealand Navy at Southampton on August 15. Lady Webb, wife of the New Zealand High Commissioner in London, re-named the vessel, and the Bishop of Portsmouth, Dr. W. L. S. Fleming, himself an ex-F.I.D.S. explorer, and a member of the Trans - Antarctic Expedition Committee, conducted the commissioning service.

After the ship's flag and commissioning pennant had been broken, Captain H. Kirkwood was piped on board, and the vessel sailed for London. Officers and crew were farewelled at Tower Bridge on August 22 by the New Zealand Minister of External Affairs, the Hon. T. L. Macdonald, who was in England for the Suez Conference.

Loaded with stores, fuel and 12 Greenland huskies, to a total value of £26,000, the "Endeavour" is expected to reach New Zealand on October 16. After completing her loading with further stores, huts, equipment, and the embarkation of the expedition's personnel, she will leave Wellington on December 15. She will call at Lyttelton the following day and will be inspected by the Duke of Edinburgh before she sails for the South.

Shortly after leaving London she struck a storm and had to reduce speed to six knots. Rough seas necessitated taking the dogs, which had been quartered on deck, into the crew's quarters.

PLANNING SCOTT BASE

Scott Base, headquarters in McMurdo Sound of the New Zealand party of the Commonwealth Trans-Antarctic Expedition, has been designed by the architectural division of New Zealand's Ministry of Works.

The site, on the fringe of the lower Ferrar Glacier, is an unsurveyed boulder-and-gravel terrace frozen to within a few inches of the surface even in summer. Only three men have visited the location —for 20 minutes—and sole visual clues to its area and appearance are four photographs.

The buildings will be exposed to gales that may reach 100 to 150 miles an hour, and to a possible 100 degrees of frost. Concrete cannot be readily used for foundations because it is difficult to set properly, but warmth from the heated huts may eventually drive down the "permafrost" level and loosen anchorages. In winter the base may be snowed in; in summer the site is free of snow, sometimes wet by day though frozen at night.

Knowing only these facts, Ministry of Works "antarchitects" have faced the task of planning a miniature village that must be absolutely self-contained, to house 22 men, their equipment, stores, fuel, food and scientific apparatus.

VILLAGE OF EIGHT HUTS

Four of the eight buildings required are being prefabricated, to New Zealand design, by the Australian manufacturers of the Mawson huts, using Mawson-type materials. The other four buildings are under construction at Renwick, near Blenheim, New Zealand.

Wall, roof and floor panels, three inches thick, will have almost 100 per cent. efficient insulation. Australian-made panels consist of onozote insulation between an interior sheet of asbestolux and an exterior of hiduminium. In New Zealand, panel exteriors are of specially-glued fireproof plywood sealed with glass fabric and a new resin, with an asbestolux-hardboard interior and fibreglass filling.

It is planned to erect the outer shell of each building in one day, to eliminate risk of damage to an incomplete unit by a sudden storm. The Ross Sea Committee hopes to have the parts assembled in Wellington in time to be erected in a "dummy run" at Rongotai. It is not intended to rush this trial erection, which will take much longer than the actual time taken in Antarctica. Different methods of erection will be tried experimentally, in order to see which is the best. With the erection of each hut as it arrives, the men will thus become experts in their tasks.

It is hoped that at least a month before the expedition is ready to sail, all fittings and furnishings will be installed and any problems which may arise dealt with. The buildings and contents will then be taken to pieces, packed and stowed on the ship in the order in which they will be taken out in the Antarctic for rapid erection.

The fireproofed and pre-fabricated village, shipped 2,000 miles in coded bundles, stowed for discharge in precise succession, and hauled by tractors to the headquarters in McMurdo Sound, must, if possible, be ready for occupation inside 10 days.

MAXIMUM SECURITY

All material in the huts, their fittings and the furniture will be fireproof. Every splinter of timber is being pre-treated with special chemicals. An automatic temperature-controlled alarm system will be installed and the huts will be so

spaced, with boulder mounds between, that a fire in one could not spread to others.

Because normal concrete or pile foundations are not practicable, each building will be erected on a "grillage" consisting of two layers, at right angles, of closely-spaced wooden beams. Floor panels will be locked into each other, walls and interior partitions will fit into prepared slots and roof panels will be laid on by fork-lift tractor.

At each stage—floor, walls and roof—panels will be tied together immovably by long rods threaded through longitudinally. Finally, a series of rods across the roof will tie in with guy wires anchored to "dead men"—railway sleepers laid in deep holes filled in with spoil and then frozen.

AVOIDING HEAT LOSS

Each building will have a "cold porch" at its entrance, connected to a central covered way. The two doors of each cold porch will be fully insulated, and the outer one will have a "pop door", or small hatch.

Covered ways have presented no problems to past Antarctic expeditions based on sites with plenty of snow. All they have had to do is to stack their stores in the form of a tunnel. Scott Base, however, cannot rely on being completely snowed in for long periods, and a prefabricated "tunnel on the surface" is being provided. It will have walls of corrugated iron sheets, each with a curved end (like those of an old-fashioned New Zealand homestead veranda), arched together on a base of angle-iron bars laid across the ground like railway sleepers.

Sheet-iron and angle-iron will be spot-welded, with the use of a fork-lift tractor for the high spots, and will be anchored by guy wires and boulders. The covered way, completely of metal, will be yet another safeguard against fire damage.

The foot-square windows in each hut have been specially designed to prevent heat loss. They will be made up of two sheets of glass substitute enclosing a sealed layer of perfectly dry air, a complete insulator. The party will take some spares in case of breakages.

"ALL MOD. CONS."

The heat from the exhausts of the two sets of diesel power generators will be used in two sets of snow melters, one to provide cold water and the other warm.

Cooking will be done on an oil-fired range in a kitchen with "all mod. cons" and a flue specially designed to eliminate downdraughts. Oil for the range, the heaters and the generators will be of a special non-freezing quality.

Although the design of Scott Base reduces all dangers to a minimum, escape hatches are being provided high up on the wall of each building. They will open inward in case snow is piled up outside.

Each building will be warmed by circulating air forced through ducts from an oil-burning electrically-operated fan-heater, with a fuel cut-out automatically controlled by thermostat. Hinged flaps in the wall panels will act as precision valves for the introduction of adequate fresh air.

Scott Base should be as habitable in 2057 as in 1957. Designed to stand maximum stresses of wind and cold, the buildings will suffer virtually no deterioration in Antarctic conditions. With no humidity and no 'bugs', only minimum maintenance will be needed for indefinite life. And, as the Ministry of Works designers point out, the best maintenance for a fine set of buildings is to keep them occupied.

The British Party

A message from Shackleton Base dated June 20 said that two blizzards had filled the inside of the temporary "hut" with 80 tons of snow while the panelling was half finished. It is not surprising therefore that recent activity had been "mainly digging". Tunnelling had been continued to accommodate the remaining seventeen huskies: seven were already inside. The tent walls were caked in ice and it was a "great performance" getting into frozen sleeping-bags which were absolutely solid and creaked before thawing out. All were "fit and fine" and finding time passing quickly.

THE CROSSING TEAM

The "Magga Dan" is expected to leave England with the main party on November 14, and to go south in the Weddell Sea some 50 miles ot the east of last year's route. Shackleton should be reached in early January. The trans-Antarctic crossing should commence in November 1957, leaving the support base in February 1958. The party will comprise 15 or 16 men, with three-component transport, tracked vehicles, dog sledges and aircraft. Normally, two dog sledges will keep with the tracked vehicles.

Squadron-Leader Lewis states that the expedition's de Havilland Otter aircraft is being fitted out "with just about every known aid for Polar flying."

"MAGGA DAN"

The 1,800-ton "Magga Dan" which has been chartered by the British Trans - Antarctic Expedition to replace the "Theron", was launched at Aalborg, Denmark, on June 1 by Mrs. Fuchs, wife of the leader of the expedition. Costing £500,000, the vessel is a modern passenger and refrigerator ship with powerful turbo-charged engines, specially designed for navigation in Polar waters. She has comfortable accommodation for 34 passengers. A heated glass wheelhouse high on the foremast, 60 feet above the sea surface, is reached by a ladder inside the mast. Here a full set of instruments similar to those in a normal wheelhouse on the bridge facilitates navigation in ice-filled seas. The propeller is protected by a special ice-knife and there are three fins on both sides of the under-water hull to force ice away from the propeller.

"Magga Dan" is expected to be ready by the end of September, and will be delivered in London by November 1. Her crew will number 26 under Captain H. Petersen, well-known as captain of the sister-ship "Kista Dan".

The leader of the party at Shackleton is Kenneth V. Blaiklock, aged 27. In 1945 he joined the Ordnance Survey and in 1946 was stationed in Germany with the field survey squadron of the Royal Engineers. From 1947 to 1950 he was at Base E of the Falkland Islands Depencies Survey on Stonington Island, with Dr. Fuchs as base commander. In 1951 Blaiklock was demonstrator in the Polar Theatre at the Festival of Britain, and for the next three years he was an F.I.D.S. surveyor at Base D, Hope Bay, where Dr. George Marsh, who will be with the New Zealand party under Sir Edmund Hillary, was leader. In 1955 he assisted to establish two new F.I.D.S. bases in Grahamland.

