

ANTARCTIC

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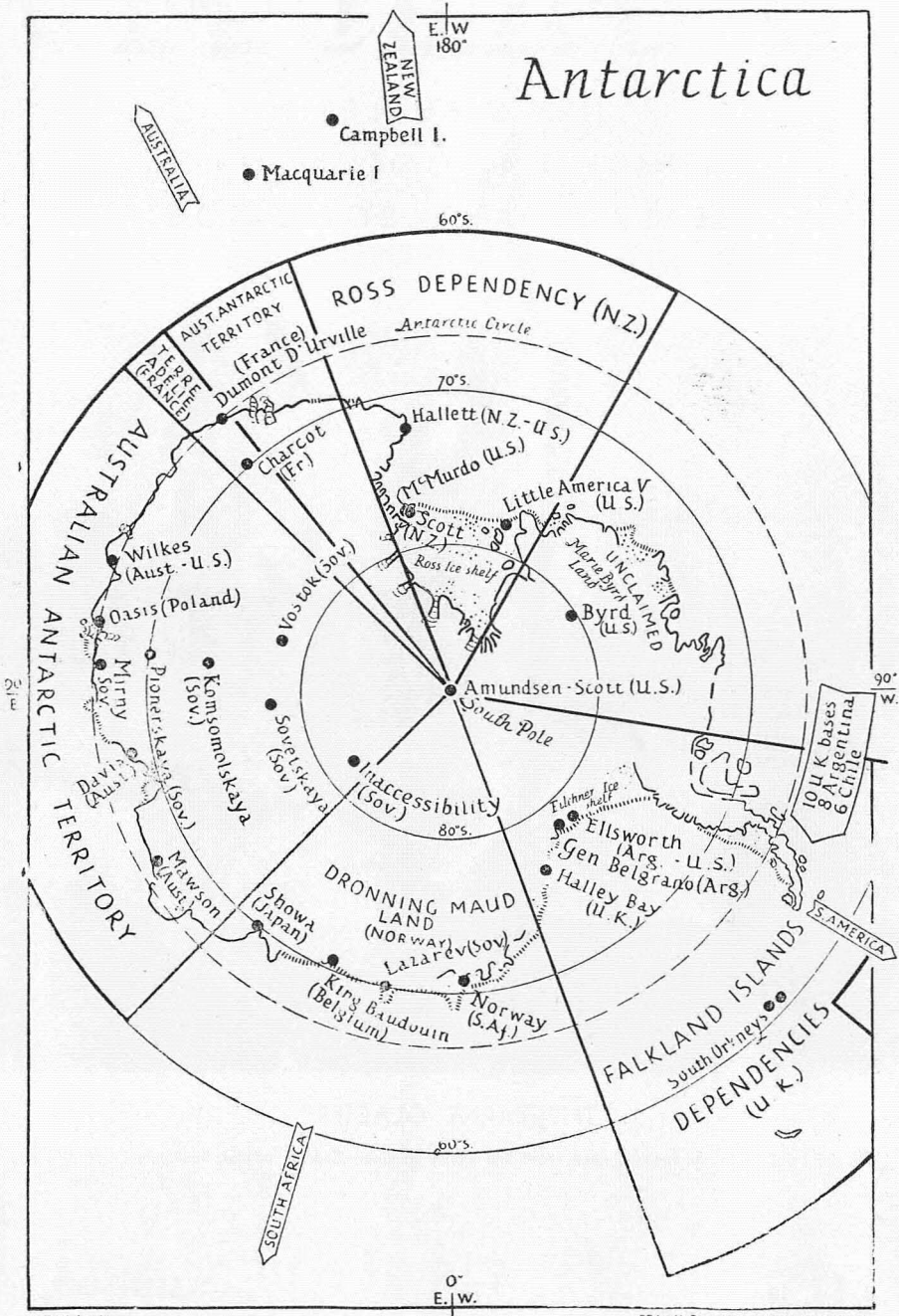


THE BARNE GLACIER

The seaward terminal face as seen from the Ramp at Cape Evans, looking towards Cape Royds.

Photo: L. B. Quartermain.

Antarctica



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WINTER POPULATION

We are indebted to the Bulletin of the U.S. Antarctic Projects Officer for this summary of personnel wintering over at the Antarctic bases at present operated by the ten "Antarctic" countries. Sub-Antarctic stations are not included.

Argentina	.....	.....	7 bases	100
Australia	.....	.....	3	70
Chile	.....	.....	4	31*
France	.....	.....	1	17
Japan	.....	.....	1	16
New Zealand	.....	.....	1	13
(Joint N.Z.-U.S.)	.....	.....	1	18
South Africa	.....	.....	1	10
Soviet Union	.....	.....	3	112
United Kingdom	.....	.....	8	90
United States	.....	.....	3	184

This makes a known winter Antarctic population of 661.

* Estimate from previous figures.

THE OLD HANDS

A surprisingly large number of veterans of the "Heroic Age" in Antarctic exploration are living, hale and hearty, in Australia.

On a Queensland pineapple farm is C. H. Hare, of Scott's first expedition, 1902. In Sydney are Prof. Griffith Taylor of Scott's last expedition, and Sir Lionel Hooke of the 1915-17 Ross Sea party. In Melbourne are Captain J. K. Davis, of "Nimrod"; and I. Gaze, A. K. Jack and R. W. Richards of the 1915-17 party. For "Mawson's men" see page 467.

THEY NEVER GROW OLD

A famous Antarctic veteran of 75 who makes a point of being busy in official retirement is Sir Raymond Priestley, M.C., M.A., who has recently been elected president of the Royal Geographical Society in London.

Sir Raymond was a prominent member of Shackleton's expedition in 1907-09 and of Scott's last expedition, 1911-13: one of the few men to serve in both these famous expeditions.

He was the first salaried vice-chancellor of the University of Melbourne, from 1935 to 1938, when he became vice-chancellor at Birmingham.

Since his retirement from that post in 1952, Sir Raymond has been chairman of the Royal Commission on the Civil Service, has accompanied the Duke of Edinburgh on his Commonwealth tour and has been temporary director of the Falkland Islands Dependencies' Scientific Bureau.

In 1958-59 he was British observer with the American Deep Freeze IV expedition in the Antarctic.

Sir Raymond now lives at Tewkesbury, Gloucestershire, where he was born in 1886.

VOLUME TWO

Next issue of "Antarctic" will complete volume 2. Make sure that you have a complete set.

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STRONG NEW ZEALAND TEAM CHOSEN FOR 1961-62

Although there will be some reduction in the number of summer support personnel and visiting specialists at New Zealand's Scott Base this season, there is no reduction in the quality of the men chosen to carry out New Zealand's continuing Antarctic work.

The call for national economy has necessitated the careful scrutiny of all Government expenditure, and this has inevitably affected the scope of the programme based on Scott Base for the coming year.

The main reductions have been the deferment for this year of some of the planned biological and oceanographic work. No Victoria University of Wellington expedition has been planned for this season, but an aerial reconnaissance will be carried out by two University men, Professor Clark and Mr. R. H. Wheeler, in preparation for the 1962-63 season's work.

H.M.N.Z.S. "Endeavour" has come to the end of her period of effectiveness as a Polar vessel, and arrangements have not yet been finalised for a successor. Nor have arrangements been possible for the provision of a New Zealand Antarctic Flight. Meanwhile, therefore, New Zealand must rely upon American aid for transport of men and supplies between New Zealand and the Antarctic; and for air support for teams in the field.

The scientific work at Scott Base will be continued at approximately the same level as in recent years. No extensive repair or building work is envisaged.

THE BEARDMORE AND BEYOND

The major development is the extension of the geological and survey work, designed to cover the whole of the Ross Dependency within the next five years, to an entirely new area. This is the country at the

head of the Beardmore Glacier (approximately 85°S., and 165° E. to 170° E.) and extending for 150 miles north-west and south-east of this area. It includes the little known southern portions of the Queen Alexandra and Commonwealth Ranges as well as the even less known Dominion and Grosvenor Ranges south of the Beardmore Glacier, historic route of Shackleton and Scott toward the Pole. In 1959-60 the New Zealand Alpine Club expedition examined the area on the eastern side of the great glacier near its junction with the Ross Ice Shelf. Otherwise, little more is known of the "hinterland" than was discovered by Scott and Shackleton themselves, and on a limited number of exploratory flights. This then is virgin ground.

Two independent parties, each of four men and two dog teams, will operate, one north of the Beardmore Glacier and the other south of it. They will be in the field from early or mid-November till the end of January.

TRAINING

A training course for the team, scheduled for six days early in August on Mt. Ruapehu, became more realistic when the whole area was ravaged by a storm of unusual intensity and duration. In fact, the conditions were so "Antarctic" that they provided invaluable experience in facing emergencies in the field.

The men lived in established mountain huts and in polar tents. Field training was undertaken under competent instructors and lectures

were given on various aspects of life in the Antarctic.

After this general training period, a group of six men was given instruction in fire prevention and fire fighting at the Fire Services Council's training school at Island Bay, under direction of the school's Chief Training Officer.

The team for the coming season, chosen from over 350 applicants, comprises twenty-six men.

WINTERING PARTY, 1962

Athol R. Roberts, Tawa: Leader. Mr. Roberts, who was Public Relations Officer at Scott Base during the 1959-60 summer, has been connected with mountaineering, tramping and ski-ing for most of his life. An employee of a Wellington sports firm, in 1953 he led the first New Zealand party into the Nepalese Himalayas, climbing the 23,500ft. Mt. Chamar without oxygen. He has taken part in many Search and Rescue operations in various parts of New Zealand.

I. R. Richards (27), Upper Hutt. Senior Technical Officer. Mr. Richards, who is single, has been engaged on radio research at the Dominion Physical Laboratory, Lower Hutt, since 1952, except for three years' full-time University work. He has had two papers published in overseas scientific journals. He was a pupil at Hutt Valley Memorial Technical College.

A. G. French (22), Auckland. Technician. Born in Morrinsville, Mr. French attended Mt. Roskill Grammar School, Auckland, where he was Head Prefect. He holds a M.Sc. (Hons.) in mathematics. He is a post-primary teacher.

G. A. Williams (22), Petone. Technician. Mr. Williams is a technician in the Dominion Physical Laboratory. Born in New Plymouth, he attended Hutt Valley Memorial Technical College.

A. C. Langston (28), Christchurch. Technician. An Englishman by birth, Mr. Langston spent two years in Canada before coming to New Zealand

in May of this year after geophysical survey work in Libya, Iran and Pakistan. His National Service was done in Germany.

H. D. O'Kane (24), Wainui-o-Mata: Photographer. An old-boy of Hutt Valley High School, Mr. O'Kane is a photographic technician in the D.S.I.R. He is married with two children.

J. D. Mills (31), Dunedin: Senior Maintenance Officer (Mechanical). Mr. Mills is an old boy of Timaru Boys' High School and Kings High School. After experience as a field serviceman and five years at Roxburgh Hydro, he operated his own business at Tarras for three years. He is a married man with four children.

W. F. Timms (27), Dunedin: Maintenance Officer (Electrical). Mr. Timms is a maintenance electrician in the Railways Department. He was educated at King Edward Technical College.

C. F. Beech (24), Auckland: Cook. Mr. Beech is a Welshman who had had considerable experience as a ship's cook before and after his arrival in New Zealand in 1959. He holds the Chief Cooks' certificate of the English Board of Trade.

E. Vickers (45), Palmerston North, Radio Operator. An Englishman by birth, Mr. Vickers served in the Royal Navy from 1933 till 1956, when he joined the New Zealand Post Office as a radio inspector.

Also wintering over will be two members of the 1961-62 Geological and Survey Expedition. They will be responsible for the care of the 60 dogs and will be preparing for the 1962-63 expedition, of which they will be members. These men are:

R. W. Hewson (23), Inglewood. Assistant Surveyor. Mr. Hewson was born in Timaru and attended the Timaru and New Plymouth Boys' High Schools. He has been employed by the Lands and Survey Department, Auckland, since 1960.

K. P. Pain (33), Westport. Field Assistant. A carpenter by trade, Mr. Pain is a keen mountaineer, who has climbed in the Mt. Cook area over a period of ten years.

GEOLOGICAL AND SURVEY EXPEDITION

This year's expedition, carrying on the planned survey of the Ross Dependency, will work in the region north and south of the Beardmore Glacier. The expedition will comprise two four-man parties, composed of the following:

NORTHERN PARTY

R. I. Walcott (28), Wellington. Leader. Mr. Walcott, who was a member of the 1959-60 expedition, is a New Zealander who spent nearly three years with the Falkland Islands Dependencies Survey. He is married, and is at present completing his B.Sc. degree in Geology.

G. W. Grindley (36), Dunedin. Geologist. Mr. Grindley, who was educated at King's High School, is a M.Sc. with Honours in Geology. In 1951-52 he worked in Canada in a geological field party, and has travelled widely. He is at present Wellington District Geologist with the N.Z. Geological Survey.

P. M. Otway (25), Te Awamutu. Mr. Otway is a qualified surveyor who was assistant-surveyor to the northern party in last year's expedition. He has been wintering over at Scott Base.

J. W. Montgomerie (22), Greymouth. Assistant Surveyor. Born at Thames, Mr. Montgomerie attended Christchurch Boys' High School. He is a surveyor with substantial mountaineering experience.

