ANTARCTIC

A NEWS BULLETIN

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NEW ZEALAND ANTARCTIC SOCIETY

AT HALLETT STATION

American servicemen survey the scenery at this joint United States–New Zealand base.

Official U.S. Navy Photo.

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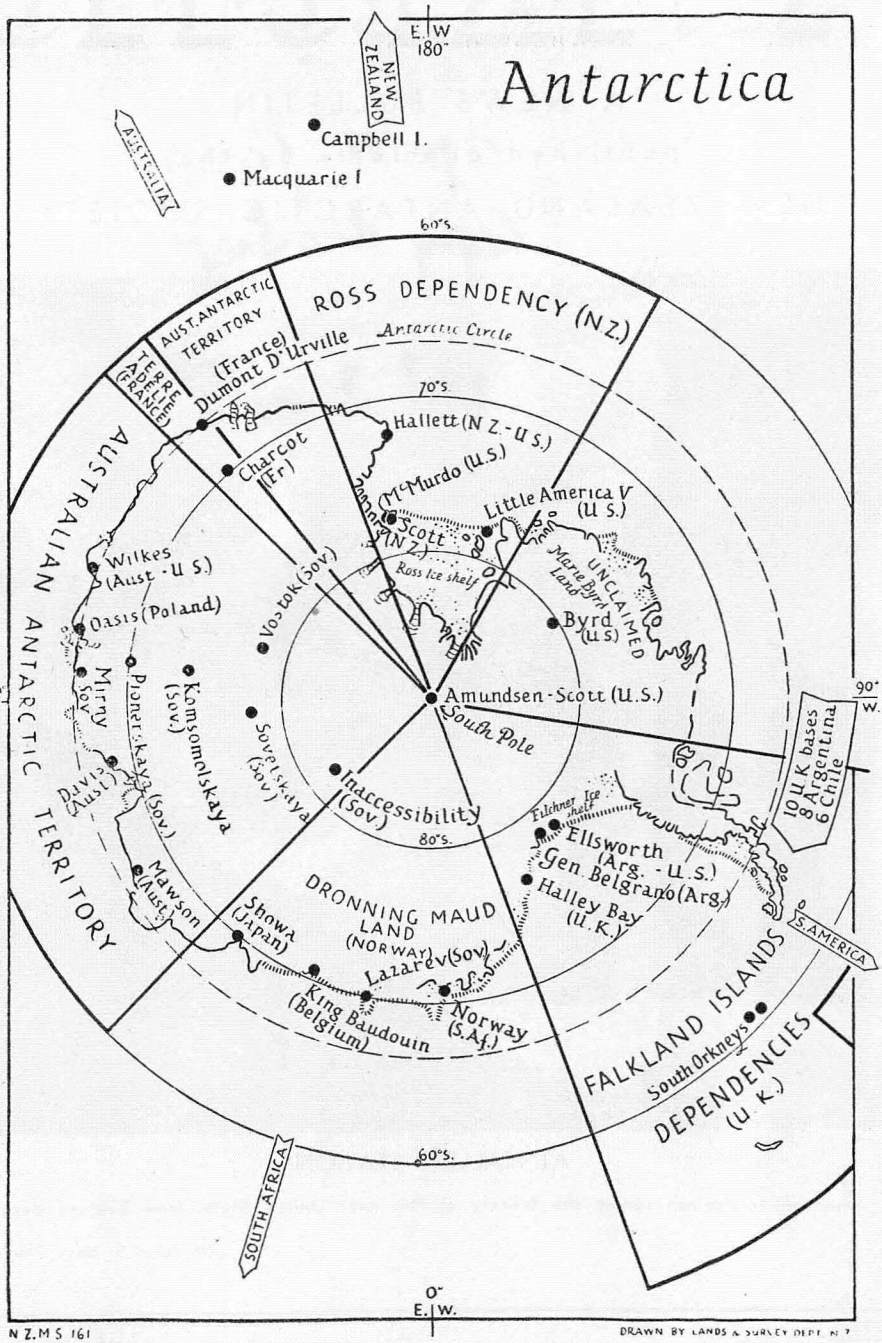

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"ANTARCTIC"

(Successor to "Antarctic News Bulletin")

VOL. 2, No. 8 DECEMBER, 1960

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PENGUINS' LONG JOURNEY

Last December a United States aircraft flew to Wilkes from McMurdo Sound. On the aircraft's return journey Mr. Richard Penney, a United States biologist at Wilkes, sent off five Adelie penguins, each banded on the flipper with a numbered ring, and arranged for them to be liberated at McMurdo Sound, about 1,600 sea miles from Wilkes.

Early in November two of these banded birds returned to Wilkes and went straight to their old nest on the site.

MYSTERY FIND

On September 18 Mervyn Knight, a 13-year-old South Australian schoolboy, found a light metal attachment which Australian experts have identified as part of the fittings of a Russian weather balloon. The attachment, which had Russian writing on it, was rusted and looked as if it had been lying where it was found for two to two and a half years. As Russian ships were engaged on scientific work between the south of Australia and the Antarctic during the I.G.Y., it is considered probable that the boy's find has a link with these ships.

VETERAN

We regret to announce the death in Sydney in September of Edgar (Ted) Smith who was a fireman on the "Aurora" during the long drift of over 300 days in the ice-pack in 1915, and during the journey south to rescue the survivors of the Ross Sea party.

ANTARCTIC FLOWERS

Although flowers do not usually survive in the Antarctic, for the last year two lived at McMurdo and a third at the South Pole. Of the 157 Americans who spent the winter at these two stations, Aircraft mechanic M. F. Flowers and Radio-Mechanic W. D. Flowers lived at McMurdo. A meteorologist, E. C. Flowers was the scientific leader at the Pole, after relieving a flower of a different kind, J. W. Posey.

American scientific parties in the Antarctic will this season use New Zealand-made field radios.

STILL MORE ICE

Ice in the Antarctic is increasing annually by 1,000 cubic kilometres, Professor H. Hoinkes, of Innsbruck, Austria, told the German Society for Research in the Natural Sciences at Hanover. If it melted, the world's sea level would rise by at least 200 feet.

ERRATA

The penguin photograph on the cover of "Antarctic" for September was taken by Mr. Rowland H. Taylor of the Animal Ecology Division, D.S.I.R.

Page 269: the name of the veteran Polish explorer who in 1906 advocated international co-operation in Polar exploration was, of course, **Arctowski** (not Artowski).

Page 273: "Antarctic Insects" for 85° 54′ read 83° 54′.

NEW ZEALAND SLEDGE PARTIES FACE SPRING BLIZZARDS

The first two New Zealand sledging parties of the new Antarctic season were trapped in their tents for days by blizzards of 70 miles an hour and temperatures of 30 degrees below zero Fahrenheit before they could return to the safety and comfort of Scott Base.

On September 3 five men took four dog teams on a week's expedition to Cape Evans and Cape Royds on the west coast of Ross Island.

On September 26 four men with teams returned from a 12-day expedition to Cape Crozier, 50 miles east of Scott Base.

The sorties were primarily training runs for the dogs, who are going south in November with two parties of surveyors and geologists for their summer's work.

TO THE OLD HUTS

The party to Cape Evans and Cape Royds consisted of Cdr. J. Lennox King, Captain P. J. Hunt, G. Matterson, Dr. C. Bailey and R. J. Buckley.

Stores were left for the men who later in the year will repair the huts of Scott at Cape Evans and of Shackleton at Cape Royds.

The party spent two days at Cape Evans, during one of which a blizzard kept them in their tents. Going on to Cape Royds they had a day of sight-seeing before three more days of confinement imposed by a blizzard.

When the weather eased they returned to Scott Base, 30 miles from Cape Royds, in five hours ten minutes.

TO CAPE CROZIER

The Cape Crozier journey was made by Captain Hunt, Matterson, Dr. Bailey, and C. Jenness.

Cape Crozier was the destination nearly 50 years ago of Wilson, Bowers and Cherry-Garrard when they suffered great hardships on their "worst journey in the world".

It showed its latest visitors it has in no way changed the unfriendliness of its welcome, although its gales were much more easily endured in daylight and in higher temperatures.

The journey out took three days and the journey back two, with half a day of reasonable weather between. The rest of the 12 days the party spent pinned in tents by unceasing blizzards.

HEAVY HAULING

For 15 miles from Scott Base the surface of the Ross Ice Shelf was easy going, but across what Wilson named Windless Bight the going was difficult. Although level and unbroken, the snow was so soft that the sledges were sinking three to four inches, making heavy work for the nine dogs hauling the 600-pound sledges.

On the third day of travel the party pitched their tents 50 yards from the low stone walls that mark the site of the shelter erected by Wilson's party and still contain penguin skins and items of equipment they abandoned there. The tents were pitched in rising wind, and were hardly secured when the blizzard reached its full strength of 70 miles an hour.

THE EMPERORS

The weather on one day allowed the party to walk along the cliffs that overlook the Emperor penguin rookery which was the reason for Wilson's journey. It is on the sea ice at the foot of the 70-foot high ice-shelf edge, and to reach it would have involved a day of hard going across the myriad crevasses.

A threatened return of the bliz-

zard made such an expedition out of the question so the party had to be content with viewing the Emperors through binoculars from two miles away.

They estimated about 1,000 birds crowded the nesting area at the ice shelf or were coming or going between their nests and the sea.

HOMEWARD BOUND

The blizzard suddenly began again and blew unremittingly for three more days.

Before the men could set out for Scott Base they had to chip the dogs free of the ice on which they were huddled.

On their way back the sledges constantly overturned as they traversed the steep sides of the foothills of Mt. Terror.

The expedition proved the quality of the equipment and the fitness of the dogs, who are quite ready for their three months of field work.

Southern Journeys Commence

The first New Zealand survey party for this season left Scott Base on November 10, after being delayed some days by bad weather. The party, comprising G. Matterson (leader), D. Skinner, D. Goldschmidt and R. Tripp, with eighteen dogs and two sledges, was flown to 80° S 167° 50′ E, in a United States R4D aircraft, and its first task was to re-observe the ice-movement station in this area.

The disruption of communications consequent upon an exceptionally severe magnetic storm has delayed further messages. The party was due to move in by dog-sledge to Cape Selborne, along the southern shore of the Barne Inlet (some 170 miles S.S.W. of Scott Base) and then south to cover the northern part of the Barne Inlet–Shackleton Inlet region.

The other survey group, led by Captain P. Hunt, is not expected to leave till the end of November, when the dogs brought from Greenland should be ready for work. This party will survey the coastal area north of the Shackleton Inlet, linking up with Matterson's party some time in January.

UNIVERSITY MEN'S NEW FIELD

During the past two summers parties from the Victoria University of Wellington have carried out exporation and research in the Dry Valley area in Victoria Land west of the Ross Sea (see article in this issue). This summer the University party will work in a different area with somewhat similar characteristics.

The sphere of operations for the 1960-61 summer is to be the partly ice-free area between the Blue Glacier, which terminates on the Victoria Land coast almost due west of the Hut Point Peninsula, Ross Island, and the head of the Koettlitz Glacier. This area lies to the north-west of the Koettlitz itself. In the region are numerous small cirque valleys. Geologically, the area consists mainly of basement, igneous and metamorphic rocks on which there are a few recent volcanic craters, flows, etc. The base of Beacon sediments is not encountered except in the south-west corner of the area, where ice-free ridges extend right to the heights of the Royal Society Range.

H. T. Ferrar, the geologist of Scott's 1902-04 ("Discovery") Expedition, usually referred to the northern part of this region as the Western and Southern Foothills of the Royal Society Range. The area lies between what Ferrar called "Snow Valley"—now the Blue Glacier—and McMurdo Sound.

The party which left New Zealand by air on November 15, consists of R. H. Wheeler (Leader), Dr. Colin Bull, Dr. H. R. Blank (U.S.A.), I. H. G. Willis and R. Cooper.

A grant of 4,819 dollars has been made by the National Science Foundation in Washington to enable Dr. Richard Blank to take part in the field work of the expedition.

The chess game which McNeill and Johnstone of Scott Base played against Lazarev Station resulted in a win for the Russians, who sent a cordial message of appreciation and good wishes.

The husky pups which Matterson reared at Scott Base have thriven. Seven of them were in September leading a grown-up life at the dog-lines between practice sledging-runs. The two smallest puppies, however, were still enjoying a period of puppy freedom, and enjoying every moment of it, going everywhere and getting into everything. No-one minded a bit.

HISTORIC HUTS

Preparations have been completed for the full-scale effort by the New Zealand Government to restore the famous huts built and occupied by Shackleton's expedition, 1907-09, at Cape Royds, and by Scott's 1911-13 expedition at Cape Evans.

During the past few years, clearing-up and urgent repair work has been done, particularly at Cape Royds, by parties of New Zealanders from H.M.N.Z.S. "Endeavour" and from Scott Base. The present more extensive restoration project has been planned by a committee representing the Historic Places Trust, the Ross Dependency Research Committee, the New Zealand Antarctic Society, the Royal New Zealand Navy, the Ministry of Works and the Antarctic Division. At the Committee's request Mr. Athol Roberts, Public Relations Officer at Scott Base last summer, submitted a report on the present condition of the huts and the full repair work required.

"The Government feels," said the Minister in charge of Scientific and Industrial Research, "that New Zealand has a responsibility to fully restore these historic huts in the Ross Dependency to the condition they were left in by the British expeditions which left our shores some 50 years ago. The Government considers that the two months' work needed to transform these huts into permanent museums of former Antarctic exploration will be time well spent."

Work will commence by the beginning of December at Cape Evans. The party will comprise:

L. B. Quartermain, Wellington, Leader.

J. M. Sandman, Howick, carpenter.

R. J. Buckley, Wellington.

C. A. Jenness, Lower Hutt.

J. Warren, Timaru.

Buckley, Jenness and Warren, who have wintered at Scott Base, and Brown, who wintered over at Hallett Station, have volunteered to stay on to assist in the Huts Restoration work. During December some members of the party will be replaced by two men selected by the Superintendent, Antarctic Division, from a number nominated by the Council of the New Zealand Antarctic Society.

These two men, chosen from over twenty applicants, will serve as unpaid volunteers in order to assist the project.

December 14, 1960.

As we go to press we are able to announce that the number of volunteers from the Society's ranks have now been increased from two to three. The three chosen from sixteen applicants are:

E. R. Gibbs (39), Taihape, Farmer.

M. M. Prebble (21), Eastbourne, Student.

G. C. Wilson (22), Wellington, Air Traffic Controller.

Mr. Prebble flew to McMurdo Sound at short notice on December 4, while Messrs. Gibbs and Wilson will leave Lyttelton by American Ship on December 21.