MacRobertson Pty. Ltd. has given the Commonwealth Government £3,000 towards the cost of scientific work in the Antarctic. The gift is to be used to buy a motor-launch specially designed for Antarctic work. Mr. MacPherson Robertson gave £14,000 towards the cost of the Mawson expeditions of 1929-31, and MacRobertson Land is named after the donor.

New Zealand Scientists to Participate in I.G.Y. Programme

A New Zealand team of five scientists who will spearhead this country's contribution to the activities in the Antarctic in connection with the International Geophysical Year will be accommodated with the Trans-Antarctic support team at Scott Base and will travel to McMurdo Sound with them on the "Endeavour".

The New Zealand party supporting the Trans-Antarctic crossing will actively assist the I.G.Y. programme by geological mapping, seismic ice-thickness determinations and additional gravity surveys up the Ferrar glacier and on to the Polar Plateau. The two parties will be sharing many facilities and, in fact, co-operating in every possible way. When Sir Edmund Hillary's team returns to New Zealand early in 1958, an augmented I.G.Y. party will remain at Scott Base at least until early in 1959. Although still in the planning stage and distinct from I.G.Y., it is possible that the Geological Survey, D.S.I.R., may send a geological field party to Scott Base to undertake regional surveys in the Ross Dependency from December 1957 to February-March 1959.

THE SCIENTIFIC TEAM

Five men will comprise the first year party for the International Geophysical Year at Scott Base.

Dr. Hatherton, as chief scientist, will be responsible for all the scientific work at Scott Base, and under his direction, training of the first-year team has already begun. He will accompany Sir Edmund Hillary's field parties on their expeditions to establish bases, to make gravity measurements up the Ferrar Glacier and on the Polar Plateau.

Mr. V. B. Gerard was educated at Christchurch Technical College and Canterbury University College, where he graduated M.Sc. in Physics in 1947. He joined the Magnetic Observatory staff in Christchurch in 1942, and in 1949 was stationed at the Apia Observatory in Western Samoa. In 1950 and 1951 he was in charge of magnetic observations from the air in the early stages of the North Island geothermal project. A geophysicist, Mr. Gerard has designed and built seven flux-gate magnetometers which will be used to measure variations in the earth's magnetic field during the I.G.Y. He is married and his home is in Christchurch. He is 31 years of age.

Mr. R. H. Orr is a 29-year-old technician in the Geophysics Division of the D.S.I.R. in Wellington. He was educated at Wellington Technical College. He joined the radio development laboratory of the D.S.I.R. in 1943, and in 1946, after a year's service in the R.N.Z.A.F. joined the staff of the Dominion Physical Laboratory. In 1948 he joined the Geophysics Division. He went overseas in 1951 and worked in seismic oil prospecting in the United States, the United Kingdom, Nigeria and the Persian Gulf area. He returned to New Zealand in 1954. Mr. Orr is married and his home is at Lower Hutt.

Mr. W. J. P. Macdonald is a teacher at Thorndon School, Wellington. He was educated at Wellington College, and he is at present completing a B.Sc. Degree at Victoria University College. He joined the D.S.I.R. in 1946 and was

engaged in geophysical work until 1952 when he went into business. In 1954 he joined the teaching profession. He spent eight months in Australia in 1951, working for the Bureau of Mineral Resources. Mr. Macdonald in 30. He is married, and his home is at Karori, Wellington.

Mr. H. N. Sandford is a radio mechanician in the Radio Section of the Post & Telegraph Department at Wellington. He is 25 and was born at Raetihi. He attended Wanganui Technical College from 1944 to 1948, and after matriculating, joined the Radio Section of the P. & T. Department. He spent six months in Rarotonga in 1949, assisting in the reconstruction of the radio station. Mr. Sandford is single, and his home is at Normandale, Wellington. He holds a first-class certificate in radio technology.

TWO SECOND-YEAR MEN

Mr. L. H. Martin has been chosen to lead the second-year party for the International Geophysical Year at Scott Base. The first member of his team to be chosen is Mr. A. J. Heine.

Mr. Martin and Mr. Heine will be members of the summer party at Scott Base from December this year to March next year, to gain experience of Antarctic conditions, and help in the establishment of Scott Base.

Mr. Martin is District Engineer of the New Zealand Broadcasting Service in Otago and Southland. He is 35, and was born at Levin. He was educated at Mahora School, Hastings, and Hastings High School. He joined the Broadcasting Service in 1939. In 1946 he took charge of the technical side of the Broadcasting Unit of the 2nd N.Z.E.F. in Japan. He became officer-in-charge of the unit in 1947. In 1949 he was appointed engineer-in-charge of the N.Z.B.S. receiving station at Makara. In 1953, he took up his present appointment in Dunedin. He is married and has three children.

Mr. Heine is a toolmaker at the Dominion Physical Laboratory of the D.S.I.R. at Gracefield, Wellington. He is well-known as a mountaineer. A member of the New Zealand Alpine Club, for the past four years he has been chief guide of the Hutt Valley Tramping Club. He is a keen photographer and an experienced skier. Mr. Heine is 30. He is a member of an Upper Moutere (Nelson) family, and was a pupil at Nelson College. He completed an apprenticeship in fitting and turning in 1948 and joined the Dominion Physical Laboratory staff in 1950. He is single, and his home is at Ngaio, Wellington.

I.G.Y. Equipment

In connection with the I.G.Y. work to be carried out at Scott Base several interesting items of equipment are being prepared.

In **Geomagnetism,** in addition to standard types of magnetographs, there will be one designed to measure rapid fluctuations of the earth's magnetic field during magnetic storms. This is being developed by the Geophysical Observatory of the D.S.I.R. at Christchurch.

In **aurora,** the Carter Observatory in Wellington is chiefly responsible for organising the auroral work to be carried out during I.G.Y..

For **Ionosphere,** the most important branch at Scott Base, a panoramic ionosonde developed and designed by the Dominion Physical Laboratory is under construction at the Canterbury College Industrial Development Department.

Radio Propagation through the auroral zones is particularly important and New Zealand is uniquely situated to undertake such investigations. A transmitter will be set up at Scott Base, and receivers, with the co-operation of the Australia, French and United Kingdom authorities, at Mawson and in Adelie Land (both in the auroral zone), and at Port Lockroy Grahamland), Campbell Island, Hobart and Invercargill.

In connection with **Gravity measurements** the Americans plan a gravity profile running across the Ross Sea and Weddell Sea "graben" or trough, from the Pole to Marie Byrd Land and from Marie Byrd Land to McMurdo Sound. The New Zealanders will extend this profile up the Ferrar Glacier and on to the Polar Plateau, in conjunction with Hillary's field-party, who will have seismic equipment to measure the thickness of the ice. This information is required in the analysis of the gravity data. The "Worden" gravimeter to be used weighs about 9lbs. and costs in the vicinity of £3,000.

HOUSING THE GENERATORS

Scott Base's six 6-kilowatt diesel generators will be housed in two separate sets of three each, one in the workshop, and the other in the ablutions and laundry hut. Heat from the generator exhausts, besides providing warmth for the two buildings, will melt snow for the base water supply.

Mr. M. W. Langevad, (20), will assist Mr. Humphries. He is a radio mechanic in the P. & T. Dept., Christchurch, and holds a first-class certificate in radio-technology. He was born in Wellington and educated at St. Patrick's College. He joined the Public Service five years ago.

CAPE ADARE STATION

The proposed station near Cape Adare is a joint United States-New Zealand base to serve two purposes: (1) to provide weather data for American aircraft flying between New Zealand and Antarctica, and (2) to undertake an I.G.Y. programme in meteorology, geomagnetism, aurora, ionospherics and seismology. The United States is establishing and maintaining the base, undertaking all the meteorology and providing the scientific equipment. New Zealand is supplying three scientists to implement the I.G.Y. programme with the exception of meteorology.

The American leader in meteorology at the Cape Adare station is to be **Prof. James A. Shear,** a meteorologist of the University of Kentucky.

Three New Zealanders are to be stationed with nine Americans at this base.

Mr. C. E. Ingham, (29), leader of the New Zealand component, will be responsible for work on aurora, in geomagnetism and in seismology. Born at Petone and educated at the local Technical College, Mr. Ingham joined the State Hydro Department in 1943 and the D.S.I.R. two years later. He graduated B.Sc. at Victoria University College in 1951. He is attached to the Geophysics Division of the D.S.I.R.

Mr. J. G. Humphries, (32), is English born and served in the Royal Navy during the war as a petty-officer radar mechanician. He worked on ionosonde equipment in the Geophysics Division, D.S.I.R., before joining the Southern Cross Engineering Co. in Christchurch. Mr. Humphries will be senior technician and will install and operate the panoramic ionosonde at the base.