SOUTHERN PARTY

W. W. Herbert (26), Lichfield (England), Leader and Surveyor. Mr. Herbert spent three years with the Falkland Islands Dependencies Survey, and also served in Spitzbergen, before coming to New Zealand in 1960 in charge of the huskies purchased by the New Zealand Government in Greenland. He, like Mr.

Otway, has been wintering at Scott Base, after being assistant surveyor with last year's southern party.

V. R. McGregor (21), Auckland. Geologist. Mr. McGregor, who was educated at Auckland Grammar School, is a B.Sc. who has been working on the geology of an area in the Southern Alps for his M.Sc. thesis. He is a keen mountaineer and has been in charge of climbing schools for the Auckland Section of the N.Z. Alpine Club this year. He is also an active "caver" and harrier.

R. W. Hewson (see above).

K. P. Pain (see above).

SUMMER SUPPORT

This year a supporting team of six men will spend the summer months at Scott Base, where they will be available as reserves for the field teams in case of emergency. The team comprises.

R. C. Jefferys (47), Wellington. Mr. Jefferys is a senior officer of the Shell Oil Company and a well-known mountaineer. He will be Deputy Leader at Scott Base, and also Postmaster and Public Relations Officer. He is married, with three children.

N. M. Prebble (23), Eastbourne. A B.A. of Victoria University, Mr. Prebble was a member of last summer's Huts Restoration Party in the Antarctic.

G. B. McKenty (25), Auckland, will be the Base carpenter; **J. Hutchinson** (27), Auckland, handyman. **F. L. L. Standring** (23), Christchurch, vehicle and diesel mechanic; and **A. W. Bowden** (21), Dunedin, storekeeper.

UNIVERSITY OF CANTERBURY ENTERS THE FIELD

This year another New Zealand University engages for the first time in Antarctic field work. The presence at the University of Canterbury of Dr. Bernard Stonehouse, a distinguished biologist who has carried out notable researches into penguin life in the Falkland Islands Dependencies, has stimulated interest at

the University in Antarctic biology. As a result a small party of four men will carry out a programme of biological research.

The party will spend most of November at Cape Royds studying the seal and penguin life and soil temperature, collecting insects, mites and other microfauna, and hand dredging and trawling in the leads for investigation of breeding cycles.

Visits will be paid to Cape Bird and possibly Cape Crozier to examine Adelle and Emperor penguin colonies and further seal work will be carried out at Scott Base.

The members of the party are:

Dr. **Bernard Stonehouse**, Senior lecturer, Department of Zoology.

Leader and supervisor of field studies.

W. Featherston, M.Sc., and **M. Smith, M.Sc.**, students.

T. Jacobs, technician.

Dr. Stonehouse has had many years' experience in the Antarctic. He was with F.I.D.S. from 1946 till 1950 — three full years at Marguerite Bay, the farthest-south post of the Survey. He was again engaged in biological work in the Dependencies in 1953-55, this time on South Georgia.

Both Smith and Featherston are secondary school teachers. Jacobs, who is a good photographer, will be in charge of the collection and preservation of specimens collected.

The Winter At Scott Base

The auroral radar equipment on Arrival Heights was operational for most of April, but there was severe interference for a few days. This was tracked down to the teletype transmitter at the American Base. The Americans immediately shifted their frequency, an example of the willing co-operation which Scott Base men have come to expect from their neighbours at McMurdo.

A blizzard struck the base at 2 a.m. on Sunday, June 4, and did not abate till Monday morning. Powdered snow beat upon the roof of the covered way, sifting through the smallest chinks to cover all inside with frosted icing. The mess-room chimney iced up, causing trouble with the stove inside. There was difficulty in boiling water for a pot of tea. Logie had to brave the blizzard on the roof to chip away the ice. The ventilator fans sucked in snow which formed ice around the blades. When this ice built up to such an extent that it fouled the fan it caused a clatter and finally a bang as ice was hurled in all directions.

ANYBODY SEEN DRACO?

Some days earlier Draco, twelve weeks old, 40lb. husky pup, was missed. Otway, Donnelly, Herbert and Sobiecki searched high and low around the Base for him. They were concerned that he might have fallen down the tide-crack which probably because of the ice move-out last summer is wider than usual, one foot wide at the top and four feet wide just below the surface.

The search was officially abandoned, but Otway, sad at the loss of one of his favourites pups, which he had reared from birth, continued to probe the night, whistling all the while. At one a.m. he came to the "gash-heap", where the kitchen waste is dumped on the fringes of the pressure ridges. Here the "gash" is slowly but inexorably churned up in the pressure ice to eventually disappear. He heard a faint yap but thought it might have come from the dog lines. However, he ventured further to where the convulsed ice reared skywards, ghostly in the light

of his lantern. In answer to his whistling he heard the yapping again. There, trapped in a small crack, he found little frightened Draco.

A change was evident in June in the pressure ridges immediately in front of Scott Base. They were advancing. Waves in the ice appeared under the dog-lines and the ice there was starting to crack. Scott airfield was not affected but the pressure ridges had drawn very close.

GOOD NEIGHBOURLINESS

Scott Base carpenter Bernie Foley has been happy to do a good turn for his American neighbours two miles away across the Gap. USARP scientists at McMurdo had a problem. Their newly-delivered five and a half ton sno-cat had its rear body-work smashed in by a crane during unloading operations. They were non-plussed how to repair it. Foley undertook the job for purely neighbourly reasons. Taking parts home to Scott Base with him, within two weeks Bernie had restored the magnificent vehicle to an as-new condition.

HALF WAY

Midwinter's Day was of course duly celebrated. On the evening of June 21, Kiwis from Scott Base joined the Americans at McMurdo in a cocktail party, dinner and general celebration. Eighty-five dollars in prize-money went to the winners of various competitions. Of this amount eighteen dollars came to Scott Base. Shanahan and Logie shared ten dollars for a second prize with their cornet duet. Sobiecki contrived a fancy dress representing a female from novelty bath towels, one of which bore the inscription "Keep Off!" His entry was so effective that he was immediately awarded first prize, despite competition from 6 foot 7 inch Bruce Raymond of VX6, who represented some sort of superman with outsize wings on his chest, and giant Seabee Jim Ankrom repre-

senting a baby — right down to outsize safety-pin.

Next day Midwinter was celebrated at Scott Base. Cook Ken Fairclough forwent the McMurdo gathering working until midnight preparing a dinner worthy of the occasion.

Nature did not forget that it was midwinter. During the morning there was a short blizzard with winds up to 70 knots. In the radio room Deverall experienced auroral flutter as bad as any so far this year as messages poured in from New Zealand bearing good wishes from former Antarctic men.

IN HUSKEYLAND

On the dog-lines the huskies were curled up asleep, hides coated with ice and noses snuggled in the warmth of their bushy tails. Among them was lead-dog Fido. According to Peter Otway it has never occurred to Fido that he is merely another dog. Fido believes that notwithstanding his four legs his intelligence rates him as a surveyor, explorer and a duly categorised employee of the Antarctic Division.

Anyway, the dogs were not forgotten. Normally fed every second day with frozen blocks of New Zealand mutton, splintered with an axe to make them more chewable, today Wally Herbert gave them a special meal of seal meat thawed out in the warmth of the sledge-room so that its black blubberliness was particularly delicious.

Early in July Deverall radioed that over 5,000 code groups of scientific data were being transmitted each month, via Awarua Radio. The Auroral Radar on Arrival Heights was fully operational.

LOCAL FOGS

"One outcome of the super frosty weather," reported Deverall, "is a local foggy area round the Base, caused by the vapour outlets from the huts. Another small fog-patch appears around the dog-lines when they all decide to bark at once."

Old hands amongst the newcomers in October and November will find the Base neater and brighter, thanks to carpenter Foley's workmanship.

Although the pulsation recorder built by senior-scientist Clements is not included in the official science programme, reports the monthly newsletter for dependents of Scott Base winter personnel, his experiments with it have produced good results which leave little doubt that it will be officially brought into use. The instrument records smaller and faster magnetic variations of the world's magnetic field.

On a servicing trip to the Arrival Heights station, Clements and Graham saw a phenomenon which, it is said, has not been reported in Antarctica before: a noctilucous cloud 65 miles high. The height was calculated by the fact that the cloud was lit by the sun, which was known to be 14 degrees below the horizon. Photographs were obtained.

RARE FIND

The huts over the oceanographic iceholes made by American scientists in the sound near Scott Base have piled up so much drift snow that the weight of it is causing them to sink.

Two members of the New Zealand party were lending a hand with the New Zealand base's D4 tractor clearing away the tons of drift when Hare saw in the headlights a small leopard seal about six feet long.

All at Scott Base are familiar with Weddell seals, but the ferocious leopard seal is seldom seen in McMurdo Sound. Hare, however, had often seen them sick or injured when they came ashore at Campbell Island.

EXCITED SCIENTISTS

He was first met with disbelief when he reported his sighting to the rest of his party, but USARP scientist John Dearborn became excited when he verified that Hare had really found a leopard seal so far south in the middle of the Antarctic night.

He immediately decided that a full biological examination must be made. Foley utilised the American Polecat vehicle's radio to send a message to Scott Base asking for the "45", and within minutes a party in a Weasel was on its way from Scott Base with the firearm.

MENACING TEETH

The seal did not move particularly fast and the waiting men did not have any difficulty in avoiding its menacing teeth.

Dearborn was on tenterhooks in case the beast should escape down a hole into the sea, but it was quickly despatched.

Herbert was able to certify that it was indeed a leopard seal, as he had encountered them before during his service with the Falkland Islands Dependencies Survey in Graham Land.

The incident caused a little flutter of excitement in a community which was mainly quiet, waiting for the first U.S. naval Hercules aeroplane to fly in some mail from Christchurch.

LIGHTS CAUSE BLACK-OUT

On the evening of Thursday, July 13, Clements, senior scientist at Scott Base, noticed that the magnetometer in his laboratory was recording a magnetic disturbance.

Donning balaclava and gloves he hastened outdoors in the 70 degree frost. As he had suspected, the sky was illuminated with the most widespread aurora in his experience. Although there was no moon the light from the aurora was sufficient to outline the skyline of Ross Island. The curtain of aurora provided a pale light which was sufficient to find one's way around the base without a torch.

After checking that sky cameras in the auroral tower were functioning correctly Clements sought the radio operator Deverall, and confidently told him that he could look forward to a spell off work as the radio spec-

trum was dead. A check in the Scott Base radio room confirmed this. The only radio station audible was nearby McMurdo running teletype callbands in an endeavour to re-establish communications as they, too, were affected by the magnetic disturbance.

NEWS BY MORSE

All day Friday the radio blackout continued, until on Saturday afternoon contact was established by morse with Awarua Radio Station, near Invercargill. With the short wave Radio New Zealand station still inaudible the radio operators at Awarua gave the Scott Base men a summary of New Zealand news by morse, which of course included the result of the Rugby game at Hamilton.

FIRE SAVE

On August 1 Foley and Hare were preparing to pump 2,000 gallons of diesel fuel from a tanker, drawn by a 30-ton American D8 tractor, into 44-gallon drums at the Scott Base refuelling point. A Herman Nelson pre-heater which was being used to heat the fuel pump caught fire. At the time — 10.15 a.m. — all but the two New Zealanders were having a "coffee break" in the Base mess. The fire immediately spread to the big tractor and the trailer — and the Scott Base fuel dump was only yards away.

As it seemed that the whole fuel dump might be lost, a call for help was sent by telephone to the nearby American base at McMurdo. American driver Lee ran and drove the burning tractor and tanker into an open space away from the dump while others came running from all quarters with dry-powder extinguishers. Beneath the concerted barrage all three separate fires were extinguished within ten minutes.

This quick save was helped by the weather. There was no wind. The sky was clear and the temperature -44° F. A sunrise glow to the north behind Mt. Erebus provided enough

light for the fire-fighters to see their way around the fuel dump. There were no injuries.

"HOSE IS FROZE"

This warning notice was on almost continuous display throughout June and July. It means that the pump of the washing machine has frozen up.

Otway's "rapscallion pups" have widened their field of operation more than he thought. American Karl Ricker on Crater Hill looking for a glimpse of the sun found them using the crater rim for a race track.

SUN UP

The 13-man Scott Base community generally works a six-day week but on Saturday August 19 Leader Donnelly declared a public holiday because on that day the sun was officially scheduled to return. The New Zealand flag, which was lowered on April 23 for the four-month long night, was rehoisted by Driver Fairclough, the only Army man wintering over this year. As he manipulated the flag his pet, eight-year-old husky bitch Zsa Zsa, came bounding to greet him, in fine fettle — her first appearance for four days, during which she had been left undisturbed in the canine maternity annexe with her new-born litter of five pups.

"Owing to the lower slopes of Mt. Erebus lying to the north, the sun is not expected to be seen from the American Base for another two days," reported Deverall on August 20, "and owing to Crater Hill it will not be seen at Scott Base for another fortnight." McMurdo Sound is almost four calendar months without the sun being visible, but this is extended to five months at Scott Base because of Crater Hill. Even in the depth of winter, however, Scott Base was not entirely without light from the heavens. Providing the sky was clear, at midday a faint glow was visible to the north. But when there was cloud midday was as dark as midnight.

During clear periods, starlight provided faint illumination, as did the frequent aurora.