The New Zealand Antarctic Society has arranged for a notice to be placed in each of the Historic Huts, giving a brief historical background and the names of the occupants. These notices have been expertly illuminated by Mr. Malcolm Barnett of Wellington.

WINTER PARTY 1961

A strong team has been selected to winter over at Scott Base next year.

CAPTAIN L. D. BRIDGE, M.B.E., R.N.Z.E. (48), Wellington. Leader. Born in England. Captain Bridge was educated in Birmingham and, later, at the Seddon Memorial Technical College, Auckland, and Wellington Technical College. He has been a Regular soldier for 19 years and is Works Officer and Chief Draughtsman at Army H.Q. Captain Bridge is well known as an alpinist and tramper, and is a Past President of Federated Mountain Clubs. He has given many years of service to Search and Rescue operations and is the author of "Mountain Search and Rescue". He is a Past President of the Wellington Girls' College Council, and a member of the Tongariro National Park Board.

V. E. DONNELLY (39), Wellington. Administrative Officer. Mr. Donnelly, who is Administrative Officer, Antarctic Division, D.S.I.R., was born in Carterton and attended Wairarapa College for four years. He served overseas with the Royal New Zealand Navy, 1939-45, and was financial adviser to K-Force in Japan in 1954-55. Mr. Donnelly has been prominent in rowing and rugby circles, and is on the Executive Committee of the Public Service Association.

SGT. L. O. DUFF, B.E.M., R.N.Z.E.M.F. (30), Christchurch. Senior Maintenance Officer. An Army mechanic, Sgt. Duff was born in Balclutha and educated at the South Otago High School. Joining the Regular Forces in 1949, he served in Korea during 1953-54. He was a member of the wintering-over party at Scott Base in 1958.

W. R. LOGIE (28), Dunedin. Maintenance Officer, electrical. Mr. Logie, like Sgt. Duff, was born in Balclutha. He attended King Edward Technical College, Dunedin, and is a test-room technician in the Electricity Department.

B. A. M. FOLEY (28), Napier. Maintenance Officer, buildings. Mr. Foley was born in Napier and attended St. John's High School, Hastings. He is a carpenter. He served for two years as a signaller in Malaya with the 1st Bat., N.Z. Rgt.

W. H. DEVERALL (36), Pukerua Bay. Radio Officer. Born in Huntly, Mr. Deverall went to the District High School there. He is a Radio Inspector in the Post Office. He has had 20 years' experience in Post Office communications, including a period (1945-47) at Apia Radio, Western Samoa, and a voyage as Radio Officer in the Cable Repair Ship "Matai" in 1956.

R. A. CLEMENTS, M.Sc. (31), Christchurch. Senior Scientist. Mr. Clements is Christchurch-born and was educated at St. Bede's College. He is a Radio Engineer in the Post Office and has a Honours degree in Mathematics.

R. SHANAHAN, M.Sc. (27), Auckland. Scientist. Prior to his university studies he attended Avondale College, Auckland. He took his degree in Physical Chemistry.

R. S. CRANFIELD (25), Christchurch. Technician. Mr. Cranfield was born in Christchurch and educated at Christ's College. He is a technician in the Civil Engineering Section, Ministry of Works. He is a brother of Flt. Lt. W. J. (Bill) Cranfield, who was a member of the N.Z. component of the Commonwealth Trans-Antarctic Expedition.

CPL. P. C. S. GRAHAM (23), Wigram. Technician. Born in Masterton, Mr. Graham was trained in the United Kingdom as an aircraft apprentice on ground radar, and since his return to New Zealand has been serving as a Radar technician at the R.N.Z.A.F. station, Wigram.

U. J. SOBIECKI (19), Wigram. Technician. Born in Germany, Mr. Sobiecki came to New Zealand five years ago when only 13 years of age. He passed School Certificate and University Entrance, and is at present serving in the R.N.Z.A.F. as well as studying Pure and Applied Mathematics at Canterbury University.

W. W. HERBERT, F.R.G.S. (25), Lichfield (England). Assistant Surveyor. Mr. Herbert was born and educated in England, but spent much of his early life in Egypt and South Africa. He served in the Royal Engineers from 1952 to 1955, spending 18 months in Egypt with the Survey Section. From here he hitch-hiked back to England. From 1955 to 1959 he served with the Falkland Islands Dependencies Survey and did considerable field work from Hope Bay. In 1960 he was with the Scottish Physiological Expedition in Spitzbergen. He brought out the huskies purchased by the New Zealand Government in Greenland.

P. M. OTWAY (24), Te Awamutu. Assistant Surveyor. Mr. Otway attended St. Peter's School, Cambridge, and Te Awamutu College. He is a qualified surveyor. Mr. Otway and Mr. Herbert will be members of the field teams dog-sledging far to the south of Scott Base during the coming summer, and will then winter-over.

K. L. FAIRCLOUGH (24), Ngaruawahia. Cook. Mr. Fairclough was born in Liverpool, England, and came to New Zealand this year. He has been serving in the Regular Force as a cook at Ngaruawahia Military Camp.

"IS IT REALLY COLD?"

Well, here are the Scott Base figures for the year 1959:

Maximum temperature, 41° F.
Minimum temperature, —62.9° F.
Annual mean temp., —7.5° F.

HALLETT STATION

The New Zealand team at the joint U.S./N.Z. Hallett Station for the coming year will consist of:

P. J. MARTIN (32), Westport. Senior N.Z. Scientist. Mr. Martin was born at Westport. He was educated at St. Patrick's College, Wellington. He is a Radar specialist employed by the Civil Aviation Administration. Mr. Martin served for eight years in the Royal New Zealand Navy.

SGT. P. A. LOWE (26), Ashburton. Technician. Mr. Lowe, who was educated at Ashburton Technical College and at Waitaki Boys' High School, is a Regular Force N.C.O. serving in the N.Z. Electrical and Maintenance Engineers since 1953.

N. E. STENT (21), Petone. Technician. Mr. Stent was born in Nelson and attended Hutt Valley Memorial Technical College. He is employed at the Dominion Physical Laboratory, where his specialty is draughting. At Hallett he will be engaged on seismic and magnetic survey work.

STATION NEWS

R. Thomson, the New Zealander who has been Station Scientific Leader in 1960, reported on September 14 that a party of three Americans and himself had spent a night camped on glacier ice at Football Pass, mainly to test survival equipment. The temperatures, estimated at —56° Fahrenheit, proved too cold for the equipment and for the heavy clothing worn. A not very happy night was finally passed with all four huddled together in a two-man tent with all available heat from the Coleman stove on full, but mainly producing much unwanted smoke. They were very happy to be picked up by weasels from camp in the morning.

ONE MAN AND HIS DOGS

THE STORY OF OPERATION HUSKY

by **W. W. HERBERT**

(Mr. Herbert is the 25-year-old Englishman who recently selected in Greenland the huskies required to build up the stock at Scott Base, and flew out with them on an American MATS aircraft to Christchurch.

A surveyor, Mr. Herbert has travelled widely and in unconventional ways. After living in Egypt and South Africa, he attended the school of military survey in Britain and returned to Egypt. He hitch-hiked back to England through Turkey, Cyprus, and Greece, living with peasants and drawing portraits for his keep.

He joined the Falkland Islands Dependencies Survey for two years, returning home through South America, the United States and Canada, again hitch-hiking most of the way. He lived with Indians in Colombia and Ecuador, and covered some of his route paddling a native dugout down the Magdalena River in Colombia.

In May this year, he joined the Scottish Spitzbergen Physiological Expedition as a surveyor and as a "guinea pig" for the physiologists. To catch a ship to join the New Zealand scientific office in London for his Antarctic appointment, he hired a kayak and paddled 70 miles round the coast in fairly heavy seas. At times, his kayak was almost upset by following seals. This resourceful journey led to an evening talk over the B.B.C.

Mr. Herbert will work with the New Zealand geological survey party in the Antarctic this summer as assistant surveyor, spend the winter at Scott Base, and join the New Zealand field party for 1961–62 summer.—Ed.)

I flew from Copenhagen to Greenland on September 6 after a cut-short expedition to Spitzbergen, and three weeks of hectic preparation in London. I had been commissioned by the New Zealand Government to select and buy 12 huskies from the Disco Bay area of the west coast of Greenland, and transport them to Scott Base via the United States, Honolulu and Fiji, by the American Military Air Transport Service.

The Disco Bay area was selected after a considerable amount of research and debate. Most of the dogs already at Scott Base were of Trans-Antarctic Expedition stock, and had originally come from Jakobshavn. There seemed little point in introducing a completely "foreign" strain, so the Alaskan and Siberian husky was not considered. Heavily in favour of buying the dogs from the Disco Bay area was the fact that there had been many previously satisfied customers, and the dogs had proved their quality in many parts of the Antarctic.

It is a common failing of all dog handlers to believe that they know more about dogs than anyone else, and I personally found it very humbling to be confronted with the task of selecting 12 out of so many. The moment I arrived in Jakobshavn I was surrounded by dogs—big ones, small ones, handsome ones and ugly ones; dogs as mean as they come, snapping, growling and fighting; dogs as friendly and playful as kittens; skinny dogs and fat dogs; crying dogs and laughing dogs. Each with a character as distinct as any human's,—3,000 dogs in Jakobshavn alone.

It couldn't happen anywhere but in Greenland where the major traffic hazard is the packs of dogs that chase up and down the main road without any concern for the pedestrians. But in fact the main road is the only place where you will see more than one team of dogs at a time. Each pack of dogs has its own territory surrounding the house, from which it is occasionally thrown some food. The boundaries of these territories are imaginary lines drawn on the tundra between one house and the next, and although the boundary is known precisely, border disputes are not infrequent.

For eight months of the year the huskies are wild and free. As a general rule the husky has to find and fight for his food. Almost

without exception the huskies belonging to the Eskimos are underfed and frequently beaten, and for these reasons are very suspicious and dangerous to handle. The Eskimo from his childhood is taught never to talk to strange dogs, and this cautiousness—plain fear in many cases—stays with the Eskimo for the rest of his years. I had great difficulty in trying to get the Eskimos to open the mouths of their dogs to let me see their teeth, nor would their dogs ever come to them unless they offered food.

My method of selection had to be adapted to the situation. I spent two months in Greenland, visiting most of the settlements between Holsteinsborg and Upernavik, giving lectures to the schools and in the "cinemas" on "Dog sledging in the Antarctic". I drew many portraits of the Eskimos, and made a present of the drawing where I felt there was prospect of business. But generally I concentrated on Jakobshavn, and among the Eskimos that by repute had the finest huskies. The biggest and most handsome dogs were clearly those of the Danish Administrators, but their dogs are only used at the week-ends during the winter—as a sport. I was looking for dogs with strength, endurance and keenness, which is impossible to recognise in the Greenland husky during the summer months. But the reputation of the owner and the way he treats his pups is a very accurate guide in Greenland, and after about three weeks I had selected 12 fine dogs.

I put them all in a pen together and got out quick. The result was three or four days of blood and tears before they settled down to a state of cold war. During this period I found them most difficult to handle: they were all suspicious and some of them very aggressive. I was attacked on a number of occasions and bitten three times—but on the whole I was well pleased since it proved they had spirit.

Our relationship improved rapidly and in direct proportion to the amount of fish I fed them; but it was set back a little at one stage by five injections against rabies, distemper and hepatitis. At the end of three weeks I was able to pronounce their names, and punch them without being bitten—which I consider is a fair test of friendship. To my surprise they did not seem to take too badly to being penned up after a lifetime of freedom. They only broke out of the pen twice and jumped over it once before accepting it as their new home. Every day at 12 o'clock sharp they would join with the other 2,980-odd dogs howling a response to the workers' lunchtime hooter, and every evening they would try to rip each other to pieces and eat their fish at the same time.

I discovered right from the start that I got far better results by handling the dogs without gloves, and by showing no fear of them at all.

From Greenland to Christchurch the dogs travelled in aluminium crates aboard a Globemaster of the American Military Air Service. At Honolulu the king dog and I were officially welcomed by Hula girls and leis of flowers were placed about our necks, and if it hadn't been for the heat and the quarantine regulations we would have enjoyed ourselves immensely.

We arrived at Christchurch on November 9 and from there Dick Walcott took over the responsibility as dog handler for the journey south to Scott Base. Apparently they are now all happily on snow again and enjoying Weddell and Crabeater seals for the first time in their lives.

(Mr. Walcott is another adventure-lover. A New Zealander who served with Mr. Herbert at Hope Bay in the Falkland Islands Dependencies, and last summer was a member of the New Zealand geological and survey team which explored with dog-teams the previously unknown area west of the Ross Ice Shelf and south of the Nimrod Glacier.—Ed.)

ELEVENTH FRENCH EXPEDITION HEADS FOR ADELIE LAND

France's participation in Antarctic exporation began in 1838, and in January 1850, Dumont d'Urville discovered Adelie Land. It was continued by Charcot in his expeditions in the Graham Land area in 1903-5 and 1908-10. The present series of expeditions to Adelie Land, following a summer exploratory cruise in 1948–9, began in January 1950, when the Port Martin base (66° 49′ S, 141° 24′ E) was built. Destroyed by fire just after the relief in January 1952, it was replaced the following summer by the present Dumont d'Urville Base (66° 40′ S, 140° 01′ E).

By mid-September the preliminary organisation of the eleventh French Antarctic Expedition had been practically completed. The wintering party at Dumont d'Urville Base will be led by Dr. F. Digeon, who was the doctor of the ninth expedition (1958-60). Other members of the new expedition with previous Antarctic experience will be Y. Maziere (radio) and R. Germain (meteorologist) of the ninth expedition and M. Renard (meteorologist), a member of the seventh expedition and a Greenland veteran.

The "Norsel" left le Havre on October 22. Her 150 tons of cargo included four boats (two of them each some 19 feet in length, designed for hydrological work and submarine ecological studies), three weasels and a caravan, and three large oil-storage tanks.

Seventeen of the eighteen expedition members are travelling to Australia by sea and will join "Norsel" at Melbourne on December 8. They are accompanied by seven of the eleven members of the summer party. This includes a hydrographic group, a helicopter group, designed to facilitate the transport of the cargo to the summit of the island, and two surveyors who will take levels on l'Ile des Petrels in preparation for the building of a new station. Jean Prevost is to carry out ornithological studies.