WINTER AT LITTLE AMERICA

The 166 Americans wintering in the Ross Dependency, 73 at Little America V and 93 at Williams Air Operating Facility (Air Op. Fac.) in McMurdo Sound, carried out an extensive building programme long after the last of the vessels of Task Force 43 left for home on March 10.

The seabees at Hut Point, working under the most adverse conditions, often in temperatures as low as 40° below zero, in up to 60-knot winds, over a period of four months, six weeks of which were in total darkness, constructed a modern, self-sufficient city capable of housing 200 men. Fourteen of the buildings were Quonsets made of cold steel. The "Quonset Jockeys" can verify that the coldest seat in the world is astride a Quonset's steel roof in Antarctica.

Other tasks included digging foundations in solid perma-frost, constructing unusual antenna for amateur radio operations, interior decorating (counters, shelves, partitions), and erecting wind-breaking vestibules for each of the buildings. The builders' work continued entirely outdoors long after many others headed for the warm interiors. Common experiences among the builders were frost-bitten noses, fatigue lined faces, hoarse voices, bleeding fingers, and eyes reddened from the biting blizzards.

"We weld everything from broken hearts to the crack of dawn," is the motto of the welders. They erected storage tanks for holding 100,000 gallons of diesel fuel and a quarter of a million gallons of aviation gasoline in sub-zero temperatures with gale winds in frequent attendance. Operating from an open sled on a 24-hour basis, during the year's first three months they effected structural repairs (on the bay ice and snow compacted ridges) to 35-ton tractors as well as one-ton sleds; they repaired tail skis on aircraft, welded cracked aluminium air-scoops on helicopter engines, cut anchor chains weighing almost a ton a section, and fabricated wire lines used in anchoring two ships to a hilltop.

LET THERE BE LIGHT

At the bottom of the world an item vital to successful living is light. This precious commodity is found in abundance at Williams Air Operating Facility.

Initial work consisted of providing temporary power to the first two completed buildings and the builders' power tools. A 30kw. generator was pressed into use as the mess hall was completed. A feature of this early wiring was an overhead power line, about 400 feet in length, from the generator to the sick-bay tent. This line was unique in the Antarctic as it was supported on bamboo poles. In the beginning, outside lines were the big project. A new type cable was used for distribution lines and splicing was extremely difficult. Nearly 80 splices, each consuming three hours work, were made. Over two miles of outside lines were installed, including the necessary cables for a fully automatic fire alarm system, and a public address system.

Every effort was made to give the best possible lighting to the 36 buildings. Nearly 20,000 feet of building wire was used. The power plant went into operation early in March and after a few growing pains was soon running smoothly. Power is supplied by two diesel electric sets of 100kw. capacity each. They will deliver a maximum of 700 amps on a three-phase, four-wire, 120-208-volt, balanced system.

Antenna fields were laid out and holes for 45-foot telephone poles blasted into permafrost. Charges averaged three 40lb. charges per hole. Guy wire anchor holes had to be drilled, six feet deep and five per hole, with an air drill. One 4-pole quadratic receiving antenna, two 4-pole rhombic transmitting antennae, and one three-pole long wire transmitting antenna were erected. The Washington Rhombic, beamed on Washington, D.C., is 770 feet long, the Auckland Rhombic is 350 feet long, and the long wire, beamed on Little America, is 540 feet long.

AIRCRAFT IN ACTION

Kiel Field, about two miles south of Little America Five, was named in honour of Max R. Kiel, who gave his life in helping to establish a trail to Marie Byrd Land. Two 20 x 48-foot insulated huts joined by an improvised sheltered area, house shops, generators, stores and control tower. Bulk stores are covered with snow resistant burlap-covered shelters. Large sleds with fuel and some supplies are parked at the field. Adjacent to the field are a helicopter and an Otter aircraft that generally require their skis to be dug from the snow. A 30-day food supply is maintained in the wanigan which houses the galley for the men living at the field. When weather permits, all hands except those on watch come into Little American V for noon and evening meals. Any time a vehicle traverses the full-flagged trail, the camp is alerted. Arrival means safety.

On May 14 the first sustained flight during the dark winter night was successfully completed. The aircraft, a UC-1 De Havilland Otter, remained aloft for four hours six minutes, evaluating electronic equipment and aircraft performance. Smudge pots outlined the runway on the ice which had been prepared for these flights. After two hours of preparation, reheating and checking of equipment in the subzero temperature the aircraft taxied into position. Voice communication had previously been established with the main base and Kiel Tower. Takeoff was made without incident. Only a few lights at Little America Base and Kiel Field were visible, and these were used as reference points.

The flight was conducted within a radius of five miles, all by instruments under a partially overcast sky. Darkness obscured ice patterns each time the plane turned beyond the Ross Sea ice-shelf. As the final landing was made without incident, plans were formulated for future flights during the winter night.

WINTER APPROACHES

At the end of May, Little America reported:

"Last hours of twilight, coupled with full moon, gave opportunity for ice reconnaissance during a four-hour flight on May 23. Kainan Bay is frozen solid to a depth established to be four to five feet, extending beyond the mouth of the bay. A ribbon of open water about 300 yards wide from the barrier edge seaward extends along the barrier. Small patches of open water are visible in the pack-ice seawall as far as the eye can see. The Eastern tip of Kainan Bay broke off approximately 1000 yards by 3000 yards in size. Many pressure ridges can be observed in Kainan Bay extending across the entire bay. No change is noted in the crevasse north of Little America V.

"Weather synopsis 15 to 30 May: partly cloudy skies with snow flurries. Average surface wind southeast 8 to 12 knots with gusts to 20 knots blowing snow. Average temperature —24°, with a low average —43°."

The base has established radio contact with the Russian IGY station on the Knox Coast. An

exchange of information, especially weather, was requested by both parties. The message received from the Russians also extended best wishes to Rear-Admiral Byrd, Rear-Admiral Dufek, and Commander Whitney, Little America base commander.

On Independence Day (July 4) the Russians at Mirny and also at the inland station Pioneer sent congratulatory messages. The French party in Adelie Land also radio-ed greetings, "All the best, good luck, and kindest regards."

A June situation report said that the average temperature at LAV was —27°, with low of —61°. At McMurdo Sound, it was average temperature —12°, with low of —38°.

THE BLIZZARDS COME

A message received early in July said that while digging out from one of the worst blizzards of the season, the base was threatened by another blowing snow storm. Winds were registered up to 38 knots, with heavy snow-fall. All hands were engaged in either digging out or making repairs to storm damage.

"Storm damage to the structures is negligible," says the report, "and can be repaired in one day. Blowing and drifting snow is the principal concern. Interiors of all machinery, helicopters and heaters are packed very tightly with snow. Considerable snow has blown into the buildings through minute holes or cracks, necessitating cleaning up within the buildings themselves.

"After an extensive survey of the camp and Kiel Field it was revealed that tons of snow now covers all equipment and supplies. Considerable snow has drifted into all tankers. The anemometer at Little America V registers 50-60 knots, and the Kiel Field portable anemometer indicates between 40 and 60 knots.

"UC-1 Otter aircraft was damaged beyond repair. Heavy winds tore it from hold-downs, whipping the aircraft around and blowing it against a snow drift. The tail section was badly damaged. A spare Ground Control Approach mechanism with blade on was swung around 150 degrees. No apparent damage was done to it."

A later message states: "This small, ice - encompassed snow-shrouded community on the Ross Ice-shelf is suffering from the worst blizzard of the season, which commenced at 0600Z on 1 July, plunging the temperatures well below zero. Visibility is reduced to zero with blinding snow, as winds increase with gusts up to 68 knots. All outside work and travel to and from Max Kiel Field is halted.

"Infinitesimal holes not visible to the eye in the tunnels connecting the buildings and within the buildings themselves are well marked with mountains of drifting snow as the winds continue to drive the dust-like snow.

"While all buildings are buried beneath tons of snow, life within the camp continues with daily routine chores, maintenance and continued planning for future operations going on as usual."

A late July report indicated that twilight hours were appearing with grey-blue skies during early and mid-morning periods. Weather had been characterized by rapidly fluctuating temperatures, pressures, and wind velocities. Low temperature for the month was a —42° July 5.

Men at both bases were putting finishing touches on the construction of their buildings and preparing material for the air drop at Pole Station and operations scheduled in Marie Byrd Land this fall.

OPERATION DEEPFREEZE II

The United States Navy Department has announced that over 3,000 men in 12 ships will leave American ports for the Antarctic between September and December this year. Navy and Air Force planes will fly to New Zealand in September and leave for the Antarctic in mid-October.