THE WEATHER

The lowest temperature recorded officially during the year was -62° F. the same as the lowest for 1959. The official observations are always made at Scott Base but at the dog-lines on the sea-ice only 200 yards away considerably lower temperatures have been recorded. On August 14 and 15 temperatures of -72° F. were noted, 104 degrees of frost. After that, temperatures rose steeply and by the 18th had reached 10° F. This rise of 82° in three days made outside work unusually warm despite the fact that there were still 22 degrees of frost.

This year has been surprisingly wind-free so far, the highest recorded gust being only 70 knots. The persistent high winds which bedevil Hallett Station, Mawson and Mirny are not experienced at Scott Base.

"ROTOITI" TO HELP DEEP FREEZE

The Royal New Zealand Navy will help the United States Navy in providing weather patrols for Operation Deep Freeze aircraft during the coming season. H.M.N.Z.S. "Rotoiti" will provide relief patrols for the U.S.S. "Vance" which is to be stationed at Dunedin.

The Minister of Defence (Mr. Eyre) has announced that the "Rotoiti" will do 10-day weather patrols 900 miles south of New Zealand in October, November and February so that flights to the Antarctic can be kept up.

The U.S.S. "Vance" is due in Dunedin about the middle of September and is expected to go south just before the first Antarctic flights start. She will spend about 20 days on her weather reporting station, alternating with 10 days in Dunedin.

"By providing a relief ship we will make it possible for 'Deep Freeze' to continue flying to the Antarctic throughout the season," Mr. Eyre said.

WHAT THE STUDENTS FOUND

Half a ton of hand-picked, hand-size rocks dominates a room at Victoria University of Wellington — the product of a few weeks' field work in Antarctica by a handful of people; sufficient research material for many months, says the "Dominion".

Every single one of the 1,300 lb. of rock, each representing a specific aspect of the geology of the Koettlitz Valley, near the continent's Koettlitz Glacier, was gathered by members of the university party last summer to advance the knowledge of the area.

The result — one of the most detailed maps of the crystalline rocks in one of the biggest areas of bare rock on the continent, and evidence that the area is a mixture of the geologically old and new, from one million to 500 million years old.

They also noted what one member of the party ironically described as the "terrific rate of advance" of the glacier, a peculiar phenomenon of the Antarctic, due no doubt to the fact that the temperature rarely, if ever, rises above freezing point.

Actually the glacier had hardly moved since the time of Scott and his explorers. Said another member of the party: "Any advance is a major event."

Even to the experts the area is a complex one. About 50 per cent. of the area is granite, but it is metamorphosed throughout with other sediments — the rock formations are twisted and bent from the terrific pressures of millions of years of earth movement and the resultant heat.

Also discovered were what appeared to be fossil remains of corals and sponges, as well as live algae, mosses and small mites.

But the work is still not finished. "We have still a lot of things to do, and we are not sure enough of some things to draw final conclusions."

KIWIS GET AROUND

Several men who have served with New Zealand Antarctic Expeditions will next year be holding responsible positions in the Antarctic programmes of other countries.

A New Zealander who wintered throughout 1960 at Scott Base, **G. N. (Johnny) Johnstone**, will be working with the American Antarctic Research Program throughout the coming year. He will be stationed at the Byrd Satellite Station in the heart of Marie Byrd Land. He will be Research Associate (Physicist) at this small 3-man station.

R. B. (Bob) Thomson, who spent 1959 as Senior Ionosphere Observer at Campbell Island and was Station Scientific Leader at Hallett Station in 1960 and Public Relations Officer at Scott Base during the 1960-61 summer, will this coming year be Station Leader at Wilkes Station under the Australian National Antarctic Research Expedition. One of his team will be **E. L. Clague**, who was with him on Campbell Island in 1958-59 as senior meteorological observer.

Keith Wise, a New Zealand entomologist working with the Plant Diseases Division, D.S.I.R., who made some interesting insect discoveries in the Antarctic last summer (see "Antarctic", June 1961, p. 416), has accepted a permanent position with the Bernice P. Bishop Museum, Honolulu.

Mr. Wise will be returning to the Antarctic next summer and will be working both on land and on the new American research ship "Eltanin". In his work for the Museum he will be based on Christchurch.

Two of the three Dunedin men to be selected for this year's Antarctic team are members of the city's Vintage Car Club. Mills owns a 1909 Britain and Timms a 1908 King Dick motor-cycle. Two other members of the club, McLean and McCraw, were in the Antarctic last year and the year before respectively.

MEN FOR HALLETT

The New Zealand Government has decided to continue the arrangements for the maintenance of Hallett Station as a joint United States-New Zealand Base. New Zealand is therefore again to supply three scientists for this station, one of whom will be Station Scientific Leader throughout the coming year.

The following three men have been selected as the New Zealand personnel.

C. B. Taylor (26), Newport-on-Tay, Scotland, Chief Scientist. Mr. Taylor arrived in New Zealand from Scotland in May and has been working at the Institute of Nuclear Sciences. He was educated at the High School of Dundee, and spent over seven years at St. Andrew's University. After obtaining his B.Sc. degree he devoted over three years to research at the University, and is now awaiting his M.Sc. result.

N. G. Woodgyer (23), Wellington. After four years at the Hutt Valley Memorial Technical College, Mr. Woodgyer joined the Post and Telegraph radio section in 1955. He has passed stages I and II for the N.Z. Certificate of Engineering.

R. R. Exley (24), Wellington. Mr. Exley has spent five years with the Dominion Physical Laboratory as a technician in Nuclear Sciences, Electronics and other branches. He is an old boy of Wellington College and has been active in the Scout movement.

STATION NEWS

Midwinter Day was celebrated at Hallett in the usual manner on June 21 and 22. The usual party was climaxed by one of the Base officials imitating the great Houdini with an unsuccessful attempt to escape from his securely locked room. A radio black-out prevented the New Zealand members from exchanging greetings with some other stations and from keeping a special schedule with the Antarctic dinner party in Wellington, New Zealand.

July 4 coincided with a three-day blizzard, so the usual American festivities were held over until the 7th when a small display by several staff members caused much excitement and a few shattered nerves. This display coincided with very warm weather, 25° F.

There are indications, reported Peter Martin (Chief New Zealand scientist) on July 11 that the sun is on the way up again so the first aircraft seems rather close now. Because of disturbed radio conditions private calls home during the last two or three months have been few and far between, so as usual everyone is looking forward to the first mail in.

On August 23 Martin radioed: "During the last three months life has been quiet for New Zealanders and Americans alike at Hallett. The New Zealand ensign and the Stars and Stripes were re-hoisted on July 31 to signify the return of the sun.

"Several extended trips have been made on the sea ice during the past few weeks. We are at present enjoying perfect weather. Temperatures have been as low as -43°: quite high by American standards.

"With only two months of our year remaining, final reports and packing up of accumulated data are receiving our attention as an early relief is forecast."

(For the above information we are indebted to "News From the South", the monthly Newsletter for next of kin issued by the Antarctic Division, New Zealand Department of Scientific and Industrial Research).

During July, magnetic storms made radio conditions extremely poor. Amateur radio contacts were impossible and only eight radio schedules with New Zealand were made during the month.

A new "Hallett Bubbler" has been developed for processing balloons, the hydrogen being bubbled through cold diesel fuel, providing a much drier gas.

TERRE ADELIE

Reports from the French station Dumont d'Urville indicate that the members of the wintering team have been kept fully occupied.

The biologist began his dissections and temperature-recordings of the Emperor penguins in April. Good results were obtained "not without difficulty".

The ionosphere antenna G2 has been replaced by a new antenna with a 3.5 mm. galvanised steel cable.

During April the average wind speed was 9.7 metres per second, the maximum 55 m.p.s. During the month there were 25 days of violent wind. Temperatures recorded were: absolute minimum -21.6° C., absolute maximum -4° C.

A new direct radio link has been established with Wilkes Station, to facilitate the immediate re-transmission of meteorological data to the International Centre in Melbourne.

In a preview of 1962 operations the French National Committee for Antarctic Research (CNFRA) states that a plateau team will make geodetic, magnetic, gravimetric and seismological measurements and will prepare for the re-occupation of Charcot Station, the situation of which is important as much for meteorological as for magnetic reasons.

1962

ANTARCTIC CALENDAR

in

FULL COLOUR

See Page 480.

UNITED STATES RESEARCH PROGRAMME, 1961-62

The coming season promises to provide the largest and most far-reaching programme of scientific research yet undertaken by the United States in the Antarctic.

The National Science Foundation grants and contracts are expected to reach five and a half million dollars.

Scientific activity will include biology, geology, glaciology, gravity, mapping, meteorology, oceanography, upper atmosphere physics and seismology.

Biology: Search will continue for bacteria in fresh water ponds: marine animals, insects and arthropods (e.g. the sea spider) are also to be studied.

Geology: The Sentinel Range will be the scene of one party's activities, amongst which will be the search for evidence that these mountains are a southern continuation of the South American Andes; soil-making processes will be studied, as will the glacial and bedrock geology of a Dry Valley area, while the small fresh-water lakes found last year with surprisingly high temperatures and salinity will also be investigated.

Mapping: 1,200 miles of coast of the Ross Sea and Ross Ice Shelf will be surveyed further to enable accurate compilation of topographic maps. The U.S. Geological Survey will undertake the most ambitious survey ever attempted in Antarctica with the use of Tellurometers, highly accurate electronic distance-measuring devices. Turbine helicopters may be used.

Solar Flare: The radiation from solar flares (massive gas explosions on the surface of the sun which hurl barrages of energetic protons through interplanetary space) is one of the most serious menaces to space travellers. To study this problem a research station will be established at McMurdo.

Mineral Deposits: A Bureau of Mines engineer is expected to investigate in the McMurdo Sound area for mineral deposits.

ORGANISATION

The U.S. National Science Foundation has announced the establishment of the Office of Antarctic Programs. This office replaces the Antarctic Research Program, formerly a part of the Office of Special International Programs. The Office of Antarctic Programs has the responsibility for the U.S. Antarctic Research Program (USARP) which is the name used for National Science Foundation-sponsored activities in the field. These activities include scientific studies by colleges, universities, institutions and government agencies carried out under National Science Foundation grants.

Dr. Thomas O. Jones has been appointed head of the office and Dr. Albert Crary will serve not only as Chief Scientist of the new office but also as Scientific Adviser on Antarctica to the Director of the National Science Foundation.

ANTARCTIC RESEARCH SHIP

A small ice-strengthened cargo ship, U.S.N.S. "Eltanin", is to become a seagoing scientific laboratory for the U.S. Antarctic Research Programme. "Eltanin" will not work for oceanography only, but also for meteorology, upper atmosphere studies, marine and terrestrial biology, submarine geology and geomagnetic studies, while other land research, such as geology, glaciology and biology may also come within

her scope in areas not easily accessible by land or air.

It is planned to convert the present hold and other spaces into laboratories and quarters for scientists and their stores, with special provision for deep sea trawling and allied overside operations. A helicopter deck will be installed.

"Eltanin" will have a home port somewhere in the southern hemisphere and will operate in Antarctic waters for at least ten months of the year.

AIRCRAFT ARRIVE

Four Hercules of the United States Navy's VX6 Squadron were expected to fly in to Christchurch within about an hour of each other on September 16th. The planes are scheduled to leave for Antarctica on the 20th.

Aboard one of the Hercules will be the officer commanding VX6 Squadron (Commander M. D. Greenwell) and his executive officer (Commander J. D. Richardson).

Also expected at Harewood on the 16th were two Globemasters and a Neptune. A United States Air Force Rescuemaster was due to arrive on the 15th.

Admiral Tyree hopes to leave for the south in the first flight on September 20 — 10 days earlier than the usual under-way date.

"I like to get off first and take the men mail and fresh vegetables," he told reporters.

SHIPPING PLANS

A convoy of five vessels is scheduled to leave Lyttelton for McMurdo Sound on November 1. This comprises three icebreakers, one small cargo ship and a small tanker.

It is hoped by this measure to ease the burden on the early airlift of priority cargo and to compensate for the loss of the storage tanker "Yog", which broke free last year and was not recovered.

Theoretically enough aviation fuel was available, said Admiral Tyree. It had been found, however, that more fuel was needed than was theoretically computed.

"We are attempting to get an early supply of gas there as a safeguard," he said.

THREE MAJOR TASKS

The force faces a big summer scientific programme with three main projects.

The first is the installation of an atomic reactor which should begin supplying McMurdo with electric power from March next year. It will leave the United States on November 1 for delivery at the Sound on December 15. With this in operation the major supply problem of the Antarctic — getting oil fuel and generators in from the outside world — will be cut enormously.

Preliminary work on the reactor site started last summer. It is planned eventually to install three more reactors in the Antarctic — Byrd Station to follow McMurdo, then the South Pole and a second reactor at McMurdo.

These undertakings will enable the introduction into the Antarctic of new scientific experiments requiring the generation of more power than is at present available.

Radioactive waste disposal will be carried out under the terms of the Antarctic Treaty. It will be sealed in containers preventing any loss of radiation, carried to the United States and disposed of there.

"NEW BYRD"

Another major task this year would be the completion of new accommodation for Byrd Base. The old base was now so far under snow that there was danger of loss of life through the crushing of the huts. This could be kept on another year by the expenditure of money and effort, but an all-out attempt was to be made this summer to house all the old base facilities in new buildings constructed under the snow to begin with.