NEW STATION

Preparations are well in hand for the erection of the new permanent station, designed to complete or in some cases to replace the temporary buildings set up for the International Geophysical Year. Some indication of the scope of the preparations involved is given by the fact that between June 3 and June 15 alone some 5,000 words were transmitted by radio-telephone between Dumont d'Urville and Paris via Noumea.

The programme for the forthcoming year comprises meteorology, geomagnetism, seismology, ionosphere, aurora, radio-activity, biology and physiology.

SUMMER WORK

Among the projects for the 1960-61 summer are: (1) an oceanographical cruise in the area to the west of Pointe Géologie and, (2) programmes in quantitative ecology and in ornithology. Supplementary oil-tanks will be installed with the object of ensuring a year's reserve of fuel.

During the year the seismological station will be completely reorganised, placing it in what is hoped will be its permanent form. During the summer seismic prospecting will be carried out on l'Ile des Petrels, on which Dumont d'Urville Base is built, as a preliminary to the erection of a new seismic shelter. This will be built on the site shown by the seismic prospecting to be the most suitable. Seismometers will be installed in the hut, and remote recording will be used.

SCIENTIST KILLED AT SHOWA

The first fatality at the Japanese Showa Base on Ongul Island occurred October 10. Two members of the 15-man wintering team, Mr. Y. Yoshida, geomorphologist and dog-handler, and Mr. S. Fukushima, geophysicist, went outside to feed the dogs and to inspect the sledge used as a mobile observatory. This was during a three-day blizzard: the wind velocity was 33 metres per second and visability was down to 1.5 metres. The two men lost their way, tried to return to the base, and became separated when about 70 metres (230 feet) from the main building. Mr. Yoshida succeeded in reaching the camp, in a frost-bitten condition, but Mr. Fukushima did not return. The missing man's team-mates, assisted by a number of Belgians who were visiting Showa at the time from their Roi Baudouin Base, carried out a thorough search but the missing man could not be found.

Mr. Fukushima, who was 28 years of age, was a geophysicist specialising in cosmic rays and aurora.

JAPANESE PLANS

The "Soya" was scheduled to leave Tokyo on November 12 for her fifth voyage to the Antarctic. On board are Captain S. Akita and his crew, with 35 expedition members. The wintering-over party for 1961-62 will number 16, and is led by Mr. M. Muruyama. He will be assisted during the voyage by Mr. Y. Morita as sub-leader and chief scientist. Mr. W. P. Boxell of the United States Hydrographic Office will join the expedition as observer, at Capetown where "Soya" is due to depart on January 2, arriving at the Base in Lutzow Holm Bay on January 11.

The "Soya", which carries two Sikorsky S58 helicopters, will resupply Showa Station and relieve the 1960 wintering team. Several sledge dogs will also be taken back to Japan, including the famous Taro, who survived, alone with his fellow sledge-dog Jiro, during the severe winter of 1957, when the base could not be re-manned and the dogs were left to their own resources. Jiro unfortunately lost his life during the winter of the present year.

It is anticipated that the scientific activities at Showa will be continued by the new wintering team on much the same scale as previously.

"Soya" is scheduled to leave Antarctica on March 6, and is due in Tokyo on May 7.

DEPOT LAYING

A plateau journey will be undertaken with the object of setting up a depot of two tons of supplies and fuel 150 kilometres (93 miles) from Dumont d'Urville Base. This is in preparation for the full-scale scientific traverse to be carried out in 1962.

AT DUMONT D'URVILLE

At the main French base the winter passed without special incident. The planned scientific programme was carried out. Additional amenities provided at the base are a new installation for the purification of water obtained from melted snow and a new magnetic hut.

* * *

The relief-ship "Norsel" left le Havre on October 22, the members of the new expedition having left by air for Australia on November 11.

* * *

A new series of stamps has recently been brought out in France. The denominations and subjects are:

85 fr.	King Penguin.
25 fr.	Kerguelen Sandpiper.
25 fr.	Fur Seal.
4 fr.	Sea Leopard.
2 fr.	Sheathbill.

Soviet Plans for Relief of Antarctic Bases

The Soviet Union proposes to maintain throughout 1961 the three major stations of Mirny, Vostok and Lazarev, with a full programme in Geomagnetism, Ionosphere, Aurora, Cosmic Rays, Glaciology, Geology, Meteorology, Seismology, Earth Currents and Medical Research.

A geological map, based on data obtained from aeromagnetic surveys, was compiled showing a mountainous zone 155 miles long and 21 miles wide in the northern part of Queen Maud Land.

In the coming season the airmen will relieve the staff at Lazarev, assist in an extensive programme of geological and geographic work in Queen Maud Land, perform aeromagnetic work and take more aerial photographs, as well as replenishing the supplies of food and equipment at Vostok.

The Detachment will also provide the necessary supplies to the sledge-tractor trains making long traverses. A flight along the route Mirny - Mawson - Showa - Lazarev and back is also planned.

SOVIET AIRMEN

"The Polar Aviation Detachment of the Civil Air Fleet," said Ye S. Korotkevich, Leader at Mirny to "Grazhdanskaya Aviatsiya" (Civil Aviation) in a radio interview in May, "has afforded reliable support to the operations of the Antarctic Scientific Expedition of the U.S.S.R. Academy of Sciences."

The Detachment, commanded by A. Pimenov, has ensured the normal activity of the island scientific stations, has provided a link between Mirny and Lazarev, has delivered supplies to the other bases and exchanged personnel, performed ice reconnaissance, and carried out aerial photography. The airmen have flown more than 1,000 hours delivering food and fuel to Vostok and Komsomolskaya. Pimenov made a non-stop flight in an IL-14 from Lazarev to Mirny, and A. Barabanov covered the same route in an Li-2 under difficult weather conditions.

One hundred and ninety-three barrels of aviation gasoline from the "Ob" for the refuelling of Soviet aircraft making flights between Mirny and Lazarev, were delivered by air at Showa and Mawson stations. An An-2 aircraft transferred 23 tons of food from the "Kooperatsiya" to Mirny.

Mirny, in 66° 33′ S, 93° 01′ E, 100 feet above sea level, will be manned throughout the year by 90 men.

Vostok 78° 27′ S, 106° 52′ E, is an inland station almost 11,000 feet above sea level. It will be manned the whole year by 11 men, six scientists and five others.

Lazarev at present situated on the Princess Astrid Coast in 69° 58′ S, 12° 55′ E will have a summer population of 25, and 11 men (six scientists and five others) will winter over.

Komsomolskaya (74° 05′ S, 97° 29′ E) will have two men in occupation during the summer season only.

The diesel electric vessel "Ob" arrived back at Leningrad from the Arctic early in October. The loading of several thousand tons of cargo at once began, and "Ob" was scheduled to leave for the Antarctic with the Sixth Soviet Antarctic Expedition early in November. This year according to Press reports, only the one ship is being used. "Ob" will travel via Capetown to Lazarev, where the ship is expected to arrive about December 1. She will then travel nearly 2,000 miles round the continental coast to Mirny, carrying out oceanographical work en route, and arriving at Mirny December 20-25.

The vessel will leave Mirny on January 10 with the men who have wintered over there. After oceanographic work as far north as the area of the Kerguelen Islands, she will return to Lazarev and pick up the remaining members of the fifth Expedition in late February before returning to the Baltic.

Over-all commander of the Sixth Expedition is the seasoned polar explorer U. M. Driatskij, who previously commanded the drifting research station Severnij Polyus 6th in the Arctic.

A NEW LAZAREV

Lazarev Station, set up in February 1959 on the Princess Astrid Coast, Dronning (Queen) Maud Land, is to be transferred inland about 60 to 90 miles to a more secure site in approximately 70° 30′ S, 12° E. The "Ob" has onloaded several prefabricated buildings for the new station, whose commander for the coming year will be V. I. Gerbovich. During the summer seaon, a geological team will investigate the Lazarev region.

Vostok Station, 875 miles inland from Mirny, at the South Geomagnetic Pole, will be commanded by L. N. Zhigalov. Vostok was established three years ago and will be re-supplied from Mirny. Vostok is reported to have recorded a new "low", —127.54° F.

TRAVERSE PLANS

The new expedition is to carry out extensive field research in the interior of the Antarctic. Using air-support freely, geographers and geologists will study the mountainous region in the eastern part of Queen Maud Land. The traverse Komsomolskaya-Vostok-Sovets kaya-Komsomolskaya is planned. During the traverse geomagnetic observations will probably be conducted.

Scientific research is also planned on the route Komsomolskaya-Point No. 1 (72° S, 85° E)-Mirny.

AT MIRNY

Mirny reported on September 30 that during the month a blizzard had raged for 23 days. The wind reached a velocity of 50 metres per second, while the air temperature was —20° F. Despite the severe conditions, which practically confined all personnel to the living quarters, scientific observations were uninterrupted. The weather had cleared up a few days before the radio message was despatched, and the crew of an Li-2 aircraft had flown from Mirny to Lazarev, calling en route at the Australian Mawson station and the Japanese base of Showa. The expeditions' geological division headed by Solovevyj, was on board.

ANTARCTIC METEOROLOGY IMPORTANT

The Antarctic, meteorologically, was of great international importance, the Secretary-General of the World Meteorological Organisations (Mr. D. A. Davies... said recently in New Zealand.

Just back from his first visit to the far south, Mr. Davies said it was important for two reasons.

"We know so little about it and it is the source of cold air which affects weather far removed from the region," he said.

Mr. Davies said he had been very impressed with the high standard of scientific work being carried out in the Antarctic.

"The skill and the enthusiasm of the men down there are remarkable and they are doing an excellent job under the most difficult conditions."

His visit to the New Zealanders at Scott Base had been one of the highlights of the trip, he said. They were doing tremendous work and their enthusiasm and morale were amazing.

Extensive Air Reconnaissance from Belgium Base

The Belgian National Polar Research Committee proposes to carry out the 1961 programme with a reduction in personnel. The leader will be Major Dedullen.

Major Derom reported at the end of September that the present team had been stepping-up its activity since the beginning of August in order to make the task of the smaller 1961 team as easy as possible, particularly by the setting up of new depots and the stream-lining of the technical and scientific results achieved to date.

The more important stores had been brought inside the buildings as far as space allowed, in order to cut out the laborious digging-out of snowed-up and iced-in dumps often six feet below the surface.

FIELD WORK BEGINS

The scientific programme has been maintained and field work has begun unusually early, thanks to the possibility of air support.

On September 14, Blaiklock and Dubois, with a team of eight dogs, sledge, tent and stores, were airborne to the sector west of the Sor Rondane Mountains 186 miles from Roi Baudouin Base, to carry out topographical and geological work.

Next day Van Autenboer and Goossens with a second team were set down at Dotten, 110 miles south of the base, for geological work. Here Depot 1 was established on September 28, and Berckmans replaced Goossens to carry out observations in radio-activity.

FLIGHTS

On October 7, a reconnaissance flight was carried out with two aircraft over the route Base Roi Baudouin - Trillingane - Botnutten - Showa, where it touched down. The flight was at an altitude of 6,500 feet. After passing Trillingane the Belgica Mountains were clearly visible. There was good visibility throughout thse flight. (Trillingane is a nunatak at the eastern end of the Sor Rondane Mountains, 125 miles south-east of Base Roi Baudouin.)

The reconnaissance indicated:

(1) That the massif rising to 10,000 feet shown on the American Geographical Society's 1958 map in 72° S, 29° 30′ E is non-existent. On the line Trillingane-Botnutten and north of this line, there is no rock visible, so that the caption "many ice-free mountains in this area" appears to be incorrect.

(2) That there is a mountain chain about 40 miles long extending from 71° 10′ S to 71° 40′ S between 35° and 36° E.

On October 22 a five-hour aerial photographic mission was carried out from Showa over the mountains sighted on the October 7-10 reconnaissance flight. Two hours after the conclusion of the flight, the weather deteriornted and on the 25th the two aircraft, an Otter and a Cessna, returned to Base Roi Baudouin.

Major Derom reported on October 27 that the teams' programme in topography, geology, nuclear radiation and biology was developing satisfactorily. A supplementary team of two men with sledges was to be carried early in November to the same mountain area to carry out glaciological work begun last summer.

After several support flights to the teams in the field during the first fortnight in November, it was

proposed to recommence air reconnaissance to the east of the Belgica Mountains and to the south of the Sor Rondane Mountains.

VISITORS

On October 3, a Russian aircraft, en route from Mirny to Lazarev, touched down at Roi Baudouin Base for refuelling. It carried a number of gifts from the Australian base at Mawson and the Japanese base at Showa.

JAPANESE - BELGIUM CO - OPERATION

A report dated October 15 from Major Derom, leader of the Belgian Expedition, provides a fine example of the friendly co-operation which is such a marked feature of Antarctic work.

The discoveries referred to above in the area between the Belgian and Japanese bases have been of great significance to Dr. Tetsuya Torii, leader of the Japanese expedition. Dr. Torii has been planning a seven-man traverse, to commence towards the end of November, using two weasels, to effect a general reconnaissance of the Showa-Monts Belgica area and to carry out research in seismology, geology and geomorphology.

As a result of the Belgian discoveries, Dr. Torii decided, instead of carrying out a reconnaissance of 300 miles towards the Belgica Mountains, to make first of all for the mountains sighted during the flight of October 7, after which he would carry out seismological work to the west.

The Belgians proposed to make a detailed aerial photographic reconnaissance of the mountains in order to provide the Japanese traverse team with information. Dr. Torii delayed his departure for several days in order to await the processing of the Belgian photograph.

Major Derom says: "The reception accorded our men at Showa was stamped with the cordial and perfect spirit of Antarctic co-operation."

ROI BAUDOUIN

Belgium's Base Roi Baudouin is situated in 70° 26′ S, 24° 19′ E, at an elevation of 37 m. The relief this summer will be carried out again by the 3,250-ton Danish ship "Erika Dan". The vessel is due to leave Antwerp on December 5, Capetown on December 27, and to arrive at King Baudouin Base on January 7. The "Erika Dan" will leave again on January 17.

Photogrammetric surveys will be carried out with one Otter aircraft in the following regions up to the time of departure of the ship:

(1) Belgica Mountains (72° 30′ S, 31° 10′ E).
(2) The western part of the Sor Rondane Mountains (by vertical air photography).
(3) The coast-line from the Russian Lazarev Station to the Japanese Showa Station.