A task force under the command of Captain G. L. Ketchum will head for the Ross Sea via New Zealand. This group will consist of two ice-breakers, U.S.S. "Atka" (AGB-3) and U.S.S. "Glacier" (AGB-4); a seaplane tender U.S.S. "Curtiss" (AV-4) which will carry the scientific party; the tanker U.S.S. "Nespelen" (ACG-55); the destroyer escort (radio, radar picket ship) U.S.S. "Brough" (DE-148); and the cargo ships U.S.N.S. "Greenville Victory" (TAK-237), U.S.N.S. Pvt. Joseph E. Merrell (TAK-V) and U.S.N.S. Sgt. Turman Kimbro (TAK-254).

To support the fly-in from New Zealand to McMurdo Sound in October, "Brough" will take station at 57° S, 170° E, on October 11, and "Glacier" will take station in the ice-pack at 67° S, 170° E, on October 19.

THE AIR ARM

Captain D. L. Cordiner will command Air Development Squadron VI, the Navy air arm of 19 operating planes comprising four R4D ski-rigged Skytrains, two R5D wheel-rigged Skymasters, four P2V ski-rigged Neptunes and nine UC-1 ski-rigged Otters.

Air Force planes of the 18th Air Force will be commanded by Col. E. W. Hampton, and will comprise eight C-124 Globemaster cargo planes, whose payload is 35 tons each. Five will be in New Zealand in sufficient time to be ready for flight to the Antarctic about October 15. Col. Hampton arrived in Christchurch by Globemaster on June 23. Major maintenance and overhaul on the Globemasters will be done at Harewood, where spare engines and other supplies will be stored.

The Otters will be taken to the Antarctic, three as cargo on the Globemasters and the remaining six aboard cargo ships. In addition, there will be assigned to various duties seven five-passenger and four two-passenger helicopters.

An ice air-strip will be prepared at McMurdo Sound (Williams Air Operating Facility) for the reception of the Globemasters. A high-frequency radio-beacon was brought to Christchurch by the Globemaster which flew to New Zealand in June. It will be used as a homing device for aircraft flying between New Zealand and the Antarctic. The beacon will probably be erected either at Taieri or at Invercargill.

INLAND STATIONS

With the advent of daylight, reconnaissance and the preparation of a safe trail to **BYRD STATION** (80° S, 120° W) will commence. Heavy tractor trains manned by some of the 73 men who have been wintering at Little America V will leave there in November on this task. Air support for the over-snow caravan will be provided by ski-rigged R4D, P2V and UC-1 Navy planes. The target date for the completion of Byrd Station is January or February, 1957, when builders will be replaced by scientists and maintenance men.

When aircraft arrive at McMurdo Sound in October a navy plane will make a landing at the **SOUTH POLE** to test snow compaction. Then navy planes will land some of the 93 Seabees who wintered at

McMurdo Sound Air Op. Fac. to mark off a drop zone. Air Force planes will then load the 500 tons of material packaged at McMurdo Sound and will parachute them at the Pole. Navy planes will evacuate the construction personnel, probably in January, 1957, and replace them with the 25 men who will man the station for the winter.

Navy aircraft based at McMurdo Sound will support the building of a small station in the vicinity of the **BEARDMORE GLACIER** in October-November. This base will be manned by a nucleus crew which will be able to conduct search and rescue mission if necessary.

KNOX COAST STATION

A navy task group under Captain C. W. Thomas will steam via New Zealand to erect a base on the Knox Coast. U.S.S. "Arneb" and U.S.C.G.C. "Northwind" will discharge men and equipment at Cape Adare for the construction of a combined U.S.-N.Z. scientific station, proceed to McMurdo Sound and then leave for the Knox Coast (approx. 104° E to 109° E.), select a suitable location, and erect the station there. When the base is completed (estimated date February or March, 1957) the builders will be replaced by scientists and maintenance men.

WEDDELL SEA BASE

Another task group under Captain E. A. McDonald, comprising the icebreaker U.S.S. "Staten Island" and the U.S.S. "Wyandot", will sail via South America to the Weddell Sea, locate a base site and erect a scientific station there. Builders here also will be replaced by the base staff before the surface ships leave the area. This station is to be commanded by Captain Finn Ronne, U.S.N.R., who led the American expedition which discovered Edith Ronne Land south of the Weddell Sea in 1947.

The battalion of Seabees who will erect the stations in the Cape Adare, Knox Coast and Weddell Sea areas will be commanded by Commander W. F. Flynn. This battalion will later relieve the battalion which wintered over in the Antarctic during the 1956 winter.

Operation Deepfreeze II will therefore comprise in all 12 ships and 38 aircraft, and the personnel will number 3,525, in addition to 148 civilian scientists, etc. (1805 men were involved in Operation Deepfreeze I).

Snow vehicles used will range from Caterpillar D-8 tractors weighing 35 tons and equipped with 54-inch treads, to jeep-sized treaded weasels.

Richard Chappell, an 18-year-old eagle scout, has been selected as a junior scientific assistant to the forthcoming U.S. Antarctic expedition. Paul Siple, the boy-scout with Admiral Byrd's first expedition, is now one of the leading American polar explorers, and is to be in charge of the party to camp on the South Pole during the I.G.Y. James W. S. Marr of Aberdeen, who went as a boy-scout with Shackleton in 1921 on the "Quest", also became a noted Antarctic explorer, and was in charge of the "secret" party which established a British base in Grahamland in 1943.

Curves for atmospheric pressure at Mirny and at Pionerskaya during June showed close mutual agreement, but the temperature range increased from 27° F. at Mirny to 57.6° F. at Pionerskaya, with mean values of 4.8° F. and —45.7° F. respectively. A temperature of —45° F. is reached in the atmosphere above Mirny only at an altitude of 18,000 feet, which is twice the altitude of Pionerskaya. In cold climates it is usual for temperatures to increase significantly with wind speed, but this was not the case in June at Pionerskaya, where the average temperature, during periods when the wind exceeded 20 knots, was only 2.7° F. above the mean for the month.

NO WINTER REST AT MAWSON

Never before in Antarctic history have explorers carried out such extensive exploration throughout the winter months as have the Australians at Mawson, and now that the hours of daylight are increasing, the tempo of activity by ground parties and airmen is steadily building up.

Although May was much colder at Mawson than April, less drift allowed regular outdoor work. When Bewsher reported on June 3, there was still about five hours light daily, although this was decreasing rapidly, with the sun low on the horizon. On May 3, Christensen, Abbs and Cooper did a weasel journey to Mt. Henderson meteorological station and changed records. On May 31, McCarthy, Gardner and McKenzie made another routine visit there and stayed overnight The sea-ice outside the bay had not consolidated sufficiently by the end of May to allow the establishment of islet weather stations. A radio theodolite for upper wind observation was installed. The radio operators established daily skeds with the French Base in Adelie Land and the U.S. base at McMurdo Sound.

The carpenter's shop was towed by weasel to the hargar site for us as a workshop and darkroom. The garage has been extended, allowing the Ferguson tractor to be kept inside thus eliminating starting difficulty. Both tractor and trailer are regularly used for many jobs in the camp area. Bunt dug and maintains a hole in the three feet thick harbour sea-ice for marine studies. Crohn also dug a hole and erected a tide gauge. Dowie gives each member two 5-minute periods of ultra-violet iradiation weekly. Several were already sunburned on June 3 and all hoped to develop sun-tan.

MIDWINTER

During June temperatures at Mawson ranged from 20°F. to —17.4°F. with an average of plus three degrees. Strong winds were frequent but there were only four blizzard days. Mawson is 75 miles south of the Antarctic Circle so the sun was below the horizon for 18 days, but owing to refraction, the northern sky was often tinged with brilliant colours even during this period. The month's sunlight totalled only 1.6 hours but there were three hours of good daylight even on mid-winter day. The menu for dinner that day was cream of tomato soup; creamed crab; baked York ham; roast braised duck with mushroom stuffing, potatoes, cauliflower, green peas; plum pudding with brandy sauce, ice-cream and strawberries in jelly. Individual menus were drawn by Nils Lied.

The sea-ice had consolidated sufficiently by late in June to allow the first 1956 visit to the remote meteorological station on an islet 5½ miles from Mawson. On the 26th Lied, Crohn and Abbs took a seven-dog team there and put the thermograph into operation again. The dogs travelled swiftly and the party was absent from base only 3½ hours.

Bewsher reported on July 2 that all sections of the scientific programme and all routine work were progressing satisfactorily. R.A.A.F. members had built a porch to cover and connect the workshop door and the small hangar door. Alterations to the kitchen pantry will increase shelf space and many men found time to carry out necessary odd maintenance tasks about the camp area. Some added extra shelving in their cubicles.

BUSY JULY DAYS

July gave an abnormal temperature range of 54°F., from +31° to —23°, with an average of +1°, but there were only two blizzard days. A radiosonde balloon was released every day although conditions were often unfavourable. The instrument transmits radio signals which indicate temperature, humidity and pressure in the atmosphere. Also, by direction finding on signals, wind directions and speeds are calculated. Two weasel journeys were made to Mt. Henderson remote meteorological station. On July 20 three men visited the station re-opened in June on Ytterskjera Islet. Radio traffic was fairly heavy throughout July.