COMMUNICATIONS

Third major construction job was to complete the installation of a new communications and navigation system, said Admiral Tyree. During a sunspot magnetic storm last year, all communications in the Antarctic "blacked out" for six days.

More powerful, modern electronic equipment was to be installed this summer to add to that already operating at McMurdo and South Pole Base. Plans were to install this equipment at Byrd Base and the joint U.S.-N.Z. base at Cape Hallett.

"I still think this is the most important undertaking, because it affects lives," said Admiral Tyree. "It makes our air operations safer."

At the moment the monitoring of flights from the Antarctic to New Zealand and back had a reliability of only 50 per cent., due to black-outs and sudden terminal storms while planes were en route south. With the new gear, it was hoped this reliability would improve to 90 per cent.

"One hundred per cent. reliability is unheard of in the Antarctic," he said.

If everything went to schedule — which it almost never did in the Antarctic due to the overriding considerations of climate and weather — the atomic reactor would provide electric power from March next year. This would cut enormously the major supply problem of the Antarctic — getting oil fuel and generators in from the outside world.

BYRD

The slow deformation of the station buildings which has been taking place for some time now requires a continuous shoring operation. The new garage has had to be evacuated and a Jamesway hut erected to house the tools and parts. A great deal of re-wiring was necessary in the science building to obviate fire possibilities due to the sagging roof.

ERA OF DEVELOPMENT

"The Seven Cities of Antarctica", as the United States-built bases have been called, were not designed or intended for long-term occupancy, said Rear Admiral D. M. Tyree in an address to the National Press Club on May 9.

"Construction and support for the I.G.Y. was of a short-term nature," he said. "Deep Freeze 60 was the beginning of a period of transition to long-term capabilities. The operation itself was basically a resupply operation, although there were several significant achievements, including the first penetration of the Bellingshausen Sea.

"Deep Freeze 61, now in its winter phase, has brought a new era to Antarctica — an era of **development**. This development has three objectives: first and foremost, to increase the safety of operations; second, to increase the effectiveness and efficiency of operations and thereby get more science per dollar spent; and third, to provide better working and living conditions.

"A nuclear power plant for McMurdo, improvement of communication facilities and aviation aids, the equipping of the Navy's Air Development Squadron Six with C-130 aircraft, the rebuilding of Byrd Station, were all major improvement projects upon which work was done in Deep Freeze 61.

"Our objectives were met in all three major construction projects. The excavation for the nuclear reactor site at McMurdo is 100 per cent. completed. The structural steel is stockpiled at McMurdo and some subassemblies have been made, and we have every reason to believe we can be ready with the building structures on schedule to meet the delivery date for the nuclear reactor next December.

"Installation of new communication facilities were completed this

year at Christchurch, McMurdo and Pole, Hallett and New Byrd Stations will be done next year. This is all according to original plan. These improved communications paid off in superlative degree in the post-season operations of the icebreaker 'Edisto' and the recent C-130 evacuation flight.

"Because of early season setbacks, we were late getting the Seabees and Peter Snow Millers into the site for the New Byrd Station, which is being built under snow, using the concept developed by the Army for Camp Century in Greenland. We were to do preliminary tunneling this year and start installing the buildings next year. The young civil engineer in charge of the Seabees and his men virtually accomplished the impossible. As a result, we have completed enough so that if it becomes essential, we can move into New Byrd Station next year for limited operations.

"In addition to these three major construction projects, we accomplished a great many others of lesser magnitude. This year we housed, at the peak, 726 people at McMurdo, which represented an increase of about 200 over any previous year.

"More aerial mapping photography was accomplished than in all previous Deep Freeze operations combined."

ANTARCTIC COAL BEDS

Several coal beds of varying sizes have been discovered by geologists at work in at least two areas of Antarctica. Ten beds found by the Mackay Glacier seem to be of better quality than other beds elsewhere in the now frozen yet once tropic continent.

Alongside other beds found in the Horlick Mountains were found petrified tree trunks measuring 24 feet, and an Antarctic "first" — tillite, one of the geological "missing links", never before found in Antarctica.

IT'S WARM UNDER THE ICE

Having drilled through the permanent ice covers of two lakes in the Wright and Taylor Valleys, biologists from the University of Kansas discovered that the water was quite warm and getting warmer as they drilled further down. Immediately below the ice the water temperature was 32.5 degrees Fahrenheit and 40 feet below was 46.4 degrees. Beyond there in depth the water got colder again and went from fresh to twice as salty as sea water at 100 feet, where it measured 27.6 degrees of warmth.

The cause of this anomaly is not known, although the most feasible theory yet advanced is that this area of Victoria Land has a high geothermal gradient, a feature which could, but need not, suggest volcanic activity.

WHAT MAKES THOSE CLOCKS WORK?

Experiments conducted at McMurdo Sound and the South Pole have resulted in the negative knowledge that "biological clocks" do not work in co-ordination with the earth's rotation.

It is well-known that animals and even plants perform certain activities with almost clockwork regularity but the mechanism of these clocks is still poorly known. By taking bean plants, fungi, fruit flies and hamsters close to the earth's axis of spin, Dr. Karl C. Hamner of the Department of Botany, University of California at Los Angeles, has shown that altering the influence of the earth's rotation does not alter the inner metabolic rhythms of these organisms.

By using rotating turntables, running counter to or with the earth's rotation, and by eliminating light as a factor, Dr. Hamner was able to prove that these factors at least had no influence on the bean's leaf movements, the fruit fly's emergence, the fungus' growth bands or the activity patterns of the hamster.

ROUTINE AT AUSTRALIAN BASES MAINTAINED

The winter months have been periods of routine activity at all Australian Antarctic stations.

From time to time short field excursions have been made, but generally time has been spent in preparation for future field trips and in routine recording at the Bases.

FROM THE BASES

MAWSON

It was the warmest May on record at Mawson. The lowest temperature was -10.5° and the average $+9.9^{\circ}$. The maximum wind was 88 m.p.h., the average was 27 m.p.h.

May opened with the Newman field party blitzed-in at Twintop. After leaving one D4 in a crevasse and the other with mechanical breakdown, they returned to Mawson on May 13 in the weasel and two snotracs. They were glad to see the bright lights of Mawson after three weeks in the field.

Pardoe, Trail and Keyser left with a dog team for Auster Rookery on the 27th for biological and geological work but after 11 miles they were forced to return on June 1, due to the condition of the sea ice. They weathered a blizzard on a small island near the coast. Francis and Harvey laid a cable to parallax cameras on the island, 5 miles away.

SOUTH POLE

A second litter of hamsters was born at the end of June at the Pole Station, but the mother again ate them all despite all attempts to dissuade her. The hamster population remains at two females and a male.

The average temperature for March at the Pole Station was -70° F., compared with -40° F. for February. The lowest temperature recorded was -90° F., on March 16 and 17.

Wyers spent May on glaciological work at North Masson and, behind at Mawson, Young was busy on the new transmitter control panel. Newman and Wilkinson were engaged on stocktaking and the repair of the airco heater and diesel overhaul. Brockelsby and Bird did a steeplejack act on the mast, repairing the radar aerial, and Newman, Young and Maslen marked a track to Masson Met. Station with empty drums. Encroachment of close crevasses near the coast introduced a new hazard.

Following the close-down of the Mawson Met. Station, Trail and Waller returned to Mawson on May 12, almost strangers. Trail had been absent since March 27 and Weller since April 8.

Giddings has done good work with the motorbike, supporting sealing scientific geological parties on sea ice and also providing fun — towing skiers or bob-sledgers.

Hollingworth was puzzled by large seismic disturbances and found that one was due to a large berg breaking away in East Bay and the other coincided with the celebration on May 28 of the return of the field party.

There were large numbers of snow petrels early in May, but during the month the numbers fell away sharply. There were plenty of seals in open leads and under thin ice, but it was difficult to secure any for dog's meat.

MID-WINTER'S DAY

Following much surreptitious preparation the main social event of June was the mid-winter celebration. It commenced with a dinner on the

21st, followed in the evening by a buffet meal and concert.

Cooks Giddings and Seavers worked night and day to provide a fabulous dinner and buffet. The highlight of the buffet was a large cake skilfully modelled and decorated to represent Mawson Station and it included buildings, vehicles and even dogs. The dinner toasts included "The Queen", "Absent Friends from ANARE", "Fellow Antarcticans" and "Sir Douglas Mawson".

The fancy dress party and concert were hilarious. The main items "Cinderella" by the Shackleton Players; "To Bliz or Not to Bliz", by Wilkins Shakespearean Society; "Maori Hakas", by the Ross Tribe.

Mid-winter souvenir menus were skilfully designed by Renouard and Harvey.

Messages of greetings from Australia and other parts of the world and Antarctic stations were well received.

STORMY JUNE

June was a much stormier month than May at Mawson. The lowest temperature -15.4° and the average $+4.7^{\circ}$. The maximum wind was 103 m.p.h. and there were three blizzards with winds to 90, 103 and 91 m.p.h. respectively. The last one, on June 20, brought heavy drift.

Each bliz caused sea-ice to break out beyond the islands and ice movement caused two breaks in Francis's cables to the parallactic cameras. They also caused anxious moments to Harris, who feared for further damage to the aerial system.

By the end of the month everyone was rather tired of the long hours of darkness and was looking forward to the reappearance of the sun which, although edging over the horizon, was obscured by cloud.

EARLY TRIPS

After several trips to reconnoitre sea-ice in early July, the Auster party — Pardoe, Smith, Trail, Keyser and

McNaughton — left Mawson on July 20 and made a base camp at Safety Island, near the rookery. By the end of July biological work was completed and they were working towards home, geologising islands en route, but hampered by high winds and drift.

Denham and Wyers were also away from Base. Since July 20 they had manned the remote weather station at Mount Henderson and expected to be relieved by Weller and Seavers after a fortnight.

On July 23 Mawson experienced an inch of snowfall in calm weather. It was the heaviest this year and covered the sombre Mawson rock with a mantle of white. However, rising winds soon whipped away the light snow, causing drift conditions around the station.

Newman, Wilkinson and Young have been busy preparing vehicles for future field work, but this job was interrupted on July 27 when one diesel engine in the power house broke down. It was a bad month for radio reception with a complete blackout between the 13th and 20th, causing a large backlog of traffic. Radio Australia was received on the 21st with fair clarity, indicating that the period of ionospheric disturbance was passing.

Giddings and motor-cycle were still in great demand for sea-ice trips, especially to Francis on the island, where parallactic cameras and meteorological equipment are installed. Francis, Harvey and Bird have been removing the final bugs from the radio triggering link to the cameras and hope to have them operating soon.

By the end of July Maslen reported that although there had been very little sunlight, and the wind persistent, Mawson was beginning to brighten up considerably as it emerged from the gloom of mid-winter.

DAVIS

Dr. Hay, reporting from Davis, stated that there were a few light snowfalls scattered throughout May and the temperature ranged from 28.4° Fahrenheit to minus 5.5° F.; but, generally speaking, the station was blessed with fine calm days. Although the sun disappeared on the 28th for the two-month night, there was still ample twilight for a few hours outdoor work in the middle of the day.

PLATEAU SHACK

The remote weather station on the southern shore of Long Fjord Basin, right on the edge of the plateau, was at last established. It was called "Platsha", short for Plateau Shack. The operation began with the departure of the dog team on May 14.

The caravan was fitted out, painted a bright orange and hoisted on an improvised sledge to be towed by the tractor. On May 16 the tractor party left Davis and all went well up the Fjord where they were met by the dog party.

Once in the Basin near the plateau troubles began. Deep snowdrifts, which had recently accumulated on the sea-ice, were almost too much for the 10 h.p. Ferguson. The tracks were also a problem, and after leaving everything superfluous at the edge of the snowfield, they only managed half a mile or so before night-fall. The dog party returned to their snug tent at the old camp site and the remainder bedded-down in the caravan in the middle of the drift.

Next morning, the tractor was eventually started and a very badly worn sledge was dragged across the basin to just below the remote station site. On the 18th the caravan was pulled over the tide crack and into position on a promontory, some 30 feet above sea level. Looking down the Fjord from the site one has a magnificent view of ice cliffs and the plateau beyond.

MOVING IN

Back at Davis the trailer was

loaded with provisions and fuel for Platsha. This was carried up on May 20. The drift in the Basin area was crossed by using two Nansen dog sledges behind the tractor leaving the trailer, on snow-free sea-ice, in the Fjord proper. Next day, the weather deteriorated, so the four spent a quiet day reading, eating and sleeping in the caravan. On May 22 the dogs and the tractor returned to Davis, leaving the remote station manned by two men.

Snow fell on ten days throughout June and Davis Station was slowly being buried. The temperature ranged from +24.8° F. to -14.8° F. Davis had the first blizzard on June 16 and 17 with winds to 90 m.p.h. This was much worse for those at Platsha, where the two men were kept inside the caravan, venturing forth only to retrieve objects blown away by hurricane force winds. The pilot balloon theodolite shelter suffered most and "looked as if it had been hit with a hand-grenade".

MID-WINTER AT DAVIS

Telegrams from friends, other Antarctic bases, various organisations and even from the President of the United States mounted up as the great day approached.

The cook, true to his word, rose at midnight the day before and started preparing the spread. The party was under way by 12.30 p.m. on June 21.