All flights will be completely radio-monitored from the Belgian Base. One Cessna aircraft is to be kept in reserve for possible search and rescue operations.

All trail parties are scheduled to return to base before January 1, 1961. No traverse parties are planned for the coming year, except for some biological, glaciological and oceanographic reconnaisances in the immediate vicinity of the base.

* * *

ANTARCTIC TREATY

The Antarctic Treaty banning nuclear tests and military bases in the Antarctic and encouraging international scientific research, has been ratified by a further six nations, Australia, France, Japan, New Zealand, Norway and the U.S.S.R.: making ten in all out of the twelve nations concerned.

SOUTH AFRICANS MAKE EARLY SPRING JOURNEYS

The South African team at Sanae Base (70° 30′ S, 2° 32′ W) which they took over from the Norwegians during the 1959–60 season, have hastened to make use of their first full summer on the Antarctic continent.

With increasing light and sunshine during August training of the dogs started in earnest in preparation for a number of sledge journeys in the vicinity of the station. The huskies taken over from the Norwegians were trained for the first time in Antarctica to obey commands in Afrikaans, such as "trek" for starting and and "hookai!" for stopping. The meteorologists were intrigued by the appearance of a new variety of cloud during these operations, viz., a "dog cloud", which is a long snake-like cloud stretching from the station to the horizon along the trail followed by a sledge team on calm days when the relative humidity is high.

SPRING JOURNEY

The first sledge journey took place from August 29 till September 14, when leader La Grange and geologist Von Brunn visited the coast 25-30 miles north of the station to chart the present ice front and inspect the sub-station. They were surprised to find a wide belt of open water stretching all along the barrier. With twisting filaments of frost smoke rising all over, the sea appeared like a huge boiling cauldron. An occasional glimpse of the horizon through the frost smoke showed the pack ice miles away from the coast. The wide shore lead at this time of year was probably caused by several days of strong off-shore winds, rather unusually, from the south-west to south.

The lowest temperature of the year occurred early in August, viz., —47.8° C. On September 3 the wind behaved in an extraordinary way when within twenty minutes the direction changed from south to north-west, the speed increasing from 6 to 60 knots at first and then as suddenly dying down to 4 knots again. Gustiness is unusual over the wide flat area of shelf ice on which the station is located. Similar unsteady conditions associated with peculiar wave clouds were experienced by the sledge party along the coast.

FRUSTRATION

On September 24 De Weerdt, the diesel mechanic ,and Von Brunn started on what was expected to be a tractor journey of two or three days to investigate a site for the new station which will possibly be established in 1962 a short distance north-east of the present station. However, the tractor engine refused to start after the first night's stop 16 km. from the base and the men decided to walk back. After some spare parts and batteries had been taken by dog sledge to the tractor, a gale, reaching almost 100 knots at times on the 29th, set in and pinned them down for another three days. They returned to base on October 2 after having done only 58 km. in nine days.

During September the roof of the balloon hut was raised another four feet so that it is now 21 feet above the floor level, which is also the level of the main huts. The roofs of the main huts are now covered under about 10 feet of snow.

The usual strong radiation inver-

sion disappeared completely during the severe gale of 27th till 29th September. The surface temperature rose to —10° C which is 19° C above the mean for the month.

FIELD JOURNEYS

Two short sledge journeys and one tractor journey were undertaken during October. The first trip of 103 km. was to the Bloenga, an elongated ice ridge rising to over 300 metres a short distance west of the station. The second trip by sledge was to the coast and sub-station to repeat some of the observations taken six weeks before. Severe storms hampered both trips but no mishap occurred. A supply depot was established by tractor about 50 km. south of the base and about halfway between the ice front and the inland mountains. This depot was laid in preparation for the more ambitious sledge journey to the Steinkumpen Mountains and Boreas and Passat Nunataks which was undertaken by La Grange and Von Brunn on October 31. It is expected that the party will be away for about a month and the main purpose is to collect geological samples and make a preliminary survey of these outcrops which have so far been photographed only from the air.

NEW TEAM

The members of the 1961 team were appointed at the beginning of October and will have had about two months' training when the "Polarhav" departs from Capetown early in December. There will be 11 men at the station next year as against 10 at present. Only one of the present team, the meteorologist Dick Bonnema, will stay on for another year. Apart from meteorological, geomagnetic and auroral observations, there will again be only a limited programme in glaciology, geology and cartography during 1961. Gravimetric and magnetic field surveys are being planned but the seismic programme was called off at the last moment.

MIDWINTER

Hannes la Grange, leading the South African party at the one-time "Norway" station, now SANAE, reports in the South African Weather Bureau's "Newsletter" that Midwinter day was celebrated on June 21. "Our celebrations may be summed up in two words," he says: "hopelessly overeaten."

"The 21st turned out to be typically midwinter with the outside temperature minus 25 degrees and a 30 m.p.h. wind. The celebrations commenced with an out-door firework's display. While red and green rockets were shot off, the letters SANAE appeared one after the other in the glow of the rockets. The reflections of the different colours made an indescribably beautiful picture on the snow.

"Radio conditions were very poor but we were nevertheless able to contact the Belgian expedition and with our respective knowledge of Afrikaans and Flemish, which are closely related languages, we managed to exchange midwinter greetings."

NOT AMUSED!

The Medical Officer at SANAE is not a meteorologist. In an article in the South African Weather Bureau "Newsletter" he caustically describes the release of a weather balloon.

"There is a feeling of silent suspense in the wireless telegraphist's cabin . . . breathless expectation and swallowing of black coffee to aid breathing because he is afraid that he might miss the first few seconds of wireless direction and that would be a mortal sin! One could swear it was the American Explorer or the Russian Sputnik that was being launched. . . . But wait, they are now trying to launch their little balloon. Hannes is busy with a board and a woollen blanket to protect the dear little thing and to keep it warm before it is launched. He shows a congenital

aptitude for the task. Dick is also outside and is saying nice things to his clumsy bulky toy and praying that the layers of ice which will soon cover it will not cause Blackie, the king of theodolites, to think that it is a cirrus cloud when it is dancing high in the air. Meanwhile George is holding the tiny balloon as gently as if it were a little girl. Chris is sitting at the wireless receiving set in tense expectation and with black coffee, and I am waiting for the thundering noise when the Sputnik will start giving its signals, because I know that the critical stage is then over and I shall be able to relax.

. . .

"When the telephone rings Chris will know that the hour has come, but the phone is still silent. Chris is getting more and more nervous because often Martin's clock is as reliable as a watchmaker's own watch. But now the climax! The phone has really rung. But what I hear is a smashing silence—Sputnik is still silent. I rush out in order to find out what the matter is and in order to fulfil my duty to the last moment of total destruction. Chris has his head inside the wireless because he does not want to miss the slightest sound. The watches tick-tick but no Sputnik signals. Then I hear the loud noise of clogs in the corridor. It is George with his hard frozen boots.

"Have you got him?" he asks.

"No," Chris answers dismayed.

"Then a noisy rapping on the door of the cabin and a moment later Dick enters, dismayed also, followed by Hannes with ice in his beard. 'Dammit,' says Dick, 'I was nearly strangled. The aerial was around my neck. Thank heavens it broke.' "

Captain of the F.I.D.S. research ship "Shackleton" is New Zealand-born David Turnbull, of Timaru.

MR. CARSE WANTS TO BE ALONE

More details are now to hand concerning the announced intention of Duncan Carse to live alone for 18 months on South Georgia ("Antartic", September 1960, p. 269).

Mr. Carse, who is 47, has led three Antarctic expeditions. He is also well-known British radio actor and is known to millions for his part as "Dick Barton Special Agent".

He plans to live in complete solitude in a prefabricated hut, without even a radio transmitter, and to carry out scientific research and filming of wild life.

He expects to reach South Georgia in March in the survey ship H.M.S. "Owen".

From his hut, 18 feet by 12 feet, on the little-known south shore of the 120-mile-long island, he will make sorties by motor-propelled fibreglass dinghy and into the mountains on a sled.

Mr. Carse has rented Ducloz Head (a promontory on the coastline) for 1/- per annum from the British Government.

Introduced at a Press conference by Sir Vivian Fuchs, he said he expected to return about September, 1962, and would then write a book on his experiences. He expected winter temperatures of up to 17 degrees (Fahrenheit) of frost. He would have food supplies to last two years. He would live on dehydrated meat, fish and vegetables, but would take canned beer and bottles of hock and burgundy.

His stores, including the hut and three fibre-glass dinghies with outboard motors, will weigh eight tons.

He is taking no novels, only technical books; but he has a gramophone with 15 records, mostly classical romantic music including Beethoven.

The Ice-Free Valley System of McMurdo Sound

by **R. H. WHEELER**

(Leader of the Victoria University of Wellington Antarctic Expedition, 1960–61).

The Victoria Valley is the northern-most of the three contiguous "dry" or better-termed "ice-free" valleys 40-50 miles across McMurdo Sound from Ross Island, where are located McMurdo N.A.A.F. and Scott Base. The valleys lie between 77° 25′ and 77° 45′ S hundreds of miles south of the northern coast of Antarctica, which has valleys still occupied with large glaciers. The valleys with their heads 20-30 miles from the Ross Sea coast have been ice-free for a short period of geological time: but it could well be a long period in the history of man as sub-fossil seals found there in quite good preservation have been dated at 2,000 years or so.

The seal carcase exposed to driven snow and sand blast has one fifth the erosional resistance of the very hard rocks of the valley (granites, dolerites, metamorphics, etc.) so the age of the ice-free area could be easily over 10,000 years. Little has changed since their becoming ice-free but for a little subsequent retreat of the minor tributary cirque glaciers on the sides of the valleys (and there are few of these in the Victoria Valley) and some settling of the moraines.

Since the valleys are close by one another and the Victoria and the Wright are actually joined by a pass, the three valleys could well be referred to as a unit, say the "ice-free valley system" of McMurdo Sound.

GEOLOGICALLY SPEAKING

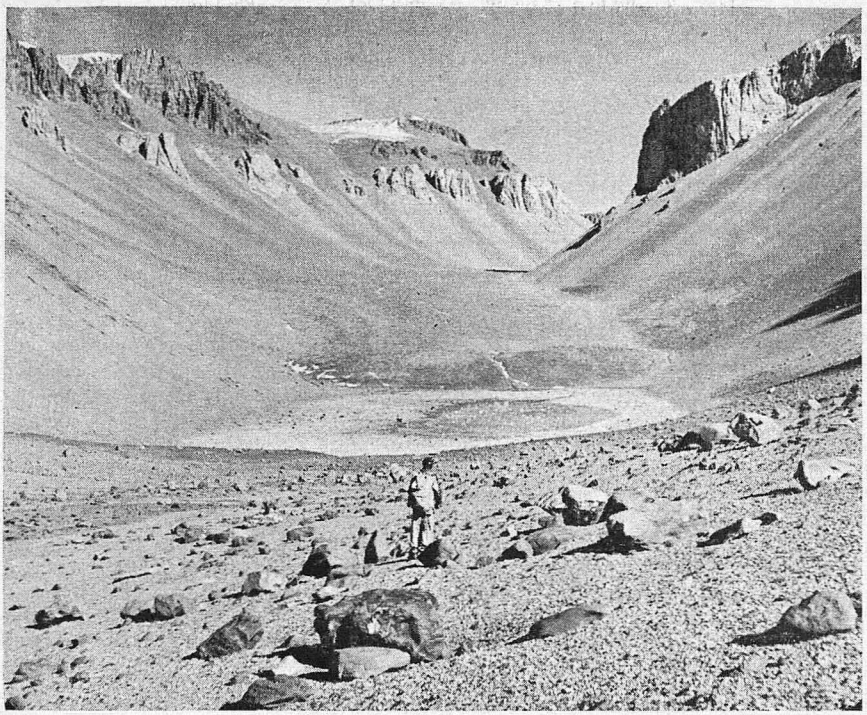
Simply, the geology is that of a multi-ply sheet or layered cake, a basement or lower layer of extremely ancient rocks coarsely and irregularly banded, overlain by alternating layers of granite and sill rock (dolerite), two of each. The land then has a distinctive coarse banded appearance of light and dark chocolate rocks, overlain by a debris of darker rock (dolerite dominant on the surface) forming the screes and morainic valley floors. This detritus is interspersed with infrequent large boulders of Beacon sandstone up to ten feet or so in height. This is essentially the same geology as in most of the McMurdo Sound portion of Victoria Land. Stream beds course along the valley floors but the streams are underfit and flow only in favourable summers, so alluvial action is desert-like episodic.

THE WEATHER

No rain falls in this cold area, and the atmospheric humidity is remarkably low, making tobacco unsmokeable and wooden ice-axe handles brittle. Snowfall in summer is rare, two or three falls in any one spot, but of greater frequency on the 5,000-6,000ft heights. The rare winds seldom exceed 40 knots, the average being five to eight knots for sensible breezes. However, the rock litter of the area is wind-polished, desert fashion, with a noticeable varnish effect, and ventifacts abound.

TOPOGRAPHY

The general land surface is almost horizontal with a slight slope to sea until ten miles from the coast when a pronounced slope occurs. The valleys, except for the open-ended Taylor, are barred from the McMurdo Sound barrier ice by the Wilson Piedmont Glacier,



IN THE WRIGHT DRY VALLEY
Looking west up the South Fork.

a stagnant ice remnant 36 miles long and no longer nourished by the vanished ice-free-valley glaciers.

The general land surface is accordant in level, with peaks arête, matterhorn, beehive, pyramidal and mesa-like in form forming the higher relief, and the broad straight valleys the lower. The whole exposed land area being under 6,000-7,000 feet or so is well below the height of the inland plateau ice, 8,000 feet. The ice-cap then slopes gradually to the barrier of Victoria Land, braked as it were against the rising land and losing height until it either flows through the barrier of the Victoria Land ranges as do the Ferrar and Mackay Glaciers, or is effectively stopped by the exposed land and the inhibited glacier flow hereabouts, allowing ablation and the occurrence of the dry valley system. The area then is a critical one, for no other area is at present known where such an extensive blocking off of plateau ice-flow is to be found. Glaciers like the Koettlitz are wasting but so far with the effect of exposing only the north side of the formerly fully glaciated valley.

LIVING THINGS

This desert area has plant life: a few algaes in or around partly-thawed shallow waters and stream beds, a few lichens on the stable solid rock of peaks and ridges; while two mosses were collected in the Victoria Valley.