On July 15 Crohn, Kirkby and Lied commenced a successful five-days sea-ice journey with a seven-dog team to the Douglas Island area 20 miles north-east of Mawson for survey purposes and geological work. Despite unfavourable drift conditions on the return journey the dogs did very well. Crohn used a dog team for a one-day geological trip to Ringoya on the coast five miles south-west of Mawson; also for a two-day trip to the same area. On August 2 Dinah gave birth to a litter of six pups, four dogs and two bitches: all are doing well. The family is bedded comfortably in the warmth of the surgery porch where Dowie can keep an eye on their progress.

AIR OPERATIONS

While most other Antarctic expedition aircraft are immobilized by winter conditions the "Beaver" at Mawson has been carrying out record flights under conditions never previously faced by pilots in Antarctica. These flights have been made possible because the aircraft hangar at Mawson has permitted the servicing of the aircraft under cover.

In May the R.A.A.F. Antarctic Flight, led by Squadron-Leader Leckie, carried out 19 missions, logging 80 flying hours. During this month a new depot was laid by air at King Edward VIII Gulf, 170 miles west of Mawson. The Beaver and Auster aircraft transported 500 gallons of aviation fuel and 1000lbs. of food and equipment for use in the forthcoming spring. They also landed A.N.A.R.E. scientists at various points along the route to investigate the coastal region west of Mawson. Crohn (geologist) and Kirkby (surveyor) spent eight days surveying Law Promontory and Stefansson Bay. Bunt (biologist) and Dowie (doctor-biologist) camped on the east side of Stefansson Bay where they visited a new emperor penguin rookery, south of Foldoya Island, which had been discovered from the air. They estimated 1,000 penguins, some with eggs. McGregor (magnetician) made magnetic measurements at Stefansson Bay and at Taylor Glacier. Leckie and Christensen flew 160 miles inland and located the weasel abandoned in 1955. It is not badly snow-covered and will be repaired during the spring.

During June when the base was experiencing continuous mid-winter darkness, a flight was undertaken to check on sea-ice conditions in the Taylor Glacier region.

Regular flying began again in July and 10 reconnaissance flights were logged. Antarctic winter temperatures at ground level were comparatively mild at —23°F., but at altitudes of 18,000 feet in the aircraft they were far more severe, falling to —56°F.

On July 27 Crohn was flown 60 miles west to the area of the Taylor Emperor penguin rookery discovered in 1954. He spent a week examining the rock outcrops on the nearby coast and islets accompanied for part of the time by Bewsher and Kirkby.

During August the R.A.A.F. Antarctic Flight made major exploratory flights over two widely separated regions, Enderby Land, 300 miles to the west, and the Prince Charles Mountains, 300 miles to the S.S.E. Flights to Cape Ann and Amundsen Bay in Enderby Land revealed many new mountain peaks and unmapped coastal features which were photographed from the air. The flight to the eastern extremity of the Prince Charles Mountains showed that a great gulf may extend from Prydz Bay westward to the mountains, a possibility which was first suggested by Law when he was exploring the Prydz Bay area in 1955.

MAWSON TODAY

Mawson is now a village of 26 buildings housing the most comprehensive permanent scientific establishment in the Antarctic, with a power station, aircraft hangar, garages for special snow vehicles, maintenance workshops, powerful radio transmitting and receiving equipment, a surgery, scientific laboratories and insulated living quarters.

The second permanent Australian station on the Antarctic continent, to be set up next January, will be in the Vestfold Hills, 300 square miles of ice-free rock studded with lakes and deep fjords which in summer are unfrozen, like an oasis on the fringe of the Antarctic ice-desert. The site is approximately 68° 32′ S., 77° 55′ E. The base will be manned by five men under Robert Dingle, at present senior meteorologist at Macquarie Island. The others will be a geologist, a meteorological observer, a radio operator, and an engineer. A post office will be opened and a special post-mark used.

NEW MAWSON LEADER

A 34-year-old Melbourne atomic physicist, Mr. Keith Mather, will lead the new Mawson party leaving Australia in mid-December by the "Kista Dan". Mr. Mather was a lecturer in physics at the University of Ceylon when in 1951 he organised and led a scientific expedition to the Himalayas. In 1952 he became a member of the atomic physics section of the Commonwealth Scientific and Industrial Research Organisation at Melbourne, transferring on its formation to the Atomic Energy Commission. As the Commission refused Mr. Mather leave of absence to lead the Antarctic Expedition, he resigned.

Ross Dependency Stamps

Very attractive first-day covers have been published for use with the series of four postage stamps to be used by members of the New Zealand Expedition. The covers will cost 6d. each and will be available at post offices or from the Secretary, Ross Sea Committee, P.O. Box 2693, Wellington.

Collectors **in New Zealand** should forward addressed covers with a remittance covering the cost of stamps required (denominations, 3d., 4d., 8d. and 1/6) plus a servicing fee of one penny per cover to:

The Stamps Division,
G.P.O. Wellington,

by the end of October.

Overseas collectors should forward to the same address a remittance covering cost of stamps and covers, plus a servicing fee of 1½d. per cover to defray the expense of addressing the envelopes and affixing the stamps.

TWO RUSSIAN STATIONS ACTIVE

When the "Ob" and the "Lena" left the Soviet Antarctic base Mirny (66° 33′ S., 93° E.), 92 men under Dr. M. M. Somov remained to winter on the continent; 21 of these formed an aviation group under I. I. Cherevichny, equipped with six aircraft. For general transport purposes the Russians have 10 tractors, nine bulldozers, and several other vehicles, including mobile repair shops and a searchlight truck. In addition there are 50 huskies.

Mirny comprises 49 buildings, living huts, radio, ionospheric, aerological and seismic stations, a magnetic pavilion, garages, storehouses, baths and administrative buildings, mostly lining Lenin Street, parallel with Pravda Coast. The living huts are so sited as to be sheltered by the other buildings from prevailing winds, and have electric light, hot water, radios, and a local telephone system.

Direct radio contact was established with Moscow on February 28 and direct radio-telephone calls were commenced on April 4.

WINTER WEATHER

On May 8 a hurricane swept the station, with gusts of 106 m.p.h. The two LI-2 aircraft, although firmly secured by wire ropes, and one with a full fuel tank and a load of one ton, were lifted and tossed from side to side. One was considerably damaged. The antenna of the transmitting rhomb was torn down, two pylons were blown over, and a storehouse on a cliff two miles from Mirny was wrecked.

On May 27 snow drifting was so heavy that most of the huts could only be entered or left after digging away the snow. In one case a manhole had to be chopped in the ceiling of the vestibule.

In May there were three "heat waves", the maximum, on May 27, being 26.8° F. Late in July Tass reported that temperatures at Pionerskaya, the inland base, had risen from —60° to —13° F., and at Mirny to +24.8°. On the other hand, early in July the inland base recorded an all-time low of —82.3° F.

BUILDING PIONERSKAYA

Further details are now available regarding the journey by tractor-train with air support to set up the first inland base, Pionerskaya ("Pioneer"), 240 miles from Mirny in the direction of the South Geomagnetic Pole, where the station "Vostok" is to be established. (See June "Antarctic", p.40).

Radio contact with Mirny was lost for three days, April 28-May 1. The train reached its destination, 69° 44′ S., 95° 30′ E., three days later. Carpenters and building material were flown in by the AN-2 aircraft, which was damaged on landing and forced to remain at Pionerskaya until repaired a few days later. An LI-2 then made a safe landing with provisions and further material. Some members of the party were flown back to Mirny, leaving seven men at Pionerskaya to construct the station, which is about 8,800 feet above sea level. Construction work was completed on May 26. A landing field approximately a mile long was prepared for the LI-2 aircraft. As fuel at Pionerskaya was almost exhausted, 15 drums of oil were flown in on June 7 by an LI-2. Some days earlier a flight was made but the pilot could not locate the station, and when five drums were dropped on the 6th all the drums burst. The LI-2 flew in a glaciologist and a wireless operator, and took four men back to Mirny. On June 22 nearly a ton of cargo was parachuted to the base, the total drop being recovered, not all undamaged.

The party at the inland station on June 28 comprised Prof. Gusev,

(leader), Dolgushin (glaciologist), Vetrov (wireless operator), and Kudryashov (driver).

NO MOUNTAINS

A great many reconnaissance and photographic flights were made. As the result of a flight in March to the region of the planned intermediate base, the idea of establishing Vostok entirely by air was abandoned. The helicopters were stored for the winter on May 8 because of high winds. Flights showed that the continental ice-shield as it recedes from the coast at Mirny rises, at first steeply and then gently, to an elevation of 11,500 feet in the region of the geomagnetic pole. No mountains were seen projecting above the ice surface. The temperature on the plateau at 10,000 feet falls to —58° F. even at the close of summer.

Japanese Plans

Japan, whose only earlier exploit in the field of Antarctic exploration was the expedition under Lieut. Shirase in 1911-12 which is commemorated in the names of Kainan Bay and Okuma Bay, in the Ross Ice Shelf, proposes to establish a station at Luetzow Holm Bay near the junction of the Prince Harald and Prince Olav Coasts, between 30° E. and 45° E.