Back at Davis dog training was becoming a daily affair. Some parties have been as far south as the Sorsdal Glacier but the limited light restricts most runs to about ten miles. Nevertheless, progress is being made and the dog enthusiasts feel it is worth while.

July was a month of relatively warm weather, stocktaking, re-orders, dog training and a field trip. The temperature ranged from 28.8° F. to -20.3° F. with 8 days of snowfall and 9 days of drift. Wind gusts

reached 84 m.p.h. on July 6, and after this blow they expected Long Fjord to be even more difficult to negotiate for the plateau changeover. Fortunately, the drifts were no worse than they were two weeks before. So, two days later, Platsha was relieved. The last three miles still has to be traversed on foot, lugging gear on a small man-hauling sledge.

On July 16 the sun was due to come above the northern horizon but it could not be seen owing to cloud. There were then several clear days, much to everyone's delight.

The meteorologists continued with 100 per cent. sonde releases, and several flights have been over 90,000 feet, with a record of 96,300 feet.

ROUTE FINDING

On the 21st a dog party left for the Crooked Fjord Recce, in search of a route up on to the Sorsdal Glacier. Taking seven dogs, they had glorious weather and made good time to about half way up the Fjord. Here, they were impeded by a maze of bergs and broken ice coming off the glacier. Next day, it was decided to leave the dogs and camp where they were, while they surveyed the rest of the route on foot. This was a slow business but the weather was kind and by dusk they stood atop the glacier, adjacent to the very eastern end of Crooked Fjord. Here, the route up on to the glacier is a gradual snow-slope and it would be a simple matter to drive a dog sledge up. Making their way back to camp by moonlight, it occurred to them that the top end of the fjord was, in fact, cut off from the sea, and the ice, indeed, proved to be quite fresh. Perhaps this is just a string of lakes and not a fjord at all. The following day it was snowing as they made their way home the remaining 16 miles to Davis.

On August 30 an enormous iceberg hove-to, some nine miles off Davis. It took six days to move past in a south-westerly direction into Prydz Bay. Its estimated size is about 30 miles long. In depth it extended to the horizon.

POLAR AWARDS

Among the 30 members of Australian Antarctic Expeditions who were recently awarded the Polar Medal, was New Zealander Ian Adams who was officer-in-charge at Mawson during 1958. He was the leader of a seismic ice depth field party that spent 110 days on the Antarctic plateau and also accompanied several aerial survey flights. In February, 1958, he was a member of a party that carried out a journey of over 50 miles by launch, charting newly discovered islands, and made a landing on a previously unexplored mountainous coastline in Amundsen Bay. Adams had previously served for 12 months in 1956 at Macquarie Island as Officer-in-Charge.

ANARE HERCULES?

In the aviation section of the Sydney "Financial Review" of June 8, there was a hint that ANARE may revolutionise its method of supply to its bases.

"A proposal to buy additional C130BL Hercules aircraft to fly between Australia and the Antarctic has been suggested in Federal Government circles.

"The 6-ton four-engine Hercules would provide the first aerial supply link between Australia and the three ANARE bases of Wilkes, Davis and Mawson.

"Polar experts claim that the Hercules would effect great savings in Australia's Antarctic budget, which now costs about £800,000 a year.

"The aircraft would reduce to a matter of hours the present weary weeks-long sea journey from Melbourne to the bases."

WILKES

By May at Wilkes, sea-ice was complete, 15 inches thick, and steadily building up. Biologists Wilson and Saunders commenced fishing through the ice. They blew an eight-foot diameter hole with two pounds of explosives, and dropped fish traps through. The first night yielded over 100 fish!

The days were shortening with the sun appearing low on the horizon for about four hours. Some were having difficulty in telling whether it was night or morning.

Weather observer Harigan, after forecasting a brisk wind, which turned out to be 90 m.p.h., continued to publish under the nom de plume of "Schmidt".

WINTER SETS IN

By June most outside work had finished for the duration of the winter months, although regular trips had to be made for water which is pumped through the ice from melt streams. Berrigan and engineers have to regularly move the vehicles to avoid them drifting over.

Mid-winter was celebrated with great enthusiasm with festivities commencing with a multi-course dinner on mid-winter's eve. Much hidden talent came to light during the evening in a rather unusual adaption of a Shakespearean play. The all-star cast included McGhee as Romeo, Harrigan as a rather over-weight but enthusiastic Juliet, and Hemphill, Hogan and Hickey as narrator and first-aid men to handle the sword fight casualties.

Church, Budd and Thorp, after several postponements, due to bad weather, finally departed on their dog trip to Cape Folger.

SCIENTISTS REPORT

Scientific work continues — with Grimsley recording some particularly fine auroral displays this month. Breckinridge and the Met. Staff had increasing difficulty in maintaining their twice daily balloon releases, which, in high winds, often

require acrobatic skill to save the trailing radio sonde equipment from being damaged, by striking the ice and rock surfaces, before the balloon gains height.

Marine biologists had little luck during June with sea ice fishing, as the ice was continually broken up and blown out to sea. Wilson examined the contents of a seal's stomach for parasites and marine specimens but other scientists in the same building doubted the value of this work, as the nauseating smell kept them out of their offices.

Winter made herself felt during July with winds of 50 m.p.h. or stronger, on twenty days of the month. This was higher than the previous two years. However, temperatures, down to 58 degrees below freezing are warmer than the previous years.

Indoor work was still the main activity, with everyone taking a share in the painting. Thorpe and Jewell were busy re-wiring the station.

VISIT TO REMOTE STATION

A quartet of Hogan, Saunders, Burch, and Budd (all with Christian name "Bill") spent a profitable two weeks at S2, fifty miles inland. Their work there included the setting out of stakes in grid pattern for an ice movement study and also a snow pit measurement. Burch claims that he rode his ski-equipped motor-cycle the whole distance.

TO SECEDE?

Wilkes is no different to anywhere else — even political problems too! As, rumour from Remote Station S2 indicates that the American confederate flag has been raised by Bill Saunders and the station renamed, "Williams Base"! (See Christian names above.)

RUSSIAN STATIONS REPORT SEVERE WINTER CONDITIONS

Radio messages received in the Soviet Union from Mirny and Vostok speak of hurricanes, intense cold and considerable disruption of radio communications.

HURRICANE AT MIRNY

On the night of July 3 a powerful hurricane broke over Mirny Station. The wind velocity reached 52 m/sec. A snowstorm blanketed the searchlight beam and visibility was down to three paces. The radio-operators' quarters, standing on an area free of snow, swayed, as in a heavy storm at sea.

This was the first such powerful hurricane to sweep Mirny this year. An LI-2 aircraft lashed down at the aerodrome by steel hawsers, was hurled down on to the sea-ice by the hurricane over a 25-metre drop. Fuselage, chassis and wings were smashed.

The hurricane raged all night. Radio contact with Vostok and Novolazarevskaya was disrupted. The wind did not begin to die down until noon the following day.

MAGNETIC STORM

The Russian journal "Vodny Transport" publishes the following radio message from V. Driatsky, leader of the Russian team wintering at Mirny.

During the last few years the level of solar activity, after a peak in 1957, has gradually declined. But now, suddenly, in July of this year, activity has suddenly increased. The number of sunspots has grown, and eruptions and prominences have increased in intensity, their influence being manifested in a series of geophysical processes on the earth.

Judging by observations carried out in Antarctica, as the result of invasion of the earth's atmosphere

by corpuscular streams ejected from the sun, and during the course of these eruptions, a heavy magnetic storm began and intensified ionisation of the lower layers of the ionosphere. This has led to considerable increase in radio-wave absorption and to an abrupt deterioration in radio communication conditions.

Thus on July 13 the radio link between Mirny and Moscow, between Soviet stations Vostok and Novolazarevskaya, the Australian observatory at Mawson, the American base of McMurdo and other foreign Antarctic stations ceased completely. For four days the ether was dead; we didn't hear a single radio station.

On the fifth day reception conditions began to pick up. Although faint, Moscow was audible, radio-wave absorption in the ionosphere diminished, and the magnetic storm came to an end. But suddenly, on July 18, two eruptions more intensive than previously occurred on the sun. To the recurring abnormal phenomena originating in the ionosphere and the earth's magnetic field, was added a sharp increase in cosmic radiation.

Radio communication was again disrupted for several days. Not until July 23 was it gradually restored. This process is very slow, and on July 27 contact had still not been fully established with all Antarctic stations.

COLD

A radio message dated July 26 stated:

At Vostok Station, situated 1,410

kilometres from the Indian Ocean littoral, 3,500 metres above sea-level, scientists recorded on July 25 an air temperature of -80°C . The station commander, L. Zhigalov, reports that there was clear weather that day, the wind velocity being 3-4 metres/second.

Judging by the experience of former years, the heaviest frosts set in here in a month's time, when the polar winter will draw to a close and the sun appear.

OUTSIZE BERG

The Russians report the discovery of a large iceberg in the Davis Sea. This occurred during the course of a routine reconnaissance of ice and weather to the north of Pravda Coast. An aircraft piloted by S. Tarasov, and carrying on board meteorologist G. Kizino and the German hydrologist Otto Schultze, found itself 60 kilometres north of Drigalsky Island. In this region the scientists and air-crew spotted an iceberg 70 kilometres long and 20 kilometres wide.

The huge floating mountain of ice will be observed to study its drift.

GAGARIN MOUNTAINS

At the beginning of this year a combined geological and geographical party from the 5th and 6th Antarctic expeditions, led by Professor M. Ravich, made an exploration of Queen Maud Land. Geological surveys were completed and mountain chains and valleys studied. All in all, the party explored some 50 square kilometres of territory in this region.

The party collected valuable scientific data which will enable geological, geomorphological and geographical maps to be compiled for this interesting and hitherto little-known region. Dozens of mountain chains were discovered. One of the most important of them the polar explorers named after cosmonaut-hero Yurii Gagarin. The "Yurii Gagarin" mountain chain extends for dozens of kilometres from the sea into the heart of Antarctica. Individual peaks in the chain rise for more than 2,500 metres above sea-level.

"TWO HEROIC HOURS"

Under the above title "Komsomolskaya Pravda" on May 10 published a full account of Dr. Leonid Rogozov and of the operation he performed upon himself on May 1 this year. Many will be interested to read the following extracts from the article.

Leonid had already published several scientific papers, and last year he wrote his thesis for the candidate's degree. The time arrived to defend it. However, this opportunity to go to Antarctica turned up. The hospital was sorry to lose such a fine sensible fellow, but he felt the pull of the sixth continent and — the thesis would keep.

And then letters began to arrive from Antarctica. Leonid wrote that among the fifteen winterers he was the only "non-specialist". By profes-

sion he was a doctor, but what connection had he with Antarctica? The people there were all healthy, except for a case of tooth-ache. In such cases he had to become the dentist. And in general he was a doctor only in name, his main duties consisting of administration and physical training organisation, and even tractor-driving.

The last letter sent by Leonid in April only arrived just before the May holidays. It included among other things the lines: "The other day I

was attacked by a bout of appendicitis. Fortunately it passed off safely, otherwise I thought: 'You'll have to operate on yourself.'

And now he has been forced to.

Under ordinary conditions appendectomy is considered to be relatively simple. Under the severe conditions prevailing in Antarctica it is difficult. In the situation which was created it was highly complex. He knew that at any time he might lose consciousness, and none of those around him would know what to do.

All his colleagues at the station took a hand in preparing for the operation. During this time they were all under orders from Rogozov alone, even the station Commander, Vladislav Gerbovich. A junior scientist, F. Kabot, and engineer-aerologist R. Pyzhov, sterilised the surgical instruments and materials. Engineer-meteorologist A. Artemev and driver-mechanic Z. Teplinsky assisted the surgeon directly. The remainder prepared the room: they placed the bed in the centre of the room, and set alongside it the table with the surgical instruments. In addition they switched on several powerful lights.

Finally everything was ready. Now the patient's fate rested in the hands of himself and his unskilled assistants.

On the night of May 1, Leonid, with precise movements, made the incision. Everything had to be performed looking into a mirror. The most crucial moment arrived. He had to find, extract and remove the appendix. The great tension brought Rogozov's face out in large beads of sweat. Evidently he was finding the going tough. But Leonid closed his eyes for a few seconds and continued to work, calmly and precisely relaying directions to his assistants. When the appendix had been located it became clear that the slightest hold-up in the operation would bring a tragic end. The assistants carefully treated the area of the operation and inserted the stitches. Only two hours

WIND CORRODED ROCKS

The Information Bulletin of the Soviet Antarctic Expeditions, No. 17 (1960) publishes this article by S. A. Evteev, well known to New Zealanders who wintered in the Antarctic in 1960.

Everyone who has visited the Oases in Antarctica — ice-free parts of the surface of bedrock — has been amazed at the extent to which the boulders have been hollowed out by the wind. These hollows are called "cells" or honeycombs, and where they are particularly dense, even "boulder lace". Individual hollows are sometimes so large that they could easily accommodate a man.

On the question of when the "oases" of Antarctica freed themselves from the ice and how long the wind required to create this "boulder lace", scientists are divided. Some consider that it took hundreds of years, others tens of thousands. We succeeded, in one spot on the littoral of Eastern Antarctica, in the Hausberg mountain region, in discovering boulders with hollows worn by the wind, where it was possible to approximately ascertain the time interval, during which these hollows were formed.