Animal life is non-existent in the valleys. Only the corpses of errant seals or skua gulls and occasional penguins are found as sub-fossils. No non-vertebrate or insect life was observed in the valley either

under rocks or in the air. Three skua gulls were observed by the V.U.W. expedition of 1959-60 in ten weeks, and they were not seen to rest or feed although one hovered over a sub-fossil seal carcase.

THE LAKES

During the summer of 1959-60 all lakes except the smallest (10-50 yards in diameter) were frozen and appeared never to be completely thawed though the edges were cicitriced by the marginal melting of previous summers. Within the valley two glaciers occurred, both with local nevés, although the Webb Glacier did have a small tributary fall from the plateau ice. Other glaciers were of small cirque-size with dimensions of almost equal width and length. Both the main glaciers, the Webb and the Upper Victoria, had frozen pro-glacial lakes 1-2 miles long. The Upper Victoria Glacier terminated in a 70ft vertical face at its lake, the Webb descending almost imperceptibly into its pro-glacial lake which was seemingly undisturbed by any thrust from the drowned Webb snout.

Both nevés had hummocky surfaces suggesting their decline as vigorous tributary areas. In the vertical face and side of the Upper Victoria Glacier it was clearly observed that tributary glaciers of the nevé area lay as a veneer on the surface of the main body of ice with lenticular cross-sections, one overlapping the other.

It seems then that tributary glacier ice does not reach the glacial valley floor but is carried on top of the main glacier with the top of both flush. Compared with, say, New Zealand glaciers these were almost moraine-free, lateral morains being observed but medial moraines being rare or paltry. In the vertical sides of the glacier (melted by heat radiations of the valley walls) thrust

Looking east across the Wilson Piedmont Glacier to Ross Island.
Victoria University of Wellington Photos.

fault plains of approximately 40° from the horizontal were observed in the Webb and Upper Victoria Glaciers.

ROCK FEATURES

Rocks on the morainic valley floor and cirque floors were desert polished. In the more wind-exposed and presumably older parts, ventifacts were often in remarkable profusion. Smoothing, faceting, fluting and pitting were all observed, often with no notable orientation—the litter is probably disturbed by frost action or turned by the wind, or both. Frost polygons abound in debris ranging in grain size from sand to boulder-strewn moraine. Convex polygons were noted on slopes of almost 40°, and concave and flat polygons on the gentler and flat areas. The polygon peripheral cracks varied in width from a few inches to V-shaped "ditches" of up to ten feet from crest to crest of the upturned edges of the concave polygon.

The permanently frozen sub-soil (permafrost) was usually one to two feet below the surface and when exposed with a shovel revealed a remarkably flat, rockless surface no rougher than that of a new concrete path.

Sound in the valley carried (in still air) extremely well. An aircraft flying at 50-100 feet altitude in the Upper Victoria Glacier Valley was heard at the Lake Vashka camp eight miles away. Humble as the vegetated tundra is, in contrast to the tropical jungle, so is this ice-free land a desert to the tundra itself—in plant life, animal life, and in a lack of moisture in any hollow or in the seldom-filled stream-beds.

N.Z. HELP FOR U.S. REACTOR SITE

Four tons of drilling equipment belonging to the New Zealand Department of Scientific and Industrial Research have been flown by Globemaster aircraft from Wellington to the Antarctic to help prepare the site for the nuclear reactor to be installed at McMurdo Base.

One of the difficulties met by experts at McMurdo has been to determine the depth of the permafrost and its contact with the solid rock on which the reactor must be built. They approached the D.S.I.R. through the director of the geophysics division (Dr. E. I. Robertson) to assist in a special survey of the selected sites.

Dr. Robertson, being at Scott Base at the time, personally carried out resistivity tests which indicated that, generally, below the top two feet of loose material was a band of 8 to 10 feet of homogeneous material, probably permafrost and below that a material of another nature. Only drilling could identify with certainty these materials.

Mr. J. E. F. Hoffman, who has had considerable experience with drilling into permafrost at Scott Base, flew to McMurdo and on his return advised that the drilling equipment of the geophysical survey could be usefully employed in part of the area, a smaller unit being employed in the steeper sections.

Two experienced New Zealand drillers, J. Mitchell and J. Johnston, will operate the unit during the several weeks of site investigation, which will entail at least 40 holes to depths of some 50ft.

SHAPE OF ANTARCTICA

A New Zealand scientist has contributed to the current research into the centuries-old problem, "What is the Antarctic?"

Dr. F. F. Evison, recently appointed Superintendent of the Seismological Observatory, Geophysics Division, D.S.I.R., has with his colleagues made an extensive study of earthquake records from Antarctica. From data observed he demonstrated that a continental mass underlies the ice-cap in eastern Antarctica, whilst western Antarctica is not continental but probably comprises a group of islands.

ARGENTINE ANTARCTIC PROGRAMME

We are indebted to the Director of the Argentine Antarctic Institute, Buenos Aires, for the following outline of Argentine's Antarctic research programme.

For operational reasons the following naval posts were evacuated: Teniente Camara (62° 36′ S, 59° 54′ W), Almirante Brown (64° 53′ S, 62° 52′ W) and the General San Martin Base (68° 08′ S, 67° 08′ W).

The extreme ice conditions which prevented the ice-breaker from reaching General San Martin Base, damaged by a fire on February 2, 1959, made reconstruction in the 1959-60 summer as planned, impossible. All that could be done was to evacuate the personnel. Therefore during this year only the following Argentine Antarctic stations have remained in commission:

Ellsworth Scientific Station ...	77° 43′S,	41° 08′W.
General Belgrano Base	77° 58′S,	38° 48′W.
Melchior Naval Detachment ...	64° 20′S,	62° 59′W.
Esperanza Base	63° 23′S,	56° 59′W.
Deception Naval Detachment ...	62° 59′S,	60° 43′W.
Orcadas (Orkneys) Naval Detachment ...	60° 45′S,	44° 43′W.

The General Belgrano and Esperanza bases are run by the military (Antarctic Division). The naval detachments of Melchior, Deception and Orcadas, by the Hydrographic Naval Service and the Ellsworth Scientfic Station is operated and administered by the Institute.

During this year instruction courses were arranged for the relief personnel of Ellsworth, dealing with subjects connected with the plans for research work to be carried out in 1961. During the month of September it was arranged that a commission of scientists and technicians should carry out practice with skis, practise salvage work from crevasses, patrol work and glaciology in the field in the Argentine mountain regions.

The Technical Department is in charge of the logistics support for Ellsworth Station, having carried out up till now the purchase and packaging of materials, foodstuffs, instruments, etc., for shipping.

MOVEMENTS

The transport "Bahia Aguirre" and the survey vessel "Chiriguano" were due to leave Buenos Aires for the South Shetlands on November 15. The ice-breaker "General San Martin" was scheduled to leave on December 1, and to arrive at the South Orkneys with the "Bahia Aguirre" on December 7, leaving for the Weddell Sea area on the 15th. Also concerned in the annual reliefs is the tanker "Punta Ninfas".

It is hoped to effect relief of all the stations, including Ellsworth, and General Belgrano, which could not be relieved last summer owing to difficult ice conditions. If the ice in the Weddell Sea this year prevents the ice-breaker from reaching these stations, the personnel will be evacuated by aircraft operating from the Halley Bay area or as far south as practicable.

The relief operations are expected to conclude early in March.

ORGANISATION

(The following account of the organisation of Argentine Antarctic activities is extracted from an article by Rear Admiral Rodolfo N. Panzarini in "Aencia Interamericana".)

The "National Antarctic Commission" is composed of 14 members who represent several government departments which have an interest in the Antarctic and is an organisation which studies general policy problems related to that region.

THE NAVY

The "Antarctic Naval Group" is composed of ships and air units of the Argentine Navy for the carrying out of the annual expeditions for restocking, relief work, placing of buoys, mapping and varied scientific observations.

The "Antarctic Naval Detachments" are permanent scientific observation units, administered and operated by the Navy and are named Orcadas (Orkneys), Melchior, Deception, Almirante Brown (at Port Paradise) and Teniente Camara (at Moon Bay).

The "Naval Hydrographic Service" plans and carries out laboratory, workshop, production work and work with buoys, mapping, oceanography, hydrography and other scientific observations conducted by the Naval Antarctic Group, the detachments, the shelters and the oceanographic and hydrographic ships which come directly under it. They also are in charge of the administrative and logistics side of the detachments.

The "Maritime Meteorological Service" is a department of the Navy which deals with meteorological and climatic questions of the Antarctic sector, while the "Naval Electronics Administration" carries out ionospheric work and research in the Antarctic.

THE ARMY

The "Antarctic Military Bases" are intended for exploration on land and certain scientific observations; they are administered and operated by the Army and are known as General San Martin (at Marguerite Bay), Esperanza (at Esperance Bay) and General Belgrano (in the Weddell Sea). There are also 16 shelters for occasional use.

The "Military Geographic Institute" plans and carries out geodetic mapping and geophysical work in the Antarctic.

THE INSTITUTE

The "Argentine Antarctic Institute" is a scientific and technical body for the study of the nature of the Antarctic. It is administered by the Navy Department but is a decentralised body with its own executive and budget.

It does Antarctic research work in all fields of the exact, physical and natural sciences within the scope of pure science. It studies, develops and applies methods, ways and means concerning various aspects of polar techniques such as transport, housing, clothing, food, expeditionary equipment and communications.

It carries out its own expeditions to the Antarctic in order to observe the results of its investigations.

Both with its permanent or temporary staff and in co-operation with other scientific institutions, it carries out work in connection with geography, geology, glaciology, terrestrial magnetism, geochemistry, meteorology, cosmic radiation, oceanography, biology, human physiology, the ionosphere, auroras and microbiology.

Within its own organisation, it has available scientific laboratories, a library and museum collections, a mapping room and a photographic laboratory, a map library and an archive of scientific and technical documentation, and a permanent observatory in the Antarctic.

The Ellsworth Scientific Station is a permanent observatory which the Argentine Antarctic Institute has administered since the end of the International Geophysical Year 1957-58. Argentine and American scientists share in the work done there.

FALKLAND ISLANDS DEPENDENCIES

Routine scientific observations have been maintained at all nine bases of the Falkland Islands Dependencies Survey, and field work has also continued without interruption in several localities.

FIELD WORK

Two men from Port Lockroy (Base A) climbed Wall Range (3,000ft) on Wiencke Island, in order to make additional sea-ice observations in preparation for the arrival of the relief ships.

From Hope Bay (Base D) a number of parties were in the field simultaneously, several of them occupying the View Point but *en route*. Five men extended the tellurometer survey across the West Russell Glacier, and surveyors also worked at the southern end of Prince Gustav Channel. Geologists studied the mainland north and west of James Ross Island, and also north of Hope Bay at Mt. Bransfield. The magnetometer survey was extended to the west side of Duse Bay.

The Adelaide Island party, wintering at the old hut on the Argentine Islands, assisted the men at Base F, both with the scientific work at base and with field work. Survey parties worked on a number of islands north and south of the Argentine Islands, and also in Beascochea Bay to the south. Observations on sea-ice in the Grandidier Channel were made from Chavez Island, and magnetometer readings were taken on Petermann Island. Cape Tuxen on the mainland was also visited.

From Base G, surveyors established ground-control for much of the existing air-survey of the King George Island. Geologists worked eastwards from Admiralty Bay, as well as at North Foreland on the north coast.

Base H personnel continued seal counts and tagging on the west coast of Signy Island, as well as geological work in the Deacon Hill area of Coronation Island.

At Halley Bay (Base Z) observations on Emperor penguins at Emperor Bay were maintained continuously throughout June, July and August, and intermittently during September. A radio chess match played against SANAE base in July provided a welcome relief from routine activities, and radio contact was also made with several other bases, including Mirny.

THE R.A.F. PARTY

The R.A.F. men wintering at Deception Island completed repairs to the damaged Beaver by the beginning of August, but blizzards delayed the test flights for some time. At last, on September 16, all was ready and it was possible to fly both the Beaver and the Otter south to the Argentine Islands, where the men wintering at the old hut were waiting to be taken on to Adelaide Island. Unfortunately, plans were once again frustrated by a mishap. The two aircraft landed safely, but while they were taxi-ing over the sea-ice the Beaver broke through and became firmly wedged in the hole. All attempts to dislodge her failed, and although it was possible to salvage several parts, the fuselage had to be abandoned. Fortunately, the crew escaped unhurt and all four R.A.F. men then returned to Deception in the Otter and are now awaiting the arrival of a second Otter to replace the Beaver.

RELIEF SHIPS

R.R.S. "Shackleton" sailed from Southampton on September 27 with ten F.I.D.S. on board, and R.R.S. "John Biscoe" on October 25 with 18 F.I.D.S. men. Several of the men were going south for the second time, the old hands including Geoffrey Thompson who wintered at Campbell Island in 1957-59.

AUSTRALIAN ANTARCTIC ACTIVITIES

On November 22 the Department of External Affairs, Canberra, announced the names of the 71 men who will man the three bases, Mawson, Davis, and Wilkes, during 1961.

The leaders of the Australian Bases for the coming year will be:

Mawson: A. W. G. Maslen (41), Queensland, a sugar mill chief chemist and a former Naval Petty Officer. The team at Mawson will number 38.

Davis: Dr. M. C. Hay (25), Western Australia, a resident medical officer at Royal Perth Hospital. Dr. Hay holds the Western Australia three-mile athletic title. There will be nine men at Davis.

Wilkes: Capt. N. R. Smethurst (24), Western Australia, of the Australian Regular Army. He is a graduate of Duntroon and a B.A. Capt. Smethurst is to be married three days before he leaves Australia. The full complement at Wilkes next year will be 23, including five U.S. scientists.

The party at Mawson includes 12 members of the R.A.A.F. Antarctic Flight, under the command of Syd./Ldr. John R. Batchelor of Victoria.

The party for Mawson will leave in two groups, the first on M.V. "Thala Dan" from Melbourne about January 3 and the second from Perth on M.V. "Magga Dan" about January 27. Also on the "Thala Dan" from Melbourne about Jan. 3 will be the nine men for Davis while the 23 men for Wilkes will leave Melbourne about December 23 on the "Magga Dan".

NEWS FROM THE BASES

MAWSON

Following the disastrous fire at the U.S.S.R. Base Mirny in early August every Australian Base offered assistance and the following message was received from the Russian leader: "All members of our Expedition send you their thanks for the kind words and condolences in connection with our grevious loss. Many thanks for offer of help. In spite of our bereavement and difficulties we are all doing our best to complete the year's programme. Best wishes. Korotkevich."