The first party is scheduled to leave Tokyo on the 2,200-ton icebreaker "Soya" early in November. February 1957 will be spent in reconnaissance to select the base site and in establishing the station. Limited geophysical observations will be carried out both on the ship and on shore. It is expected that four buildings will be erected, a messroom, a living hut, a radio hut and a workshop. Transport will comprise three gasoline and one diesel "snow cars" and two dog teams. The "Soya" will carry two helicopters. Radio communication will be established with Japan, using a 2kw. transmitter, and with Mawson.

The "Soya" will leave for Japan at the end of February. A proposal to leave a 10-man party for a preliminary trial of wintering conditions is still under consideration.

In November 1957 the "Soya" will again leave Japan carrying scientific personnel and I.G.Y. equipment. When the ship returns at the end of February 1958, a party of approximately 30 will be left to carry out the proposed I.G.Y. programme. The party will include a doctor, three radio operators, and four airmen. The leader will be Dr. Takeshi Nagata, aged 42.

The expedition is being hindered by lack of funds. Government appropriations cover less than half the estimated cost. The newspaper "Asahi Shimbun" has undertaken to organise the entire supply establishment. Lack of Antarctic experience is also a difficulty. After Dr. E. Nishibori had consulted the Australian authorities (see "Antarctic" No. 2) almost every aspect of the original plans was changed. It was realised, for example, that the camp will not be upon ice, but on rock.

Chilean Moves

The Chilean Navy has ordered a ship to be built in Holland for service in the Antarctic. The ship will have a speed of 14 knots. It will be delivered in August 1958.

The routine relief expedition to sail from Valparaiso in December will comprise the transport "Angamos", the tanker "Rancagua" and the tenders "Lientur" and "Lautaro", under the command of Capt. A. Navarrete.

Chile is issuing in November a series of 11 air-mail stamps portraying Antarctic subjects: camps, icebergs, penguins, whales, etc. They will be in use for five years, replacing all existing issues.

ROYAL SOCIETY BASE: HALLEY BAY

The site of the I.G.Y. base established by the Royal Society Expedition a mile and a half inland from the Coats Land ice-shelf in 75° 31′ S., 26° 36′ W., has been named Halley Bay after Edmond Halley, sometime secretary of the Royal Society and a pioneer geophysicist, in commemoration of the tercentenary of his birth in 1656.

Halley Bay is formed by two ice headlands about two miles apart, which converge to an apex where a gentle slope gives access to the ice sheet. Soundings suggest a depth of 100 fathoms and the ice sheet is believed to be grounded as at Kap Norvegia. No exposed rock has been seen in the region and none was seen during the coastal reconnaissance. There is no evidence of any activity or ice movement. From the top of the slope the ice level continues to rise evenly and gently, at an approximate rate of five feet per mile, to the east, and in the far distance the main continental slopes are visible about 35 miles away. An aerial reconnaissance in one of the aircraft belonging to the Trans - Antarctic Expedition has since revealed that the area between Halley Bay and the continental plateau is badly crevassed and this would make travelling in that direction very difficult.

No crevasses were found in the reconnoitred area, and the surface is in the form of extremely low sastrugi. A test pit 8ft. 8in. in depth was dug but only snow was revealed, the firm compact, new ice level not having been reached. The pit also showed that the probable annual deposit had not been more than nine inches in the last two years.

The water off the coast near Halley Bay remained open until March 18 1956, but by March 23 it had been transformed to firm sea ice.

The first main objective of the 10 men remaining was to erect the wooden hut, which is 130 feet long and 30 feet wide. The hut was supplied with the wood cut into the appropriate lengths, marked and made up into manageable bundles. The lower grillage rests on an expanded metal carpet and both were completed by January 20 1956. By February 4, five trusses and a gable end had been erected, and the whole floor had been laid, and by February 23 the party enjoyed their first meal inside one end of the hut. Frequent blizzards immediately after the departure of the "Tottan" hampered the work, but finer weather in March enabled all the trusses and walls to be erected and by the first week in April the roof was completed. Since that date the internal construction has proceeded and all the necessary stores have been put under cover. By the end of May 1956, the wireless room, bathroom, workshop, coal store, meteorological office and ozone room had been completed.

SCIENTIFIC REPORT

The lowest temperature reported (July) is minus 57° F., which caused the anemometer to seize up and will necessitate the supply of lower-reading thermometers for next year's party. The outdoor instruments need constant attention and require to be set up more than 50 yards away from the hut to avoid its lee wind temperature effect. The drift chokes the screens and clockwork recorders at moderate wind speeds, but clears them at high speeds.

The main problem is electrical interference between the radio echo, ionospheric, meteorological and wireless communication equipments,

etc. Owing to the development of a fault and its consequent repair, the speech side of the transmitter now only develops 160 watts, but even with this low power successful radio transmission has been achieved directly between Halley Bay and the United Kingdom.

The first aerial to be erected was a two-element rotary array, but this was destroyed in a blizzard and the aerials now consist of two long wires at right angles. Experience has shown that good communication conditions often last 15 minutes only, so attempts at high speed automatic transmission are likely to be made during the next season.

NEXT SEASON'S ACTIVITIES

The main party of the Royal Society Expedition, consisting of approximately 18 men, will sail from London on November 14 in the M/v. "Magga Dan", which is being shared with the Trans-Antarctic Expedition, and should arrive at Halley Bay during the first few days of 1957. This party will proceed to erect geo-magnetic huts, etc., and also the aerials for the radio echo and scintillation experiments. They will also have to install the new generators and new wireless transmitter and set up the new Decca wind-finding radar apparatus, so that on July 1 1957 the Royal Society Base, Halley Bay, will be a fully - operating I.G.Y. scientific station.

"The Antarctic Today"

Supplies of the New Zealand Antarctic Society's highly praised volume, "The Antarctic Today", are nearly exhausted. The book will not be re-printed and readers desiring copies should order without delay from the Secretary, N.Z. Antarctic Society, Box 2110, Wellington, The price is 47/6.

Adelie Land Stations Named

Little news has been received of conditions at Pointe Geologie, on the coast of Adelie Land, where a French party of 14 under M. Robert Guillard has been wintering. It has been announced, however, that the station, situated on Petrel Island (L'Ile des Petrels) in 66° 40′ S., 140° E., at an altitude of 130 feet, is to be named **DUMONT D'URVILLE BASE.**

Twenty men will be stationed here during the 1957 winter to carry out France's I.G.Y. Antarctic programme. The leader will be the hydrographic engineer, B. Imbert.

The satellite station to be set up in January next on the polar plateau some 200 miles from the coast is to be called **CHARCOT STATION.** To erect this outpost, the party which has ben wintering at Pointe Geologie will set off southward in October with 15 tons of equipment, food and fuel. Three men will later occupy the plateau station.

This Charcot Station hut will be formed of three semi-cylindrical aluminium sections (A-G5 Klegecell panels) on chassis which will act as sledges to be drawn by tracked vehicles. The complete hut, which has already been trial-assembled, weighs a little over two tons, and measures 20 feet by 13 feet. The two Tucker sno-cats and three weasels available for haulage purposes will have to make two trips to transport the station equipment and the personnel.

F.I.D.S.

MAY-JUNE

In addition to continuing routine observations all bases have been busy overhauling equipment and making various improvements to the huts, but as elsewhere in Antarctica, the highlight of the past few months was the celebration of mid-winter's day.

SURVEY

Field work during the first part of June was hampered by unusually high temperatures (at the Argentine Islands it has been the warmest June on record), which made travel on land very difficult and delayed the formation of sea ice. Nevertheless, some progress is reported:—

At Signy Island, a new base line has been measured for the triangulation which is to cover Signy and Coronation Island. Reconnaissance and depot-laying parties have visited Coronation in preparation for extending survey and geological work over to the north coast, which so far has not been reached.

At Anvers Island (Base N) the surveyors and geologist are working along the west coast, and local survey has been started at the new Danco Coast Base (O). A reconnaissance party from Base O crossed to the mainland of Graham Land in May, and returned in early June to lay a depot, preparatory to reconnoitring a route up on to the plateau.

HUTS

Detailed local survey at the Argentine Islands has revealed that the F.I.D.S. geophysical station (Base F) is built on a rocky islet and not on Galindez Island, as was originally thought, the two being connected by a snowbridge.

A new hut replacing the existing one at Admiralty Bay (Base G) was occupied at the beginning of June, and an extension has been added to the hut on Horseshoe Island (Base Y).

A new hut constructed at View Point (V), south-west of Hope Bay (D), has been occupied since early June.

At the Loubet Coast Base (W), which was also established this year, the hut was occupied at the beginning of April, but no news reached the Falklands until the end of May when first radio contact was made. The meteorological instruments were installed and tested in June.