In 1901-1903 a German expedition was working in the Hausberg mountain region, under the command of E. Drigalsky. For their work members of the expedition assembled on the north-west slope of the mountain rock pyramids made from the spoil of solid crystalline rocks spread along the Antarctic littoral.

In 1957 we discovered these pyramids, which had stood for over 50 years. It turned out that the outside of the spoil forming the pyramids was heavily "corroded" by the wind, whereas on the inside there were no

had passed since the first incision. Towards morning Rogozov dozed off, and all was well.

SHOWA REPORTS

There is no very special news about the Japanese team wintering at Showa Base, which will be closed down after the summer relief, but which will be re-opened, reports the Japanese Antarctic Office, "after several years".

Meanwhile the members of the 1961 team are carrying out their routine observations and preparing for the inland surveys scheduled for the spring.

CLOSE DOWN

The 1962 expedition is to be the last one, after which Showa Station will be sealed as carefully as possible for the future re-opening for which Japanese scientists cherish desires.

On June 27, Professor Torao Yoshikawa (39), of University of Tokyo, was appointed as leader of the 1962 team. He is a geomorphologist and was one of the members of the first J.A.R.E. team in 1957. Mr. Sueichiro Akita was appointed again to be the captain of the "Soya".

Besides the evacuation of the wintering team 1961-62, mapping from the air which has been partially achieved and will cover a large area between 30° and 45° E., will be one of the main tasks of the coming

hollows. The depth of the largest hollows was 5-7 cm. It is natural to assume that the hollows appeared after the pyramids had been built. It is impossible to imagine that the members of the Drigalsky expedition when building the pyramids, intentionally laid the spoil so that the wind "corroded" surface was on the outside.

Thus it proved possible to approximately evaluate the rate at which the wind wore the hollows in the rocks. For the region of the Hausberg mountain, which is formed of melitite basalts, it was approximately equal to 1-1.5 mm. per year.

voyage. Mr. Yoshimichi Harada, the vice-leader, and his staff of the Geographical Survey Department will carry out this work.

TARO

Taro, the famous sledge-dog, will spend the rest of his life at Sapporo Botanical Garden in Hokkaido, but, reports a Japanese correspondent, "he seems to be neurotic, because many people he never knows often call his name and touch his body." In late spring, the dog had a chance to be received in audience by the Emperor Hirohito and the Empress Nagako during their tour through northern Japan.

Mr. Murayama, the Leader of the wintering party, reports that regular work has been carried on in meteorology, aurora, geomagnetism, cosmic rays, glaciology, etc. during the winter months.

As soon as the sun returns, on July 11, it was hoped to begin field activities, which are planned to include mapping of coastal and inland areas.

The team will withdraw in January or February, 1962.

OUR ILLUSTRATIONS

NEW COUNTRY

Above:

Camp looking south to Survey H south of Byrd Glacier (Barne Inlet) about 28 miles W.S.W. of Cape Selborne: November, 1960.

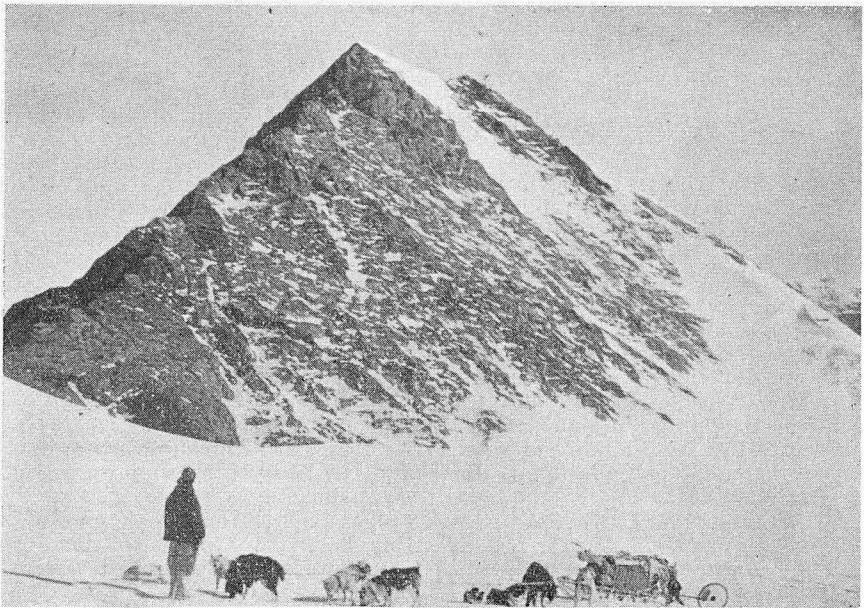
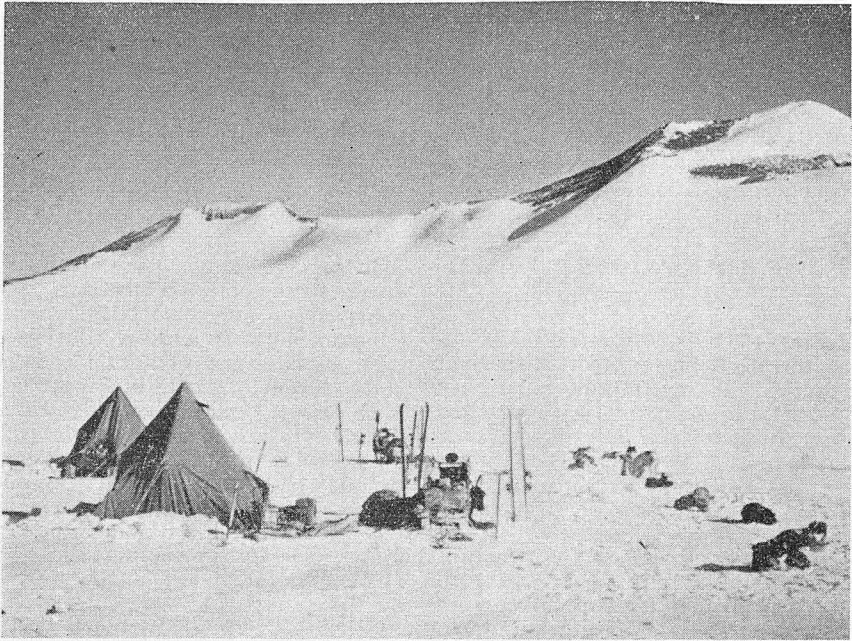
Photo: G. Matterson.

Below:

Looking at Survey K (half way up left ridge of mountain) from near Kiwi Pass, approximately 80° 45' S.; about 30 miles in from the coast: December, 1960.

Photo: G. Matterson.

WITH THE NORTHERN PARTY OF THE NEW ZEALAND SURVEY EXPEDITION, 1960-61.



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 on some Antarctic problem of interest to the informed layman.—Ed.)

SOME ADAPTATIONS TO COLD IN PENGUINS

Sir, — The question of how Antarctic penguins protect their feet from damage by freezing must have occurred to many who have watched these birds in their natural surroundings; for the feet are the only parts of the body not well insulated by a layer of blubber or firm dense plumage.

Obviously as long as the penguins are swimming and their feet are in salt water with a temperature very little below -1°C . no great problem will arise. When the birds are out of the water, however, the pads of the feet must for long periods be in direct contact with ice or rock at temperatures often lower than -30°C . and it is then, one would expect, that special adaptations are needed to prevent freezing.

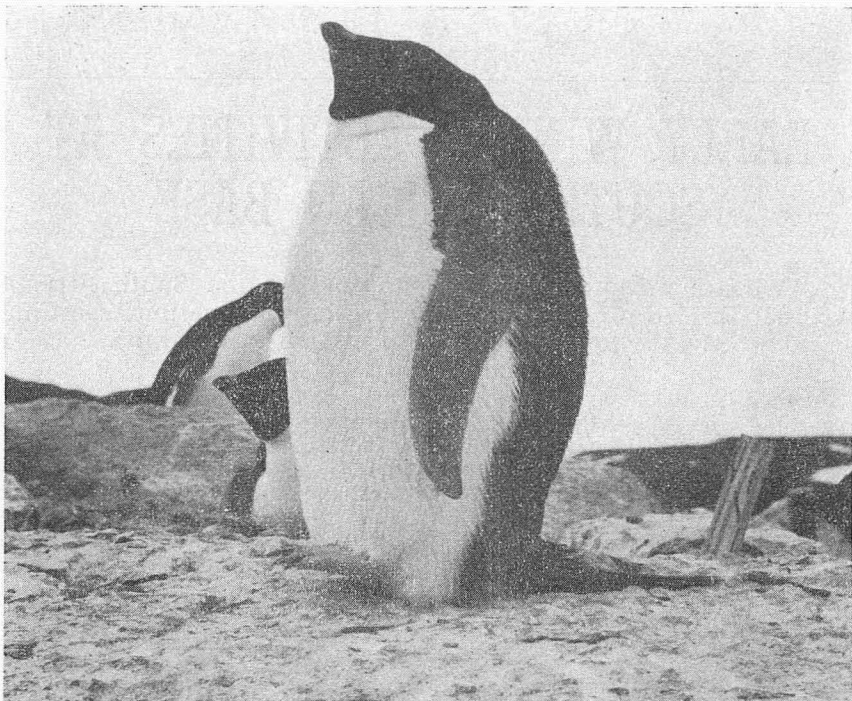
In several species of Arctic land birds, Madsen and Wingstrand (1959) found the foot pads covered by enlarged papillae (outgrowths) on the surface of which was a very thick layer of cornified tissue. These papillae reduce the contact surface between the foot and the ice and in addition the thick cornified layer is an efficient insulating mechanism. A superficial look at the under-surface of the feet of both adult and young Adelie penguins at Cape Royds during 1959-60 indicated that they also have large papillae on the foot pads.

Other mechanisms such as arterio-venous anastomoses are known to exist in the extremities of warm-

blooded vertebrates. They are direct connections between arteries and veins without the usual intervening capillary network and are concerned with temperature regulation and the conservation of heat. In birds they have been found and described (Wodzicki, 1929). In Antarctic penguins it is probable that arterio-venous connections have become highly developed and by increasing the rate of circulation play an important role in protecting the feet against freezing.

In addition to specialised anatomical structures, behavioural reactions also play a major part in counteracting possible damage from subfreezing temperatures. When lying down penguins can hold their feet under the body among their plumage and probably well clear of the ground. When standing, they have other methods of avoiding excessive contact between their feet and ice or rock. Adelie penguins sometimes raise the pads of their toes off ice by down-pointing their claws, a device also giving a better grip on a smooth surface; and Emperor penguins adopt a somewhat similar stance.

Another method of the Adelie, particularly when sleeping in an upright position, is to sit back on its "heels", with toes held clear of the ground and the body being supported from overbalancing by the feathers of the tail (see photograph). At Cape Royds this behaviour was also noted in young Adelie chicks only a few weeks old.



Adelie Penguin sleeping with toes raised. On rock surface at Cape Royds, 15 December 1959.

Photo: R. H. Taylor.

Evidently this last attitude is common with both adult and young Emperor penguins (Wilson, 1907, Figs. 15 and 19) and incubating King penguins (Stonehouse, 1960). It is also the sleeping position most frequently adopted by King penguins at the Edinburgh Zoo, although many have been bred in captivity (Gillespie, 1932).

The whole field of temperature regulation in Antarctic penguins and their specialised adaptations and reactions to an extreme environment should prove an interesting one for research.

ROWLAND TAYLOR.

Animal Ecology Division,
D.S.I.R., Lower Hutt.

Gillespie, T. H., 1932: *A Book of King Penguins*. London.

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Stonehouse, B., 1960: *F.I.D.S. Scientific Reports*: 23.

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Wodzicki, K., 1929: *Bull. Acad. Pol. Sci. & L.*, B (II).

MEN v. ICE

The United States would attempt to beat the ice this season with a new technique, Rear Admiral David M. Tyree said in Wellington.

The force would cut its way to Ross Island through ice reaching depths of 10 to 11 feet.

"Glacier" would spearhead the attack, followed by two smaller ice-breakers chopping out a channel as "Glacier" finished its work. This would give a wedge-shaped channel five miles wide at the mouth, with the apex at Ross Island.

The advantage would be that ice would not congest in the channel. A southerly wind would blow the ice free whereas before it became clogged. "We can't clear the ice with machinery so the wind will do the work," he said.

EARLY WINTER ACTIVITIES AT SOUTH AFRICAN BASE

(We are indebted to the Newsletter of the South African Weather Bureau for most of the following information regarding work at SANAE, previously the Norwegian base.—Ed.)

Further details are now available regarding the dog-sledge trek of Butt and Swanevelder to the mountains south of SANAE Base (see "Antarctic", June, 1961, p. 392).

From the previously erected depot ("Dassie Depot") they made two trips: one to the glacier (Penck Trough) taking 15 days, and a trip to the east of the depot of 6 days.

At three places they carried out magnetic observations. As for geological work, as many of the nunataks were visited as was possible in that limited time. A few nunataks they could not reach as they were inaccessible. For the purpose of glacier observation, a considerable number of poles were erected. Accumulation and the absolute movement of the ice can be measured thereby. Snowpits were dug and the density of the snow measured.

The dogs were pulling very well and after the trip they were fit. However, sometimes they had a difficult job on the hard surface of the ice. Two of them lost a toenail and another suffered small cuts on its leg. In three places a dog fell into a crevasse, but came out again safely.