The R.A.A.F. Antarctic Flight at Mawson was ready to fly in assistance but on Saturday, August 6, they were informed by their Russian friends from Mirny that, due to a blizzard, their air-field had been destroyed, and therefore the flight planned for August 8 had to be cancelled.

Jim Kichenside and Ken Assender flew the Beaver to Kloa and dropped Rik Ruker and Hank Geysen near the depot where all the field equipment had been stored since April when Kirkby, Bennett and Ruker were picked up after their dog-sledging trip in Enderby Land. Ruker and Geysen were joined the next day by Doc Newton and Harry Munstermann, and the four of them man-hauled the two sledges and equipment from Cape Gotly to a landing area three miles north of Cape Boothby, visiting, in passing, the Emperor penguin rookery at Kloa. On Sunday, August 6, they covered 26 miles.

After the Dakota had landed on the sea-ice and taken on its load, John Arthur connected the JATO bottles and the first jet-assisted take-off by the Antarctic Flight was a fact. The unanimous comment

of the man-hauling party was "Scott really did it the hard way."

On August 16 the Antarctic Flight made a maximum penetration flight south-west from Mawson at the request of the Division of National Mapping. The duration was 7 hours 20 minutes and the distance covered was 1,083 miles. The most southerly position reached was 72° 30′ S, 40° 30′ E.

On Friday, August 25, the Dakota left for Davis to carry out part of the year's survey programme and to depot fuel in the Prince Charles Mountains.

By August 29 preparations for the southern journey were well in hand and the party under Base Leader Henk Geysen was ready to depart.

Several men had spent long working days in preparing the two caravans for the southern journey, and they did a marvellous job—"home away from home". Syd Kirby prepared all the food rations and field equipment and Nev. Collins and Noel Jennings got the two tractors and the weasel ready. Graeme Currie made sure that the radio equipment will be one hundred per cent.

First stage of the trip was to be a base camp in the southern Prince Charles, approximately 360 miles south of Mawson. Dogs will then be flown in to assist Rik Ruker's geological survey in areas which cannot be reached by aircraft or mechanical transport.

For most of September Mawson seemed deserted, with seven of the Air Force over at Davis and five men away on the journey to the Prince Charles Mountains. The Air Force had a busy month with a total of 123 flying hours and, though hampered by the weather at Davis, was well up to schedule. Several flights have been made to a depot site at Meredith to drop fuel for more southern operations and one long reconnaissance flight to study landing areas in the mountains. The Dakota returned to Mawson once during September and took the opportunity to bring Leon Fox over from Davis for dental treatment.

September 25 saw the arrival of the long-expected Russian plane carrying 15 aircrew and scientists on a 2,000-mile journey from Mirny to Lazarev for the summer. They brought over some excellent Russian films, some in colour and the dialogue in Russian but this was ably translated by the Russian-speaking busiest Radio Officer, Oleg Zakharoff.

CREVASSE RESCUE

By October 6 the field party en route to the Southern Prince Charles Mountains had covered over 300 miles in spite of bad weather, mechanical problems and extremely low temperatures. Their lowest temperature of over 100 degrees below freezing is certainly an A.N.A.R.E. record. The party had almost reached the chosen base area picked by Jim Kichenside in the Beaver when the news came that Henk Geysen, the O.I.C., had dropped his six-ton D4 tractor into a hidden crevasse. Fortunately, Henk was unhurt and quickly rescued, but one tractor was lodged 17 feet down an apparently bottomless crevasse.

After three days of herculean effort the five members of the party (Henk Geysen, Nev. Collins, Sid Kirby, Rik Ruker and Doug Machin) managed to recover the slightly damaged tractor by digging a ramp through the ice down to the level of the tractor and winching it out, using the other D4. The party then gingerly negotiated the still crevassed route but, in spite of many precautions, broke through four more snow bridges before reaching safe ground and the base area.

Then began a week of frustration when the weather was either too bad at the base area or at Mawson to allow the relief of personnel

and the transport of the dogs. Several attempts were made in the Beaver to fly in but bad weather in each case turned them back. Eventually on October 22, after an abortive flight by the Beaver, Graham Dyke and Ken Assender managed to get the Dakota in, though landing was made difficult by ground drift. Bill Kellas, Oleg Zakharoff and Ian Bird, together with the dogs and their food, were flown in and Henk Geysen, Sid Kirby and Doug Machin came out.

On the 24th the Dakota, which had just finished a 120-hour service before relieving the field party, left for Davis to finish the photomapping programme over there. Unfortunately, engine trouble developed and, after eight days, the aircraft returned to Mawson for an engine change, a major task in these temperatures out of doors. Fortunately, the weather has been kind to Bert Carue and Kev. Felton, our engine fitters, and their many helpers, and the new engine was assembled and fitted in record time with a test flight scheduled for November 10.

LOSS OF A WEASEL

Unsafe sea-ice was causing those on local trips from Mawson plenty of worry during October. While on a visit to Auster rookery, 45 miles from Mawson, the weasel was almost lost on the outward journey but assistance by air in response to a radio call avoided any loss. On the return journey, however, when within 17 miles of base the weasel broke through an area of soft sea-ice and disappeared in a very short time, leaving the party stranded, but fortunately with all gear safe and only a short distance from an island. The party under Doc Newton hauled the equipment to the island camp and radio contact was made with Mawson. The Beaver came quickly to the rescue and eventually all personnel and equipment were safely returned to base.

DAVIS

From Davis, Ian Douglas reported that the sun reappeared during the second week in July.

On the 11th, Noel Barratt and John Molle departed the camp area, by means of canine motive power, with a sledge packed to its limit. After a rather embarrassing difference of opinion between the dogs and the would-be rulers, the intrepid party disappeared from sight. Four days later they returned much the worse for wear, having travelled along the Fjord to the plateau edge.

On August 16, Leon Fox and Keith Power took over, and headed north. These men travelled to the Wyatt Earp Islands. This expedition arrived home on the 22nd after navigating many miles of extremely bad pressure-ice and a number of whiteouts.

During the Dakota's stay at Davis in September a number of minor unserviceabilities, consequent on cold weather flying, caused it to be grounded for several days. At the end of the second week the Beaver flew across from Mawson with various spare parts and a few days later made a round trip to collect a cylinder for the Dak. Ian Douglas saw Mawson as a result of this flight. The Beaver's presence brought our spring-time population to 17. Each of the Davis permanents took part in at least one operational flight.

During the second week of September, Leon Fox and Derrick Hobby travelled by dog-team to and along Crooked Fjord, which is situated on the southern fringe of the Vestfold Hills. Kevin Felton managed the powerhouse in Derrick's absence. Bill Suter and Keith Oldroyd covered the same ground with tractor sledge and caravan during the first week of this month. Both parties were away only a few days. The trip now in progress is being undertaken by John Molle and Noel

Barratt with the aid of the dogs. They are travelling north to the Wyatt Earp Islands via Long Fjord. Last week the caravan, constructed earlier in the year and used by Bill Suter and Keith Oldroyd on their trip, was taken to Long Fjord where it will be used as a camp when observing the Weddell seals breeding later this month. A number of seals with pups have already been seen in the Fjord.

WILKES

August at Wilkes was characterised by heavy snowfalls and four blizzards, one of which howled for a record 92 hours non-stop, gusting to 99 m.p.h. As a result Wilkesians have been leading troglodyte-like existences underground (or under-snow), using roof trap-doors for exits. After each blow we have the spectacle of many snow-shovellers uncovering doorways, vehicles, stores, drums, etc. Towards the end of August there has been an illusion of warmth in the sun, which climbs higher every day.

Scientific programmes continue with routine aurora, ionosphere, geomagnetism, seismology and glaciology observations. The brightest aurora of the year—showing greens, yellows, and reds—appeared on August 24. The meteorology programme now includes collection of data from two weather stations on the plateau for comparison with station area. A record radiosonde height of 3 millibars has been attained twice.

Sea-ice broke out during blizzards, and three times as many additional icebergs—a hundred or more—dotted the north-west skyline. Open water brought snow petrels, antarctic petrels and giant petrels within sight of the station, cruising along shore seeking food. Seals are more plentiful now.

By late August field work was becoming more active. Frank Soucek and Rich Penney had undertaken a five-days man-hauling trip along 35 miles of coastal region. Brian Wall and Neal Graham attempted a trial day's man-hauling on the lower ice-cap. Weasel trips have been made to the ice-cap by Yingling, Jones, Soucek and Black.

The glaciological field work was carried on by Harry Black. The programme included periodic measurement of the accumulation and ablation stakes which provide a record of the snow increase and decrease at scores of locations on the ice-cap and coast. A battery of anemometers and snow drift traps mounted on a mast, at levels from six to 800 centimeters, provide data on the vertical wind profile and associated drifts of snow at each level. These observations are only made in blizzards and the unfortunate observer staggers back along 400 yards of blizzard line covered in ice snow, looking like a yeti. The glaciology programme also includes snow sampling for density determinations, systematic observations of sastrugi (the raised snow formations caused by wind) and measurements of the compaction and the contraction of the ice-cap in an 120-foot-deep pit at S2. There is also the recording of the temperatures, densities, grain size and various snow ice strata in boreholes and pits dug on the plateau. Also there are photographs of the saltation process, setting the fascinating snow and drift particles on plastic-coated slides and examining and measuring them under the microscope. The interesting solar halo displays are recorded, as well as the capture of the particular ice crystals or diamond dust causing these spectacular phenomena.

Giant Petrels, Antarctic Petrels, and Snow Petrels are sighted on most fine days. Weddell Seals are beginning to congregate on the breeding area of sea-ice to the north. Sea Leopards are sometimes sighted, cruising the ice edge and seeking penguins; Keith Jones observed two Emperors when a

Leopard lunged out within a few yards. Apparently geophysicists bear some resemblance to penguins.

In September the first S2 trip for months was made by Don Butling, Mike Campbell and Jim Smith; in one week they found many trail markers buried in deep snow. They camped on the trail two nights, carried out work at S2 underground station 50 miles east and laid trail markers on the return trip.

Also in September preparations were going ahead for a field trip to the interior which was scheduled to commence at the beginning of November. The main party will be Campbell, Lunde, Butling, Harrop, Black (Officer-in-Charge). The support party, Dr. Frank Soucek and Tom Edwards (Mechanic) will make a tractor journey in the first week of the journey.

ANTARCTIC DIRECTOR'S VISIT TO UNITED STATES BASES

Mr. P. G. Law, Director of the Antarctic Division of the Department of External Affairs, accepted an invitation from the Commander of the United States Naval Support Force for Antarctica, Rear-Admiral David Tyree, to fly from New Zealand to visit United States bases in Antarctica. Mr. Law flew from Sydney to Christchurch on Thursday, October 13, and visited McMurdo Sound and New Zealand's Scott Base, as well as seeing various other parts of the Ross Dependency from the air during the last week of October.

* * *

LAND BELOW THE ICE

At the 1960 S.C.A.R. Conference it was decided that "features lying under an ice cover should be named according to the already adopted geographical terminology prefixed with the term *sub-glacial*". The abbreviation of this prefix on maps will be Sg.

AIR RESCUE

A new method has been evolved by United States airmen to rescue a man stranded in Antarctic country too rough to permit ski-landings and too far from base for a helicopter to be used.

A cannister containing a do-it-yourself kit is dropped to the marooned man. He climbs into a harness similar to that used for parachute jumping, attaches one end of a 600ft nylon cord to it, pulls the plunger on a hydrogen-making plant, inflates a balloon and sits down to wait.

A Neptune aircraft fitted with guides to channel the balloon and its cord into a locking device on the wing, then sweeps down over the "victim", its equipment picks up the cord, carries it back to the after station and the subject is winched up to safety.

When he first leaves the ground the "victim" rises straight in the air, then gathers speed steadily as the arc of nylon takes the pressure and gradually straightens. The "G" forces involved are less than those experienced in a parachute jump.

NEW ZEALANDER TO WORK AT POLE

A New Zealand glaciologist, Mr. A. Gow of Wellington, will this summer become the first New Zealander to work at the South Pole scientific station.

A graduate of the Victoria University of Wellington, Mr. Gow was last year a member of a 10-man American team which drilled 836ft through the Ross ice-shelf, near Little America, to take ice core samples for study.

His work this year will be a study of the rate and age hardening and ultimate strength of disaggregated snow at very low temperatures.

The United States Antarctic Programme

October saw the air link with Antarctica restored for the 1960-61 summer season with the flight from Christchurch, N.Z., to McMurdo Sound of Rear-Admiral Tyree, Commander of U.S. Naval Support Force of the United States Antarctic Research Programme. A combination of adverse weather at McMurdo and unexpectedly and unprecedentedly severe radio black-out conditions have made this flying season one of the most difficult since the early season N.Z.-McMurdo air link was established five years ago.

PROJECT MAGNET

History was made when the U.S. Navy Super Constellation engaged in "Project Magnet" landed in Hobart, Tasmania, on October 24 after a non-stop flight from Antarctica to Australia. However, the sequel came dramatically, when on its return flight to McMurdo it crashed. While salvage operations will retrieve some of the scientific equipment, the plane is a total write-off. The itinerary of the plane up to the time of the crash had been:

October 22: Left Christchurch for McMurdo.

October 23: Flew over South Magnetic Pole, then direct to Hobart.

October 27: Left Hobart for Christchurch.

October 31: Crash at McMurdo.

Aboard the plane were a crew of 16 and four geophysicists and three Navy personnel, of whom two were seriously and six others slightly injured. The plane and equipment were worth six million dollars. The operation on which the crew were engaged was an aerial survey of the world's magnetic fields over the oceans. Begun in 1958, it utilizes aircraft equipped with magnet and cosmic ray recorders, as well as several systems of automatic navigation equipment.

KC4USV

Six licensed ham radio operators at McMurdo, all Navy men, working on off-duty hours, operate KC4USV Ham Radio. They volunteer their own time and efforts so that personnel in the camp can talk with families and friends ten thousand miles away.

KC4USV operates on a single side band mode of transmission. This method allows greater transmitting distance and more efficiency in receiving. Approximately 300 radio-telephone connections are made each week over this 20-meter amateur band. Around 35 volunteer hours a week per man are spent keeping military and scientific personnel in contact with the States. The Ham Radio has been called the greatest morale booster in the Antarctic.

Call-up is at a predetermined time every day. As soon as contact is made, the men at McMurdo are notified through the inter-communication system. By connecting the radio to the telephone system in the particular State which has been called, any man can talk directly to his home, or the home of a friend. The only cost is the cost of a long-distance phone call.