Regular radio schedules are now maintained between Base A at Port Lockroy and Shackleton Base, the first contact having been made on May 9.

The only casualty reported by the company making an air-survey of Grahamland is to photographer Bill Freeman, who, it is said, was "severely bitten" on the mouth when a colony of penguins attacked him as he picked up an egg.

The Nations Plan

At the meeting of the I.G.Y. advisory council held at Barcelona from September 10-15, New Zealand was represented by Dr. V. Armstrong and Mr. F. H. Corner. These two, with Capt. H. Kirkwood and Mr. T. R. Clarkson, represented this country at the third I.G.Y. Antarctic Conference in Paris, July 30-August 3.

Antarctic Weather Central, being set up at Little America to co-ordinate meteorological reports from the various Antarctic weather stations, will undertake to provide a limited number of regional and route forecasts when these are requested by responsible officials. A New Zealand meteorologist will be included in the Weather Central staff this summer.

LIFE ON MACQUARIE ISLAND

Ian Adams, the New Zealander in charge of the Australian station on Macquarie Island, sends this report of life on the island, dated June 1.

"On Macquarie there are five outposts. The most important is a collection of three buildings situated at Hurd Point, 20 miles away in a direct line, but in walking distance many more. Its primary purpose is in conjunction with the Main Base, taking simultaneous photographs of auroral displays. This year a radiometer was installed with which ionosphere temperatures and cosmic noises are measured.

"To make the greatest use of Hurd Point equipment, we are endeavouring to man the outpost continuously. Twice a month two men make the two-day trip as a relieving party. There is no danger in the hike, but many unpleasant factors are met. Rain falls on approximately 330 days per year, so it is usual to be wet through, as fully waterproof clothing makes walking arduous, and biting cold winds reach a strength that makes progress impossible except on the inhospitable coast. Floating bogs, streams and seal wallows ensure wet feet. The plateau is trackless and to counteract this a project of staking the easiest route is nearing completion. A small reward for the trek is to slide down the last 700 feet to the huts on a scree slope in under two minutes."

On July 1, Adams was worrying.

"The most noticeable feature of the weather recently has been several falls of snow and the popular pastime has been tobogganing expeditions, led by our cook. Whenever a new fall occurs we wonder if our lunch will be forthcoming. So far he has not failed us.

"Ski-ing is difficult because of high winds on the ski run which create blizzard conditions. One ski trip was notable for the instructor being sledged home by pupils because of a knee injured in a fall before skis had been donned.

"Mid-winter's day commenced with a fresh snow-fall and finished with an excellent dinner. We now feel that the worst of the year is over. After completing all the small jobs traditionally left for long winter evenings we will be busier than ever preparing for the return of wild life for breeding.

"The radio section has been very busy in contact with other Antarctic bases while our amateurs have contacted an amateur station mounted on a dog sledge in the frozen wastes of Alaska.

"Abdul, our calf, has now to be content with powdered mlik while the fresh milk supplies the recently opened milk-bar."

On August 2, Adams reported:

"The winter months are slowly passing. The weather has been unusually mild and has not restricted general activities on the island. More than usual snow has fallen, but it has not been accompanied by long freeze-ups. Activities away from base have included the usual two journeys to Hurd Point, and a routine two-day biological trip along the west coast observing wandering albatross chicks, who stay on land 10 months before trying their wings. Also two men spent field days around the central part of the island. An interesting 10-mile trip to Green Gorge was made in one of our boats, mainly to uplift a faulty generating plant."

The leader of the new party at Macquarie Island will be Mr. H. P. Black, a 37-year-old secretary of the Y.M.C.A. at Canberra.

Kerguelen

M. Richert kindly forwards us the following information supplementary to the report on the French Iles de Kerguelen Station in our last issue.

Myxomatosis has not failed as up to 30 per cent. of deaths have been noted in the rabbits in the affected zones; but it is not effective enough to destroy all these rodents for lack of vector insects. That is why we have thought of the rabbit flea which will be spread in the warrens.

On the other hand the rearing of pigs is proving very successful and these are multiplying very quickly, as are the poultry, ducks and pigeons. Our seven reindeer (seven males and three females) show signs of rapidly becoming acclimatised and the sheep are doing very well, especially those which are living in a wild state on an island where there are no rabbits.

Finally, the device of the aerodrome has been established. The study of flight conditions carried out by a light army helicopter has been very encouraging. During every day of last February this weak-powered machine carried out its mission over the archipelago, proving that aerial navigation there is quite possible.

The number of people on the Kerguelen Islands will rise to about 100 by next October.

The Seabees who occupy the U.S. bases in the Antarctic appear to have a sense of humour.

Near the olive-drab chow tent a sign reads:

"There is no place anywhere near this place like this place. So this must be the place."

A note on the mail-box advises:

"Hours of pick-up—sunrise and sunset."

The last sunrise was in late October. The next sunset is due in late February.

CAMPBELL ISLAND

Mr. Brian Perkinson, ionosphere observer and radio technician, was injured internally in an accident on Friday, July 6. As weather conditions made flying impossible, an Air Force doctor travelled to the island on the coaster "Karamu", leaving Bluff on Monday, July 9, and reaching the island at 3 p.m. on Tuesday. Meanwhile the injured man was tended by Mr. P. G. Poppleton, officer in charge of the island staff, under radio-telephone instructions from the Director of Medical Services (Air) in Wellington.

Mr. Perkinson was admitted to the Invercargill hospital on Thursday, July 12, and was able to leave for his home two days later.

H.M.N.Z.S. "Tui" visited the island on August 8 with mail and stores, and carried also two new members for the island staff: Mr. W. G. Whitley, a replacement for Mr. Perkinson, and Mr. E. A. Mitchener, a carpenter.

The preparation of the site for the new camp building is well advanced, and no difficulties are anticipated when the construction party arrives in early November.

AIR-DROP MISHAP

An air-drop of supplies, chiefly foodstuffs, and mail, was carried out in August by an R.N.Z.A.F. Hastings. With a complement of 18, the aircraft left Whenuapai at approx. 8 a.m. on Thursday, August 23. A thick mat of low cloud prevented the usual practice of flying up Perseverance Harbour to make dropping runs at 500 feet. The pilot was forced to climb to 2,000 feet and make his runs from there in extremely turbulent conditions. After two dummy runs the first cannister was dropped and landed high on a hill. The second fell short into the water, and the third landed in the middle of the drop-

ping zone. The next cannister was dropped from the starboard side for the first time. Almost instantly the pilot felt a sudden jolt from the control column and the Hastings, vibrating strongly, plunged downwards. The cord and parachute were wrapped round the tailplane. The two pilots, working furiously, gave the aircraft full power and plenty of trim, and after 20 or 30 minutes the vibrations and swinging of the cannister apparently severed the cords, and cannister and parachute went plunging into the sea.

The aircraft flew back the 400 miles to Taeri at 150 knots instead of the normal 180, and landed safely. The Search and Rescue Organisation had swung into action as soon as the mishap was reported: a Devon took off from Wigram and contacted the Hastings by radio-telephone at 4.40 p.m.

Alternative arrangements are being made for the forwarding of the remaining material and for the replacement of the supplies which were lost.

ISLAND DAYS

Forrester Davidson reported by radio-telephone on August 20 that on a trip to Beeman Point on August 17 a large number of red and white crabs were seen in the shallow water around the wharf. About a dozen were speared and were found to measure about eight inches across the shield. They were taken back to camp and cooked. The flesh from the legs was reported as "tasty". A fawn-coloured octopus was also caught and taken to the camp in a biscuit-tin. The tentacles were 18 inches long. While the men were at tea the octopus crawled up the side of the tin and lifted the lid, and was found later on the floor.

Two right whales about 50-60 feet long were seen swimming up to the head of Perseverance Harbour and made a fine sight passing Beeman Point. On recent visits to North-West Bay also, whales were seen, generally 10-20 of them.

The weather during the winter was surprisingly good, with little wind and not much rain—"or, for that matter, sunshine". But the first half of August was stormy and, said Davidson, "the pleasant days of winter are behind us."

During June the same two men made a trip to North-East Harbour and were interested to find, as well as the refuge hut, the remains of a whalers' and sealers' camp: the ruins of a hut, a stack of broken oil barrels, and three large try-pots, as well as the remains of a wharf and of what had apparently been the concrete base of a fireplace. Also found: a bottle of home-brew, not sampled. The journey took about two-and-a-quarter hours each way.

Bouvet Island

Meteorologists consider it desirable that a weather station should be set up on Vouvetoya (Bouvet Island), 54° 26′ S., 3° 24′ E. As no single nation seems willing to undertake the task of erecting a station on the extremely dangerous coasts of the island, it has been agreed that the Russian vessel "Ob" will call at Bouvet in December to investigate landing spots etc., and return there in February, 1957 to land by helicopter the equipment for a small meteorological station. The Soviet Union will provide one or two meteorologists, while South Africa and Norway will provide further equipment.