The men experienced difficulties when travelling from the higher part of the ice to the glacier. The sledge went out of control, due to its speed, for about three-quarters of a mile, fortunately without any injury to the dogs. On the way back uphill the freight had to be divided into four lots.

For survey purposes six cairns

were erected on nunataks. Meteorological observations were made.

The fact that the 1961 expedition could — as early as February 8 — start field work is to a considerable extent due to the fact that all supplies for 1961 could be delivered when the ship bringing the relief party arrived. After the departure of the ship the men could immediately start on field work.

NEW SHIP

The Transport Department has ordered in Japan a new ship, to carry freight as well as passengers, which will be used inter alia for the transport of staff and supplies from and to the Republic's weather stations on the islands and at the Antarctic base. The ship will have a crew of 35 and can carry 25 passengers. Its length will be 225ft. and the tonnage 1550 tons gross. The hull will be especially reinforced so that it will be able to break through heavy ice. The cost will be about R 846,000. It is expected that the keel will be laid at Osaka on April 20, and it is hoped that it will be ready towards the end of November.

NEW HUSKIES

The two huskies received from the Belgian Antarctic Expedition 1960 are doing very well. They are still under quarantine in Capetown.

The dog Bidule is approximately 2½ years old; the bitch Fatima is 4 years old and a real pedigree husky (although it is not known whether the Eskimos issue certificates for pedigree animals). Although she was born in Paris, her ancestors were in

Adelie Land and with the famous French expedition leader Paul Emile Victor. Both dogs are of the Greenland type and will later be taken to Onderstepoort until towards the end of the year they will go to Antarctica. The South African National Antarctic Expedition will from now on breed its own dogs.

Bidule and Fatima are expecting to become proud parents in May.

Every day there is radio communication between S.A.N.A.E. and the British Expedition at Halley Bay, the Japanese Expedition at Syowa and the Australian Expedition at Mawson. No communication could be established as yet with any of the Russian stations. Usually only weather reports are being exchanged but sometimes there is a chance to greet members of the other expeditions. There are strong ties of friendship between all the men in Antarctica even though they have never met.

LATE JOURNEY

A party visited the area where the new station will be erected in order to collect fuel oil and to measure the snow-accumulation poles along the track. On their way back they had to travel the last 11 kilometers in darkness, but fortunately they could see the red and white lights on the mast and it was not necessary to use the compass.

In the evening hours after dinner two courses are held where German and Morse code are taught, the first subject by means of long playing records.

Butt is the editor of a newspaper, the "Sanniespos-Signpost" which is now appearing regularly. The men are always most interested in any even brief news from South Africa.

A soapbox club has been established, where everybody gets the opportunity of climbing on to his box and saying whatever he has to say: in this way all domestic, local, political and other problems are solved.

Before the winter the boys made

two trips to the substation and all had the opportunity to leave the main station for a short while.

Working hours are from 0600 to 1600 with one hour for dinner and coffee at 1400. Sometimes men work again after supper. Morning coffee is served in bed at 0430 by the man on night duty, breakfast is at 0500 and supper at 1700 local time. All men take part in cooking and fatigues.

SUNSET

During April the last of the snow petrels were seen. Since May 18 the sun has stayed below the horizon for the winter.

Snowstorms are a serious enemy, as is apparent in the magnetical observation cabin where the snow penetrates during storms in spite of the double windows. Several of the dugouts have had to be lengthened because the snow on top of the buildings is getting higher and higher.

In seven places in or around the buildings extra supports had to be put in in order to keep up sagging or breaking ceilings. The two aluminium huts which were erected in December, 1960, were damaged during a gale, when parts of the sheets were torn off.

"Pikkenien", a small trailer with a scraper in front which was so often used for all kinds of small jobs in the surroundings of the station, is now unfortunately out of action.

THE MET. PROGRAMME

As might be expected from an expedition so closely allied with the Weather Bureau, unusual stress is laid on meteorological work at SANAE.

During 1960 land-observations were made every three hours day and night. Much of the night-observation was facilitated by the use of auxiliary equipment, special lamps, searchlights for clouds, etc.

The night-observer usually went to bed shortly after breakfast and got up just before supper. During the night he also made inspections for

the prevention of fires, since the diesel engines and the heaters were kept on during the night. However, the night-observer was especially popular as he made the early morning coffee for the cook and served it to all of us in our beds.

The other meteorological observers were employed during the "day-time". They were almost continuously assisted by other members of the expedition during the release of balloons, installation of apparatus, etc.

As at all Antarctic stations storms usually cause difficulties. Either the instruments are clogged by snow or suffer damage, or one cannot even see where one is going and has the greatest trouble getting in and out.

On such an open and level ice-floe natural means of measuring visibility are restricted. Towards the north-west there is an ice hump and also one far to the south. During the dark season lights were used by which visibility can be defined accurately up to 1000 meters; at longer distances visibility can reasonably well be estimated by the brightness of those lights.

Cloud observation was done in the usual way. For height measuring there was a good searchlight and sometimes balloons were used.

Air-temperatures were measured at the meteorological observation tower at heights of $\frac{1}{4}$, $\frac{3}{4}$, 2, 5, 10 and 25 meters. The temperature was measured with resistance-thermometers and recorded inside the hut.

Total wind velocities were measured at heights of $\frac{3}{4}$, 2, 5 and 25 meters with an anemometer and recorded inside the hut on chronographs.

The temperature of the snow was measured on the surface and at depths of 5, 10 and 25 cm. and 1, 2 and 4 meters. Prior to May 18 thermometers placed in holes were used, but later instruments called thermocouples were used. The temperatures were measured twice daily.

Snow-accumulation was measured with bamboo poles distributed over a large area. The yearly accumulation is ± 1 meter. Special observations were made of reflection- and radiation-phenomena.

Observation by balloons was very incomplete because the ship bringing the balloons from Great Britain arrived at Capetown after the expedition-ship had departed, so that there was a shortage of balloons. Balloons were launched during January and February and from September 20 until November 5 every day. From March 1 until August 2 a balloon was used every third day. During the other times no balloons were launched.

Wind observations in higher regions of the air were carried out by radio-theodolite, but the results were sometimes unreliable. During the time that no balloons with radio sondes could be launched, optical theodolite observation of 100-gram balloons was carried out as often as possible.

During sledge trips observations were also made. Aneroid barometers were used for air pressure, an Assmann-psychrometer for temperatures and a small hand-anemometer for wind velocity measurements. The latter was, however, usually estimated only.

PACIFIC WATERS

Russian studies of the ocean currents and the mixing of Antarctic and sub-Antarctic waters were followed with great interest at the Honolulu Antarctic Symposium and showed that the Russians have been carrying out probably more oceanographic research in the southern seas than any other country. In fact, many visiting scientists have been astounded at the extent of Russia's knowledge of the Pacific. Careful, full, methodical surveys have covered many of the Pacific areas which have not been touched on before.

GORDON HASLOP

We regret to announce the death at Singapore on August 27 of Fl. Lieut. Gordon Murray Haslop, R.A.F., as the result of a motor accident at Air Base Changi. He was 38.

A TRIBUTE

by J. H. (Bob) Miller

Many readers of "Antarctic" will be sorry to learn of the passing of Flight-Lieutenant Gordon Haslop.

Although born in Canada, Gordon was a New Zealander by upbringing, joined the R.N.Z.A.F. and saw service with that arm during the Second World War. Later he transferred to R.A.F. Transport Command, serving for a long period in the Berlin Airlift.

He came into Antarctic circles by his selection as second pilot of the R.A.F. section of the Trans-Antarctic Expedition under Squadron-Leader Lewis. He was a member of the "Theron" party which gained a "foothold" at Shackleton in the Weddell Sea in the summer of 1955-56. As "Pedro" he will always be long and dearly remembered by all who shared those days. Among other pioneering tasks it was he who with Ken Blaiklock first reconnoitred by air and photographed the "Theron Mountains", the first new "land" discovered by the expedition. Returning with Sir Vivian Fuchs' main party one year later, he took his share of the aerial establishment of the "South Ice" Station and just before the Trans-Antarctic journey proper began he, with Alan Rogers, survived a force down of a week's duration in the severity of early spring weather while on a mercy mission to Halley Bay. His part in the epic Trans-Continental flight in the single-engined Otter is well recorded in "The Crossing of Antarctica". His New Zealand friends will miss his periodic visits to this country. To his mother, sister and brother, the Society extends its deepest sympathy.

CHILEAN ACTIVITIES

With the Navy ships on their way from Punta Arenas to relieve the groups stationed at Chile's four bases, Antarctic expeditions since the first in 1947 have now reached 14.

It is confirmed that the "Gabriel Gonzalez Videla" Air Force base has been handed over to the University of Chile in order that University scientists may carry out various investigations. The FACH (Argentine-Chilean Federation) is co-operating by appointing four petty officers for the upkeep of the mechanical and electronic apparatus at the base.

AT THE BOTTOM OF THE WEATHER

Reported as "probably the outstanding paper" at the Honolulu Antarctic Symposium (see p. 476) was that of Dr. M. J. Rubin, of the United States Weather Bureau, on the heat budget of the Antarctic mass.

Antarctic studies like Dr. Rubin's, in which he surveyed the total heat capture and loss of Antarctica, are the source of fundamental information on the understanding of weather and could form a basis for far more accurate weather prediction, and possibly, weather control.

Antarctica receives a certain amount of radiation and heat from the sun. Surface melting, evaporation, the melting of ice shelves, the northward flow of ocean currents and many other factors help to remove some of this heat, and what is left is lost by radiation into space.

Dr. Rubin has taken into account all these factors, based on actual measurements made in the Antarctic, and has worked out the annual heat budget — the amount retained, and the amount lost — for the continent.

F.I.D.S. TO BE RE-NAMED BRITISH ANTARCTIC SURVEY

From January 1, 1962, the Falkland Islands Dependencies Survey will be known as the British Antarctic Survey.

Although it seems a pity to drop a name which has become familiar to so many, it is felt that the new name has several advantages over the old one: it should certainly convey more to the general public and is more convenient for international use.

This is, of course, the second time that the organisation has changed its name. It started at the end of 1943 as a wartime naval operation under the code-name "Tabarin" — the name of a Paris night-club which was thought to be appropriate for men about to face the darkness of the polar winter. It was given its present name in 1946 when control was transferred to the Colonial Office and it became a civilian organisation.

The adoption of the latest new name also marks what is in some ways another new phase in its history, following as it does soon after the ratification of the Antarctic Treaty which aims at further international co-operation in polar research.

NEWS FROM THE BASES

The weather throughout the period was general poor with high winds, gusts up to 147 knots being recorded at Hope Bay in May. Strong winds were also recorded at other bases, including Halley Bay where the average temperature for May was -25° C.

Field work continued intermittently throughout the period and parties from Hope Bay were assisted by the two Otter aircraft. As reported in the June issue, these were flown to Hope Bay from Deception Island, on March 26 and April 2, and used

to ferry stores south to a depot at Cape Longing, at $64\frac{1}{2}^{\circ}$ S. on the east coast of Graham Land. The aircraft then returned to Deception for the winter.

LATE SLEDGING

Several sledge parties were in the field simultaneously from Hope Bay; geologists worked on the coast of Tabarin Peninsula, in the centre of Trinity Peninsula and on James Ross Island; another party combined physiological observations with a sledge trip down Prince Gustav Channel to reconnoitre sea ice, and a geophysical party covered 300 miles on a reconnaissance trip via Broad Valley to Cape Ducorps overlooking Bransfield Strait. A party of surveyors and geologists visited the Cape Longing area, and three men established a second depot west of Cape Longing.

At Marguerite Bay, work on the new base hut was completed and the season's field work commenced with a new plane-table survey of Stonington Island. A considerable amount of field-work has also been carried out by the three men wintering at the advance base at Fossil Bluff in George VI Sound. They will be joined later in the year by a strong party of men who will make the journey from Stonington Island with two Muskeg tractors and four dog-teams, and spend the spring and summer working in George VI Sound and on Alexander Island.

HUT ENLARGED

At the Argentine Islands the hut has been extended to accommodate the ionospheric equipment which is to be moved south from Port Lockroy early next year. A direct reading magnetograph was constructed, and

routine observations were supplemented by a local magnetic survey. Tide records were continued in spite of the 19th tide-gauge being damaged by heavy seas (no less than 18 predecessors were lost or badly damaged by heavy seas or sea ice). Movements of a series of stakes are being observed by the glaciologist.

At Signy Island biological work has continued. A number of giant petrel nestlings have been ringed, and several sheathbills and skuas which were ringed in 1959 have been recovered. Orwell Glacier, near the base hut, was surveyed in detail in preparation for the work on glacier temperatures which was started at the end of May.

Field work on Adelaide Island commenced in April when a survey reconnaissance party covered about 110 miles. A second survey party visited the south of the island in May.

HUT BUILT

A new hut was constructed at Halley Bay as the old hut is now buried under about 15 feet of snow; the two have been connected by drift-proof tunnels. The ozone hut has been moved and the ionospheric aeriels raised.

Attempts to study 50 Emperor penguins in captivity were thwarted by a mass break-out at the beginning of May, but the cage was then reinforced and work has now started on a second batch of penguins. Two men using a trailer caravan as a living hut and laboratory have also carried out observations on a small colony near by.

Glaciological work continues at Halley Bay, a cold laboratory for the glaciologist having been completed and moved to its permanent site.