As well as sending messages home, the men regularly talk to "hams" in many parts of the world. In the Christchurch district alone, four persons talk to McMurdo Sound on any subject from weather to sport.

ICE OBSERVERS

Two U.S. Navy weathermen have arrived in Antarctica to begin extensive aerial reconnaissance chart-

ing of Antarctic ice fields. Their efforts are closely co-ordinated with the U.S. Naval Weather Service at McMurdo Sound.

Since their arrival on October 11 the two observers have drawn up an ice reconnaissance chart of ice conditions in the Western Ross Sea off the Antarctic coast. They will collect data on the distribution of the ice, concentration of the ice, movements and pattern of the ice and its topographical features. The ice areas will be photographed to determine how far the ice extends from the continnent.

Ice observations are made from aboard U.S. Navy ships, from land stations and from aircraft.

The aerial ice observer's information is invaluable to the ice-breakers plying their way through the broken ice fields surrounding the continent. Flying overhead, he can chart open leads and transmit this information to the ice-breaker below. The ship can then plot a course through the paths of least ice resistance.

COMMUNICATIONS

A two-year, $1,800,000, communications improvement programme is under way at McMurdo.

Present Deep Freeze communications facilities and equipment were installed four to five years ago during the International Geophysical Year. Today the Deep Freeze programme has grown to such proportions that the communications equipment carried over from the I.G.Y. is no longer adequate.

From the main Antarctic communications centre at McMurdo, vocal, radio, teletype, facsimile and continuous wave — dot dash — systems provide the Deep Freeze chain of contact for the inland stations, McMurdo, and the outside world. Byrd, the South Pole, and the joint New Zealand–U.S. station at Hallett are in continuous contact with McMurdo. Weather and scientific information is transmitted with requests and replies concerning personnel and supplies—even surgery has been performed at the inland stations with the aid of medical instructions radioed from McMurdo.

The French at d'Urville, the Argentines at Ellsworth, the Australians at Mawson and Wilkes, and the Russians at Mirny, all transmit daily weather compilations. This information is received at McMurdo and relayed by radio-teletype to the International Antarctic Analysis Center for Weather in Australia.

With the present communications equipment it is often very difficult to maintain contact with aircraft flying over the Antarctic continent, and on the 2,100-mile overwater flight from Christchurch, New Zealand, to McMurdo. Aircraft flying these summer support flights often lose contact with the ocean picket ship, the U.S.S. "Wilhoite".

Improvement of the air to ground, ground to air circuits will be the first to be tackled in the communications rebuilding programme. More powerful transmitters, more efficient directional antennas, and better receiving equipment will be installed, first at McMurdo, Christchurch, and on board the ocean picket ship, and then at the inland stations.

On the overseas flights, communications with the aircraft through the New Zealand Civil Aviation Administration will be backed up with the installation of single sideband radio equipment on the ground and in the aircraft. The single sideband is the most efficient radio equipment at present available, and is used in emergencies when all other contact is lost.

New navigational aids and automatic aircraft homing devices will aid aircraft in their flying through treacherous Antarctic weather. The ground control approach (GCA) radar, now used as a foul weather landing aid by aircraft on the ice runway at McMurdo, will eventually be installed at the inland stations.

A direct teletype circuit will be put through from McMurdo to

Christchurch, eliminating the present requirement for several land-wire relays in New Zealand. With this direct line from Antarctica to the Advance Support Unit in Christchurch greater speed will be possible both in the movement of supplies and in the passing of traffic to and from the United States.

By March of 1962, the Deep Freeze Unit at Christchurch, and U.S. stations in Antarctica will have new navigational ands, new buildings, and more modern sending and receiving equipment.

AIRPORT TO BE?

In October 1957, 27 U.S. Navy men were sent to Marble Point, about 4 miles north of Cape Bernacchi, McMurdo Sound, to construct a 1,200-foot airstrip. This they did in five days.

From time to time reference has been made to the practicability of constructing a larger airstrip in the area, to provide an all-weather airfield for commercial flights. The cost of constructing a strip providing runways with an initial length of 5,000 feet was, in October 1959, estimated at $100,000,000.

A New Zealand scientist who visited the area during the 1959-60 summer, supplies us with the following notes on the site and the situation at the time of his visit.

MARBLE POINT

Marble Point camp and airstrip is situated at the northern end of a long narrow strip of bare ground about a mile wide and about eight miles long extending from Gneiss Point in the north to Cape Bernacchi in the south. To the west this strip of ground is bounded at the northern end by the ice cliffs of the Wilson Piedmont Glacier—a couple of hundred feet high at the cliff face but rising rapidly to over a thousand feet. At the southern end of the strip of bare ground the ground rises to the slopes of Mt. Hogsback.

The northern end of the expanse of bare ground is described as a till plain, covered with ground moraine deposited under the Piedmont Glacier and exposed by its retreat, but the basement rocks, schists, gneisses and marbles of pre-Cambrian age are near the surface or exposed in many places. The surface relief is rolling, with hillocks rising to a hundred feet or so. To the south, near Cape Bernacchi, the till plain is replaced by moraine deposits with a more pronounced relief. Several melt-water streams flow across the plain from the edge of the glacier. A few small lakes are also found, some containing algal peats. The ground is permanently frozen to within some two feet of the surface.

The Americans have been investigating the area as a possible site for an airfield. At the end of 1959, there was a short airstrip near the north end of the area. This airstrip was rough and just long enough for an Otter aircraft to use. A construction camp of about a dozen huts had been set up but was unoccupied at that time. Construction activities on the site apart from the airstrip consisted of a network of roads covering the area. Trails on paving materials were laid out in places.

A longer airstrip was marked out several miles off the coast on the ice but was unusable because of cracks.

Considerable construction equipment was on the site; two Caterpillar D9 bulldozers, some smaller models and several trucks.

* * *

At the request of the Australian Antarctic Division, the Sydney office of the British Travel Association has sent colourful "Come to Britain" posters to brighten up Australian and Russian bases in the Antarctic, and the French base on the Kerguelen Islands.

Status of U.S. Scientific Programmes in the Antarctic

The following material was prepared by Albert P. Crary, of the National Science Foundation. Dr. Crary is N.S.F.'s Chief Scientist for the U.S. Antarctic Research Programme. During the the I.G.Y., Dr. Crary was Deputy Chief Scientist of the U.S. Antarctic Programme, Scientific Station Leader at Little America I.G.Y. Station for two and a half years, and leader of the two major I.G.Y. oversnow traverses from Little America Station.

Since the close of the I.G.Y., co-ordination and administration of the United States Antarctic Research Programme has been the responsibility of the National Science Foundation. Prior to that time, development and supervision of U.S. scientific programmes in Antartica were the responsibility of the National Academy of Sciences and its U.S. National Committee for the I.G.Y. Financial support was received by the Academy from the Congress through the National Science Foundation, and logistic support was afforded by the U.S. Navy.

Even before the end of the observational phase of the I.G.Y., in December 1958, it had become evident that world-wide, co-operative research in geophysics had proved more valuable than the most optimistic forecasts, and consequently would benefit from continued international study and co-operation. Accordingly, in 1957 and 1958, the I.G.Y. parent body, the International Council of Scientific Unions (I.C.S.U.), established several groups to co-ordinate the long-range post-I.G.Y. effort; among these was the Special Committee for Antarctic Research (S.C.A.R.), established in February 1958.

Following the pattern of the I.G.Y., the National Academy of Sciences established in the United States the Committee on Polar Research to co-operate with S.C.A.R. in co-ordinating international programmes in Antarctica and to advise U.S. agencies on the formulation of the post-I.G.Y. U.S. Antarctic programme. Laurence M. Gould, President of Carleton College, is the Chairman of C.P.R.; Dr. Gould was also the Chairman of the U.S.N.C.-I.G.Y. Antarctic Committee.

The U.S. Antarctic Research Programme now consists of research conducted at six Antarctic installations, augmented by oversnow traverses and field parties in selected areas, as well as in laboratories and research centres in the U.S. The Byrd, South Pole, and McMurdo Stations are wholly U.S. stations. At Hallett Station the programme is a co-operative New Zealand–U.S. effort, as it was throughout the I.G.Y. Since the end of the I.G.Y., the Ellsworth and Wilkes Station programmes have been conducted co-operatively with Argentina and Australia, respectively.

Within N.S.F., Thomas O. Jones serves as Antarctic Programme Director. Scientific projects of the U.S. Antarctic Research Programme are arranged by the National Science Foundation in consultation with the Committee on Polar Research. Government agencies with interests in the Antarctic are represented through the Interdepartmental Committee on Antarctic Research, a second advisory group assisting the Foundation. The U.S. Naval Support Force, Antarctica, commanded by Admiral David

Tyree, provides the operating personnel for the Byrd, Hallett, and South Pole Stations and for the Naval Air Facility at McMurdo Sound, and also furnishes logistic support generally.

The U.S. scientific programmes in Antarctica have been maintained at approximately the same man-power level as during the I.G.Y. Although there has been a reduction in the number of stations wholly operated by this country, additional emphasis is being placed on biology and geology, which were not major fields of study during the I.G.Y., and a scientific staff has been added at McMurdo. A major change in the mode of scientific operation has been the limiting of wintering-over personnel, for the most part, to scientists in upper-atmosphere disciplines and in meteorology. Summer personnel of the glaciological, biological, and geological programmes can now fly to the continent in October or November and complete their work by January or February.

McMURDO NUCLEAR POWER PLANT

The Martin Company of Baltimore, Maryland, have been awarded the contract for supplying the packaged nuclear power plant for the Naval Air Facility, McMurdo Sound. Already the company has begun development of a 1,500 electric kilowatt reactor, and will fabricate, assemble, and test operate the plant on the site. The reactor under construction is of the pressurised water type, moderated and cooled by light water. The design and operation is such that no radioactive waste will be deposited in the Antarctic. Due to be transported to McMurdo in November 1961, it will be put into operation at a site presently being prepared, by early 1962.

The reactor will supply a dependable, permanent supply of power for the foreseeable future. As 70 per cent. of the material transported to the Antarctic is fuel, the resulting economies will be enormous, and at the same time will not interfere with the scientific work being undertaken.

The capacity of the reactor is such that it will supply sufficient electricity for the 700 men, who at the peak period of operation, assemble at McMurdo.

Other reactors are planned for Byrd and Pole Stations, and eventually a second will be built at McMurdo.

DID BELLINGSHAUSEN SEE THE CONTINENT?

At a meeting of the Soviet Antarctic Committee, it is reported, photostat copies were produced of documents relating to Admiral Bellingshausen's Antarctic voyage. During this famous voyage the Russian explorer on January 28, 1820, two days before the English officer Bransfield sighted Grahamland, saw near the Princess Martha Coast what he described in his book merely as an ice-field "covered with ice hillocks".

It is claimed that evidence now presented suggests that Russian sailors really saw ice-covered land, and that some of them anyway realised the true nature of what they saw. One document, it is said, is "a letter in which Captain Lazarev of the 'Mirny' writes of an ice-clad shore seen from the vessel's masthead", and goes on to say that, sailing further east, they "ran into the ice-covered mainland". This latter would of course be after Bransfield's discovery.

Another document said to have been produced is Bellingshausen's report from Sydney to the Russian Minister of the Navy, in which the Admiral uses the word "mainland" in discussing a further probe south in February of the same year.

Whaling in the 1959-60 Season

In our September issue we gave the oil production figures for the five participating countries for the 1959–60 Antarctic whaling season, with the 1957–58 and 1958–59 fifures for comparison. The following table shows the total **numbers of blue-whale units** worked up in the same season's operations (number of fleets in brackets):

	1957–58		1958–58		1959–60	
Norway	(9)	5,558	(9)	5,781	(8)	4,515
United Kingdom	(3)	2,155	(3)	1,858	(3)	1,892
Netherlands	(1)	868	(1)	951	(1)	1,032
Japan	(6)	4,628	(6)	5,029	(6)	5,204
U.S.S.R.	(1)	1,561	(1)	1,600	(2)	2,789
		14,770		15,219		15,432

The Antarctic is divided into six whaling "areas". The most extensive catches for some years have been made in area III, from 0′ to 70° E, south of Africa. In 1959-60, for example, 4,983 blue whale units were worked up in the area, the next largest production being 3,765 blue whale units in area IV, from 70° E to 130° E, south of the Indian Ocean.

ROSS DEPENDENCY WATERS

The Ross Sea lies partly in area V (130° E - 170° W) and partly in area VI (170° W - 120° W), and in these two areas **combined** the number of blue-whale units last season was only 3,766, less than 25 per cent. of the total Antarctic pelagic catch.

In area V, the western of those two areas, however, which takes in the coasts of Victoria Land, this catch has been rising rapidly over the past few years:

1956-57	12	units
1959-60	3,401	,,
1957-58	716	,,
1958-59	1,776	,,
1959-60	3,401	,,

By far the greatest number of whales caught overall have been fin whales. The figures are:

Fin whales	26,415
Sperm whales	4,173
Sea whales	3,234
Humpback whales	1,338
Blue whales	1,230

WHALERS AWAY!

The **Russian** factory ship "Slava" and its flotilla of catchers sailed from Odessa early in October, after being modernised during an overhaul. A new factory ship, the "Sovetskaya Rossiya", was to be launched about the middle of the month.

The **Dutch** "Willen Barendoz" left Amsterdam on October 19. The production of frozen whale-meat, which started last year, will be continued, on a large scale. Whale meat will be marketed in Britain.

HAZARDS

When the Japanese refrigerated whale-meat carrier "Kyokko Maru" was in Lyttelton recently during an off-season voyage, Dr. Tsuyoshi Yamamoto told a reporter that it was not unusual for three men to be killed on each Antarctic voyage.

Many injuries and sometimes deaths were caused on the mother ships of the whaling fleet when the vessels rolled in heavy seas, causing whales on the ramp inside the vessel to slide against the side of the vessel, crushing any men standing there.

Dr. Yamamoto said that during a season in the Antarctic he could expect up to 15 fractures and 10 abdominal operations, mainly appendectomies.

THE READER WRITES

Sidelights of Antarctic Research

(Letters of approximately 500–600 words are invited from readers who have observed some little-known facet of Antarctic life or who have reached conclusions of interest on some Antarctic problem.—Ed.)