DUKE GOING SOUTH

The Duke of Edinburgh will spend New Year's Day at Deception Island in the Faulkland Islands Dependencies, as the guest of Lieutenant Angus Erskine, leader of the five-man F.I.D.S. party on the island. The Duke will go from New Zealand to the Antarctic on the Royal Yacht "Britannia".

"He Really Is Excellent"

This is one of Captain Scott's many approving comments on Thomas C. Clissold, who was cook for the shore party at Cape Evans, 1911-13. Scott also recorded that "Clissold deserved a great deal of credit" for his work in training sledge dogs.

Tom Clissold today lives quietly in Napier. In an interesting letter to "Antarctic" he throws light on a mysterious disappearance. "I have in my possession," he writes, "the large (2ft. 4in.) wooden razor made by Chippy Davis of the Terra Nova for the "crossing the line celebrations" on the way out.

"It has "Terra Nova R.Y.S." on one side and the obverse has "B.A.E. 1910" and a penguin. Actually, I suppose, it is the property of the Expedition, for I do not think any member knows of its existence, for it was presumed to have gone overboard when after the ceremony Father Neptune and all his court were thrown into the huge tank made by tying up the four corners of a spare mainsail thus forming a huge tank with about a depth of 5-6 feet at the break of the poop. With about 10 or 12 men milling around in it the strain was too great for the halyards, two of which snapped like successive revolver shots cascading men and water along the upper deck. I happened to be going forward at the time and some of the water reached me, and to my amazement the razor floated between my legs, so whipping it up I passed on down to between decks and popped it in my locker."

Of his own career, Mr. Clissold writes:

"I was not a New Zealander to begin with although after 35 years out here I claim that privilege. I first came to New Zealand in 1910 with the Expedition and found the country and people ideal and decided there and then that when the Expedition finished I would return here. However, the 1914-18 War broke out before I had completed arrangements to sail, so off came the civvies and in August 1914 I proceeded to France as a dispatch rider using my own motorcycle which was later taken over by the Army. After Mons I transferred to the infantry (Middlesex Regt.). After getting knocked about at Loos I transferred to the Royal Flying Corps where I remained until demobilised in 1919 when I got the first boat available to New Zealand. The day I arrived I got a job as second engineer at the freezing works (still hankering for the frozen south I can hear you say), then engineer in charge of internal combustion plant to Arapuri Hydro Scheme with Armstrong Whitworth & Co. Ltd., and for the last 26 years Plant Overseer in P.W.D., and then Vehicle Inspector in the Transport Department.

"There is one little point that might have intrigued you, why I joined the Army seeing that I was an ex-naval man. You see, I knew how efficient the navy was. I also knew the Germans would never come out for a scrap and I was so afraid it would soon be over that I was most anxious to get somewhere where I could have a poke at them, hence the Army. It was a wonderful experience, and I made some wonderful friends. I met Gran (the Norwegian ski expert, with our expedition) one night in St. Omer."

A Veteran Passes

When Reginald Skelton served under Captain Scott on H.M.S. "Majestic", Scott was so impressed that one of his first acts when appointed to command the Antarctic Expedition of 1901-04 was to make Lieut. Skelton chief engineer of the "Discovery". Skelton later became Engineer-in-Chief of the Fleet. As Engineer Vice-Admiral Sir Reginald W. Skelton, K.C.B., C.B.E., D.S.O., he died in England on September 5, aged 84.

WHALING PARLIAMENT

The International Whaling Commission held its eighth annual meeting in London from July 16 to July 20. Delegates were present from all the 17 contracting governments except Brazil.

An item on the agenda concerning the taking of humpback whales was deleted on technical grounds at the request of Australia, whose own whaling catch would be affected by a greater humpback catch in the Antarctic. So there will be no change in the present restriction to four days' catching.

The value of whale-marking was stressed, and the Commission endorsed the suggestion that the use of helicopters for marking, having been tested, might with advantage be put into practice.

It was agreed that there should be no increase in the annual Antarctic quota above 15,000 blue-whale units. A proviso was approved "that in the season 1956-57 the number of baleen whales taken shall not exceed 14,500 blue whale units." This decision becomes mandatory, if no objection is lodged by any of the contracting governments.

The next meeting will be held in London in June 1957.

WHALING CATCH

The following table shows the number of barrels of whale oil produced by the nineteen pelagic expeditions 1955-56, with the corresponding 1954-55 production in brackets

Norway (9)	657,565	(668,352)
United Kdm. (3)	344,463	(344,752)
Holland (1)	85,193	(58,335)
Japan (3)	338,889	(315,029)
U.S.S.R. (1)	143,171	(162,059)
S. Africa (1)	80,568	(82,150)
Panama (1)	146,420	(145,690)
Total (19)	1,796,287	(1,776,367)

BOOKSHELF

"OF WHALES AND MEN," R. B. Robertson: London, Macmillan, 247 pages, ill. N.Z. price 21/-.

Dr. Robertson spent eight months as a medical officer with a whaling fleet in the Antarctic in 1950-51, and in this fine book records his experiences, and his convictions, which are strong and strongly expressed. Dr. H. R. Lillie ("The Path Through Penguin City") was appalled by the suffering inflicted on the whales: Dr. Robertson, a psychiatrist, is furious about what he regards as the callous disregard of the welfare of the whalers, especially on South Georgia. His emphasis throughout is on the men, not just the much publicised gunners, but engineers, flensers, scientists, and mess-boys. For no doubt very good reasons, Dr. Robertson is careful to point out that his characters are "composite, non-existent whaling characters". One would like to feel that Old Burnett, Thor, Mark, and the rest were "real" men, especially as Mansell ("Everybody in Zuther Notion know Mansell") was present when Shackleton arrived at the whaling staion after his crossing of South Georgia. Is the account factual or imaginary? The book gives in non-technical language an excellent account of life on a modern factory-ship and among the whaling men whom Dr. Robertson knows, and loves, so well.

L.B.Q.

CAPE EXPEDITION REPORTS

16. Johnston and Edmonds: Acanthocephala from Auckland and Campbell Islands. (Dominion Museum Records, vol. 2, part 2, pp.54-61, 1953).

17. Johnston and Mawson: Parasitic nematodes and trematodes from the Campbell and Auckland Islands. (Dominion Mus. Records, vol. 2, part 2, pp.62-71, 1953).

18. Fell, H. B.: Echinoderms from the sub-Antarctic Islands of New Zealand; Asteroidea, Ophiuroidea, and Echinoidea. (Dominion Museum Records, vol. 2, part 2. pp.72-111, 1953). (Vol. 2, part 2. Price 5/-).

19. Forster, P. R.: Spiders from the sub-Antarctic Islands of New Zealand. (Dominion Mus. Records, vol. 2, part 4, pp.167, 1956).

20. The Diptera of Auckland and Campbell Islands: Dominion Mus. Records, vol. 2, part 4, pp. 205-246. (Vol. 2, part 4: price 6/-).

(i) Harrison, R. A.: Report on Diptera of Auckland and Campbell Islands; (ii) Alexander, C. P.: The Craneflies of the sub-Antarctic Islands of New Zealand (Diptera); (iii) Richards, O. W.: A species of Sphaeroceridae (Diptera) from Campbell Island; (iv) Oldroyd, H.: A Wingless Dolichopodid (Diptera) from Campbell Island.

RECENT ARTICLES

Dawbin, W. H.: Sub-Antarctic Marine Food Cycles and their Relation to Discontinuous Plankton Concentrations. Sorensen, J. H.: Ecology of the sub-Antarctic Islands: Botanical Factors. Fleming, C. A.: Ecology of the sub-Antarctic Islands: Geological History. Proc. N.Z. Ecological Society (2): 16 (1954).

Falla, R. A.: Antarctic Adventure and Research. (Hudson lecture, 1955): N.Z. Science Review, vol. 13, 9-10, Sept.-Oct., 1955.

LEVICK OF THE PENGUINS

Surgeon-Commander G. Murray Levick died in England on May 29, aged 79. A Royal Navy medical officer, he went to the Antarctic with Captain Scott in 1910 as M.O. and zoologist, and wrote the well-known "Antarctic Penguins" (1914). After his retirement from the Navy he interested himself especially in methods of maintaining physical fitness and in physical rehabilitation after illness or injury; also in the training of boys. He founded in 1932 the British Schools Exploring Society and was the Society's President until his death. It was said of his work in this connection, "He took out boys and returned them as men."

WHERE'S THAT CREVASSE?

Among the new equipment successfully tested by Operation Deepfreeze I was an experimental crevasse detector based on information derived by the U.S. Army from its work in Greenland. The machine consists of a weasel towing on a non-conducting nylon rope an electrical transmission unit, and projecting an electrode about 20 feet ahead on a boom.

The impulses of the electrical field created by the transmission unit were measured by a meter in the weasel, and it was found that the intervention of a body of air in the field, such as occurred when the forward electrode extended over a crevasse, was infallibly indicated by a change in the meter readings.

Several advance models of the detector are being built for use in next season's operations.

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