OLD RECORDS FOUND

Sir,—In April 1916 a famous Antarctic ship, the "Aurora", entered Port Chalmers. Its crew had an exciting tale to tell. In August 1914, immediately after the outbreak of the first World War, Shackleton had started on his "Imperial Transantarctic Expedition". He had planned to land at the head of the Weddell Sea which had first been reached in 1912 by the German Antarctic Expedition led by the recently deceased Wilhelm Filchner, and to sledge across the South Polar Plateau to McMurdo Sound in the Ross Sea, thus anticipating Sir Vivian Fuchs by forty years. But his ship, the "Endurance", was trapped in the ice of the Weddell Sea before reaching the south shore and afterwards crushed by the ice. The drift of the crew to Elephant Island of the South Shetlands and Shackleton's open boat journey from there to South Georgia are epics of Antarctic exploration (E. Shackleton, "South", London 1919).

It was planned to establish depots on the Ross Ice Shelf to aid the traverse party in their last stages, and a team under Aeneas Mackintosh was sent out to McMurdo Sound in the "Aurora". The ship reached its destination in January 1915 and was moored for the winter off Cape Evans, Scott's winter quarters during the "Terra Nova" Expedition. But on May 6 the ship was torn from its moorings in a gale and drifted, caught in the ice, during the winter and the next summer northward, being released only on March 13, 1916. During the drift meteorological observations were taken. Almost half a century later they are still the only observations from the eastern half of the Antarctic seas outside the summer months. (From the western side observations of "Belgica", "Deutschland" and "Endurance" are available.) They would have been of great scientific interest; but unfortunately the original documents as well as a copy seem to have been lost during the first World War. (Wordie, Geogr. J. 58, 1921.)

Whilst searching for these unique observations my attention was drawn to a notice in "Antarctic" (Vol. 1, p. 43) that several members of the Ross Sea Party of Shackleton's expedition were still alive. Enquiries with them concerning the observations of the "Aurora" were not successful. But during the search the equally unknown whereabouts of the scientific observations made by the shore party at McMurdo Sound in 1915 and 1916 were established. Mr. A. K. Jack of Melbourne, a member of the party, had been entrusted by Shackleton with the safeguard of the observations and had kept them carefully for over 40 years. A cursory inspection shows that they comprise, among numerous other observations, a detailed meteorological record for almost two years at Cape Evans. These observations are particularly valuable because since Scott's "Discovery" Expedition, 1901-1903, McMurdo Sound has been the base for a number of expeditions. The observations of 1915 and 1916 thus narrow the gap between the studies during the

"classical" and the modern periods of Antarctic exporation.

Plans are in hand to summarise and publish the valuable results of this enterprise in the Antarctic sector administered by New Zealand which has always been overshadowed by the simultaneous drama of the Weddell Sea party of the same expedition and by the World War.

F. LOEWE.
Department of Meteorology,
University of Melbourne.

TOURISTS AHOY!

Sir,—Not so long ago, certain F.I.D.S. personnel were treated to a rather unusual experience, unusual under prevailing Antarctic conditions, which may prove of interest to "Antarctic" readers.

Stationed at one of the most northerly of the F.I.D.S. bases, they were coming close to the end of their two-year tour of service, when the Argentine ship "Les Eclaireurs" hove in sight and lay off the British base early one afternoon. A rumour had been heard that this ship was carrying a large party of fare-paying tourists, so it bore immediate investigation.

A group, therefore, rowed out to the ship, and found their considerable interest entirely reciprocated, the sides of the ship being crowded with brightly clothed, chattering men and **women.**

Invited on board for dinner, an invitation that was accepted with startling alacrity, the F.I.D.S. found their blubber-coated anoraks and mukluks a cause for embarrassment amongst the well-cut clothes of the gay and perfumed exotics. More suitable clothes, offered perhaps with a most understandable motive, were gratefully accepted and they emerged from a luxurious cabin, bearded still, but in Dinner Dress.

During the banquet, conversation —a mixture of Spanish and English—flowed, but the F.I.D.S. were observed surreptitiously pinching themselves, probably being doubtful as to the reality of the situation. The party games and the dances that followed were entered into with abandon—except for one poor F.I.D. who had split his undersized suit trousers disastrously and retired to a corner of the lounge, resisting the persistent invitations of many simpering lovelies to dance during the "Ladies-excuse-me". It is understood he has since recovered from the severe emotional stress undergone during this, the most frustrating of experiences.

For the rest, however, the night passed quickly, and at 2 a.m. with festivities cooling, the F.I.D.S. changed into their now offensive, but comfortable clothes, clambered down into a peculiarly lurching dinghy and returned to base, dehydrated cabbage, tinned sausages and pin-ups!

(The writer of this letter prefers to remain anonymous.—Ed.)

HEIGHT OVER ICE

Mr. Amory H. Waite kindly forwards the following note on our references to the techniques developed by him and his team for measuring the depth of polar ice ("Antarctic" 2: 5, p. 201 and 2: 6, p. 205).

"The reading a pilot flying 20 feet above 1,480 foot thick ice would see registered on his altimeter would be 20 feet plus 1480 times the correction factor for the change of radio wave velocity in ice, which is 1.83 times slower than in air. Thus your pilot would see $20 + 1480 \times 1.83$ or approximately 2,700 feet. In a fog or snow cloud he would thus think that he was 2,700 feet above the surface (of the 1,480 foot thick ice) when actually his skis were about to crash.

We still saw bottom through 1,000 foot thick ice as our planes rose above the surface (this summer) until we were at least 300 feet above the ice.

Sub-Antarctic Men Await Reliefs

MACQUARIE ISLAND
(Australia)

"Winter came and went earlier this month with two snowy days," says a cheery August 24 news-letter from Macquarie Island.

"Spring has now arrived: the first skuagulls have returned, anticipating tasty morsels during the forthcoming seal breeding season. The first giant petrel eggs are laid and our hens have also started spring production. Fine sunny weather has made possible an early start to painting and outside maintenance work. Two men are weighing albatross chicks and taking the annual census of King Penguins at Lusitania Bay.

"Already we are beginning to feel that our year is drawing to a close. For most of us the time is flying and within a few months we shall be writing applications for the 1962 Parties."

The cheerful note continues in the September 26 letter.

"Our health is almost perfect, our scientific equipment, engines and radios operate without major technical hitches—even the weather this year has been milder and drier than ever previously recorded. Our only occupational disease is boredom and with the coming of spring this trouble is alleviated. Penguins are returning in their thousands: this year we have good supplies of eggs from our own hens and shall not need to rely upon penguin omelettes."

IN CHARGE 1961

The leader of the Australian party at Macquarie Island for the ensuing year will be F. M. Stean (38) of Sydney. He served for five and a half years in the R.A.A.F. as a wireless operator.

CAMPBELL ISLAND
(New Zealand)

The scientific expedition under Dr. E. J. Godley (Director, Botany Division, D.S.I.R.) will include, in addition to N. T. Moar, J. Moreland and P. M. Johns, P. R. Wilson of the Animal Ecology Section, D.S.I.R., who will study the rat population of the island, and D. G. Orwin of Massey Agricultural College, who will be concerned with the island's sheep.

As a result of rough weather at Raoul Island, lasting almost a week, M.V. "Holmburn" was delayed, but loaded for Campbell Island and departed on November 4, arriving at the island on the 7th. The unloading was carried out without hitch and the "Holmburn" arrived back in Wellington on November 13.

The weather encountered on the southward trip was fair, at the island a mixture of fair weather, rain and hail in patches but not sufficient to hold up unloading. The return trip to New Zealand was rather stormy at times.

Inspections at Campbell Island were carried out by Group Captain Marsh, Director of Medical Services, Air Department, Mr. I. S. Kerr and Mr. B. Dash, N.Z. Meteorological Service, Head Office, and Mr. J. Wright, Civil Aviation Administration.

K. B. Lyons has been appointed Radio Technician and the cook will be G. Johnston, who has previously served a 12 months' tour at Raoul Island. The Expedition is now complete.

BOUVET ISLAND
(Norway)

A. B. Crawford in the "Newsletter" of the South African Weather Bureau, clears up a problem

which has puzzled South Africans for several years.

In 1958 the U.S. "Eastwind", en route to Ellsworth, sent a helicopter to photograph a plateau half-a-mile long by a quarter of a mile wide on the north-west of the Island, close to Cape Circoncision. The plateau was reported to be a favourable site for a weather station.

Mr. Crawford had been one of a South African party which landed on Bouvet in 1955. The photographs then taken showed no sign of the plateau photographed by the American helicopter in 1958, though the landing was only a quarter of a mile away.

"This plateau did not feature at all," says Mr. Crawford, "in the radar survey carried out by S.A.S. 'Transvaal' in 1955, and a letter received from a geologist at the Norwegian Polar Institute shortly before we sailed for Antarctica in 1959 contained a warning that this area appeared to be entirely new. Photographs in their possession taken by the 1929 'Norwegia' Expedition showed the coastline to be completely different. The Norwegian geologist suggested that it was an enormous landslide which had taken place since 1955.

"M.V. 'Polarbjorn' called at Bouvet on December 10, 1959, and although the weather was too bad to enable the vessel to approach within 1½ miles, the area was examined and photographed. It was at once evident to the writer that this was indeed a completely new stretch of land, for it had not existed in 1955.

"It is therefore quite obvious that the island—on its west coast, at any rate—is still subject to periodic volcanic eruptions or earthquakes, and that as the result of one of these phenomena, thousands of tons of rock have slid down to form an entirely new plateau. It is of interest to record that not half a mile away from this area, the writer in 1955 took moving photographs of steam issuing from a fissure in the cliffs, close to Cape Circoncision, and previous expeditions recorded rock-falls whilst in the vicinity of the western shores.

"It appears, therefore, that the safest place for a base would be on the eastern snow slopes. But to establish a base in that area would entail the use of helicopters, for the narrow beaches are bordered by 100 foot ice cliffs not unlike the Great Ice Barrier farther south. These cliffs are constantly lapped by a relentless sea, and would present an insurmountable difficulty if shore operations were to be attempted. The problem of Bouvet remains unsolved."

AIRMAIL FOR MARION

(S. Africa)

Tuesday the 5th of July was for the Marionites an historical day, because on that day they received airmail from the Union. A Shackleton plane of the South African air force flew to Marion for a training flight and had agreed to take certain supplies and the mail and to drop it on the island by parachute. The weather was not favourable for parachuting as wind velocity on the island was up to 44 miles per hour with gusts of up to 65 m.p.h. Nevertheless, all the supplies and the mail were dropped successfully and reached the ground within a radius of 10 feet from the only beacon. The boys on the Island, however, had their hands full with the parachutes which would not close in the strong wind. Three of the parachutes got entangled in the aerial masts but ultimately everything was collected and the men were happily reading their letters.

A bottle released at Marion Island on September 20, 1958, was picked up on May 31, 1960, on the west coast of King Island in Bass Strait, between Victoria and Tasmania.

BOOKSHELF

"THROUGH THE FROZEN FRONTIER": Rear Admiral George J. Dufek, U.S.N. Leicester, Rockhampton Press, 192 pages ill. N.Z. price

Readers of Admiral Dufek's earlier book, "Operation Deepfreeze", will welcome this new volume, which covers a much wider field. Sir Vivian Fuchs in his foreword sums up the scope of the book admirably: "he has given a brief general background to Antarctic exploration before plunging into a lively account of his own activities in the field." It is in the main the simply-told story of the "I.G.Y. epoch" in Antarctic exploration from the pen of one of the men most competent to tell it, one who took the leading part in many of its most exciting enterprises. It is a very human story as the Admiral tells it and as Sir Vivian says, "One relives with him and his men some of the moments—amusing or dramatic—which must always stand out in any expedition."

One of these moments, described with zest, is the arrival of Sir Vivian Fuchs himself at the South Pole.

"ON THE OCCURRENCE OF LIFE NEAR THE BEARDMORE GLACIER ANTARCTICA": C. H. Tyndale-Biscoe. In "Pacific Insects" 2 (Z), July 1960.

Mr. Tyndale-Biscoe, now at the University of Western Australia, was a member of the New Zealand Alpine Club's Antarctic Expedition, 1959-60.

"SOME OPERATIONAL AND MECHANICAL ASPECTS OF THE 1959-60 VICTORIA LAND TRAVERSE", Part 1, Traverse Operations: A. J. Heine.

Mr. Heine, a New Zealander with considerable Antarctic experience, was a member of the United States Victoria Land Traverse last summer (see his article in "Antarctic", Vol. 2, No. 6, June 1960). In this 22-page cyclostyled booklet, he gives a wealth of detail, particularly on the supply aspects of the traverse covering fuel and food, and on some of the problems, such as icing in the fuel lines, which affected the supply problem.

KERGUELEN
(France)

The vessel "Gallieni" left Tamatave, Madagascar, on November 10 with the relief personnel, 57 for Kerguelen and 31 for Nouvelle Amsterdam, as well as various visitors and 1,300 tons of supplies. The ship was due to arrive at Port-aux-Francais, Kerguelen, on remain there for a fortnight before November 17, and was expected to sailing for Nouvelle Amsterdam.

The men to be relieved have had a long tour of duty, 18 months.

As an experiment, Kerguelen is to export 22 frozen sheep to Madagascar, 30 live sheep will be left on l'Ile St. Paul by "Gallieni". The rearing of trout at Kerguelen has been a magnificent success, reports Terres Australis et Antarctiques Francaises.

PUBLISHED IN NEW ZEALAND

"ADELIE PENGUIN ROOKERIES IN THE ROSS SEA REGION": H. J. Harrington.

In "Notornis" (Ornithological Society of New Zealand), Vol. 9, No. 2, September 1960.

"SUPPLEMENT TO THE PROVISIONAL GAZETEER OF THE ROSS DEPENDENCY": A. S. Helm, M.B.E., M.A., F.R.G.S.

This 30-page supplement, mentioned in our last issue, includes a descriptive account of the various expeditions during 1957–60 which made the 200 new names possible. The Provisional Gazeteer and this supplement will ultimately be incorporated in a definitive Gazeteer. The supplement is not for sale to the public.

The New Zealand Antarctic Society

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

You are invited to become a member.

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"THE ANTARCTIC TODAY"

This volume is out of print, but a limited number of the following **separate sections** is available, the stapling slightly rusted:

Ionosphere Research (J. W. Beagley).

Meteorology (A. R. Martin).

Marine Biology (R. K. Dell).

Aurora Australis (I. L. Thomsen).

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

These separates are available at a cost of four shillings each from the Secretary, N.Z. Antarctic Society.

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