The dogs have been housed in a tunnel 7 feet wide and 100 feet long.

Routine work continues at all bases.

NEW ZEALANDER WITH F.I.D.S.

A London report dated June 6 says that after his second long Antarctic cruise the New Zealand-born master of the Royal Research Ship "Shackleton", Captain David H. Turnbull, is back in Britain. His ship is at Southampton refurbishing and preparing for yet another annual relief voyage to the bases of the Falkland Islands Dependencies to survey during the southern summer.

Before he joined the survey ships Captain Turnbull was for two years master of the "Port Waikato" sailing between Lyttelton and the Chatham Islands.

At the end of September he will make his third voyage south in command of the ship's crew of 30, about a third of them Falkland Islanders, and a dozen or so scientists and mechanics who work aboard the ship or who will relieve men at the survey bases.

ADVICE TO COLLECTORS

The German philatelic information sheet "DILL REPORTS THE NEWS" offers this advice to philatelists who wish to have covers serviced at Russian Antarctic stations.

"If you wish to have covers from these Stations, there is only one successful way: Write in English to this address: Mezhdunarodnaja Kniga, Moscow G-200, U.S.S.R., enclose for each wanted cover one Dollar bill, give your address and country in capitals and mention from which base the cover might be mailed. You may be sure that after 6 or even 12 months you will receive, directly mailed to your address, the wanted cover. I have never heard that a cover ordered in this way did not arrive."

SUMMER ACTIVITIES AT ARGENTINE BASES

We have received from the Argentine Antarctic Institute the following report of activities at the Argentine bases during the 1960-61 season.

The summer campaign of 1960-61 began on November 18, 1960, under the command of Captain Luis Marie Iriart, the Antarctic Naval Group under his orders being composed of the icebreaker "General San Martin" (Commander Luis Gonzalez Castrillon); the transport "Bahia Aguirre" (Commander Atilio S. Porretti); the tanker "Punta Ninfas" (Commander Mariano Alvarado); the hydrographic ship "Chiriguano" (Commander Armando Lambruschini), and a Fleet Air Arm unit consisting of two S-55 helicopters and two Beaver aircraft (Commander Carlos J. M. Sagastume).

The ships carried out relief and supply duties for the following bases and Argentine Antarctic posts: Orcadas [Orkneys], Decepcion, Melchior, Esperanza, General Belgrano and the Ellsworth Scientific Station. They put in order the Jubany Base in Potter Inlet at the 25 de Mayo Island, South Shetlands, with military personnel, and Ballve and Capitan Cobbett Bases on the Ardley Peninsula of the same island. Civilian personnel of the Argentine Antarctic Institute were left at Cape Spring, Brialmont Inlet and the Antarctic Peninsula.

Summer Work

The Almirante Brown and Teniente Camara naval posts, which had been evacuated as such, were occupied during the summer as bases.

The ships of the Antarctic Naval Group carried out oceanographic, hydrographic and meteorological work, mapping the placing of buoys, and cosmic radiation research duties.

The Argentine Antarctic Institute sent two groups of scientists and

technicians, who carried out their plans near the Capitan Cobbett Base and at Ballve Base. The two groups were led by Alfredo Corte and Dr. Nestor H. Fourcade respectively.

At Capitan Cobbett

The group based on Capitan Cobbett Base carried out the following work: the observation and study of plankton and fresh-water algae; tests of fertility of Antarctic plants; the isolation of micro-organisms of the air, the soil, the snow and the ice; the listing of banded birds; a census of penguin colonies, and the study of birds and mammals. Meteorological observations were made in order to assess the development of vegetation. Readings were also taken of carbon dioxide of the air and qualitative chemical analysis of the organic components in snow water, related to the biological activity of plankton, at set intervals (every 10 days at 3 p.m.).

At Ballve

The group based on Ballve Base collected 28 samples for the study of paleomagnetism: these belonging to igneous rocks (basalt and adesite). Carlos A. Meneses and Juan M. Ageitos, who belonged to this group, carried out taxidermy work on several kinds of birds captured in the district, such as skuas, Antarctic pigeons, penguins and Wilson petrels. They prepared some skins for studying and some for exhibition purposes, which were added to the scientific collections of the Argentine Antarctic Institute. As well as this, the idea was conceived of capturing live animals to take to Buenos Aires. Skuas, penguins, Antarctic pigeons and Wilson petrels were caught. The Antarctic pigeons and Wilson petrels

did not survive in captivity and died a few days later.

Two skuas, a giant petrel chick and one semi-albino penguin arrived in perfectly good condition at the port of Buenos Aires, the first two being placed in the zoological gardens of this city. The giant petrel chick lived until March 28. The penguin was transferred to the Argentine Antarctic Institute for physiological studies but died on April 1. Later it was stuffed, its skin being among the other items on exhibition.

The campaign for the 1960-61 summer finished on March 17.

BALLVE NAVAL BASE

Position: Lat. 62° 12' S., long. 58° 54' W.

Situation: Ardley Inlet, Ardley Peninsula, 25 de Mayo Island.

Accessibility: By sea.

Date of Installation: December 6, 1953.

Periods when it has been functioning: Campaigns of 1953-54, 1954-55, 1955-56, 1956-57, 1957-58, 1958-59.

JUBANY NAVAL BASE

Position: Lat. 62° 14' S., long. 58° 38' W.

Situation: South coast of Potter Inlet on 25 de Mayo Island.

Accessibility: By sea and air (seaplanes).

Date of Installation: November 21, 1953.

Periods when it has been functioning: Campaigns 1952-53, 1955-56, 1956-57, 1957-58, 1959-60, 1960-61.

CAPITAN COBBETT NAVAL BASE

Position: Lat. 64° 10' S., long. 60° 57' W.

Situation: Spring Head, Brialmont Inlet.

Accessibility: By sea.

Date of Installation: January 23, 1954.

Periods in which it has been functioning: Campaigns of 1954-55, 1955-56, 1956-57, 1957-58.

All three of the above bases comprise a "Lamadrid" type of house

SIR DOUGLAS MAWSON

Lady Mawson's Life of her late husband will be published in London shortly. The Australian Prime Minister, Mr. Menzies, has written a foreword.

Dr. A. Grenfell Price has completed the editing of the Mawson papers, dealing with the British, Australian and New Zealand Antarctic Research Expedition (BANZARE) of 1929-30 and 1930-31. The papers will be published by the end of this year.

MAWSON STAMP

A new 5d. Australian Antarctic Territory stamp, commemorating the 50th anniversary of the 1911-14 Australasian Antarctic Expedition, will be issued on October 8.

The design will be based on a hitherto unpublished portrait of the late Sir Douglas Mawson, who was leader of the expedition. The stamp will be grey-green in colour.

The stamp will be available at post offices for about three weeks. Thereafter it will remain current for a limited period for use in the Australian Antarctic Territory.

RE-UNION

In Sydney on June 30 six survivors of Mawson's 26-strong 1911 Antarctic expedition gathered for a jubilee re-union. All aged between 70 and 75, they were:

Captain M. H. Moyes (Meteorologist).

Andrew Watson (geologist).

George Dovers (surveyor).

Dr. John Hunter (biologist).

Walter Hannam (radio operator).

Captain F. Hurley (photographer).

(two rooms and bath), and carry supplies for three men for three months. Observations which may be carried out are meteorological, oceanographic and biological.

News from the Sub-Antarctic

MARION ISLAND

(South Africa)

The men destined for Marion this year decided that — apart from all those birds and sea-elephants — they wanted another inhabitant for the island. They asked for permission and after long searching they laid their hands on a small dog. Certainly he is not exactly a beautiful specimen, but he is full of life and naughty tricks. On March 8th they had a special roast meal and about half past eight in the evening "Oubaas" was duly "christened".

A bottle that had been thrown into the sea during December, 1957, near Marion Island was picked up in September, 1959, near Sandy Cape, Tasmania.

The men at Marion Island reported in April that they were keeping well, also the dog Oubaas, 48 fowls and 23 sheep. A regatta on Lake Gentoo came to a quick end when one of the rafts overturned in the ice-cold water.

Already during April the temperature had fallen below freezing point and occasionally some snow fell. For most of the men this was the first time that they had been able to build a snowman (or snowgirls?) and throw snowballs at each other. The swamps, however, claimed some victims among the "snow soldiers" trying to escape from the battle.

There is plenty of fish to be caught in the sea but from a true fisherman's point of view it is not worth while catching them as they bite too easily.

One of the men had a tooth temporarily stopped, when the gold filling of one of his front teeth had fallen out.

KERGUELEN

(France)

This interesting description of life on les Iles Kerguelen as observed by the crew of the cutter "Mischief" first appeared in an article in the "Times".

"We now made sail for Morbihan Bay, at the extreme south-east of Kerguelen, where the French have a base and where we received the warmest of welcomes from the leader, M. Heurgon, and his men. We shared all their meals — and what meals! — and when we left, four days later, they loaded our boat with provisions and with ten gallons of wine.

"There are 67 men, 15 of whom are scientists. Their living quarters have central heating with hot and cold water. Under frames and by intensive cultivation they produce lettuces, tomatoes, radish and potatoes. They rear several hundred sheep on the neighbouring islands and have a farm, with several cows, pigs, and plenty of hens and ducks; so these Frenchmen live on fresh food, and live amazingly well. They have trucks, jeeps, weasels, a motor-boat, two L.T.C's, and repair workshops for maintenance purposes. The project of building an aerodrome (Kerguelen is mid-way on the shortest air route between South Africa and Australia) has been shelved for the present, but the question of setting up a hydro-electric plant is under consideration. In the vicinity of the base a small private company is exploiting for their oil the sea-elephants which are slaughtered on the near-by coast and hauled in by tractors. The killing rate is fixed at 2,000 per year.

"Above all, the base is a meteorological and scientific station, and we were really impressed by the achievements of this distant French outpost, as well as by its ability to support itself."

Last year 311 blue whales were caught by Japanese whalers off the Courbet Peninsula, Kerguelen. This represents no less than 25.3 per cent. of the total blue whale kill during the Antarctic season, says T.A.A.F.

MACQUARIE ISLAND (Australia)

The highlight of May was Milne's scientific survey of the populace to find the perfect male specimen. An interesting sidelight on this survey is the increased attention paid to diet; everyone has modified his eating habits even to the extent of starvation in an effort to remain ineligible for the "200 and Over Club".

Two little pigs that used to scamper playfully around the camp have now fulfilled their duty to the expedition and have provided some very succulent fresh pork chops. A hunting safari to North Head added lamb cutlets to our menu.

Reid and McNally are making a very worthwhile contribution to stemming the rabbit menace and have a great stack of excellent quality skins to show for their efforts.

Watson delivered a unique and interesting lecture on Australian folk music supported by a "choral recital" self-accompanied on the concertina!

The award for intrepidity this month goes to Dodd, for painting the Dynes anemometer tower under gale conditions.

June: the month when the experts say that our morale should be at its lowest ebb. It is at an all-time high!

A week of sub-freezing conditions have justified the use of such code groups as Yafzo, Yagob and Yabgo in cables home. Other words not found in the code sheets were justified when emergency toilet facilities had to be introduced and morning ablutions conducted with a handful of snow. Edward evolved a system for defrosting the frozen tanks.

Milne's lecture on seismology occurred during this freeze-up, and furs, woollies and blankets were the order of dress for the evening. Merrony gave a most enlightening talk on Rhodesia, and Thomas was delighted with the response to his lecture on "the raising of puppies in an environment conducive to a psychologically healthy and uninhibited life."

In June, snow fell on 14 days, the maximum wind speed was 85 m.p.h. and there was practically no sun.

During July skiing enthusiasts had several days of good skiing including a picnic party to the plateau, where each in turn demonstrated some dramatic falls.

Watson, on a field trip to Bauer Bay, discovered a lifebuoy on the beach marked "Eastwind U.S. Coast Guard".

Wednesday nights' lectures continued, the topics being the secrets of the role of blood in the body, automotive electricity and the weather man's tools of trade.

Dodd is battling with the teething troubles of a new tide gauge designed and built on the station. The new store is functional and the Met. boys are up to their necks in painting and overhaul of buildings and equipment.

McNally and Merrony conducted a short field trip to band four wandering albatross chicks.

Radio conditions have been seriously impaired by severe magnetic disturbances, causing difficulty in clearing traffic. Radio Australia was conspicuous by its absence throughout May and June and party of July.

Auroras have made good their reputation with some brilliant and very colourful displays.

The weather for the month was generally quite pleasant, mainly due to the lack of wind. The lowest temperature was eleven below, with ground temperatures somewhat lower. It snowed on thirteen days

CAMPBELL ISLAND (New Zealand)

The new team to go down at the annual servicing has now been selected. It consists of Colin Clark, Leader, who previously served in a similar capacity at Raoul Island; L. P. Rush, Junior Ionosphere Observer; G. W. Voigt, Mechanic-Handyman; R. B. Goffin, Meteorological Observer.

The remainder of the team (with the exception of a cook still to be selected) will proceed to the Island on the U.S.S. "Vance" in mid-September. These members are Ian Fisher, Senior Ionosphere Observer; Ian Johnson, Radio Technician; K. P. Rennell, and D. J. Polson, Meteorological Observers. Fisher and Johnson had previously served on Campbell and Rennell on Raoul. Of the Meteorological Observers on the Island, E. D. de St. Croix will return to N.Z. on the servicing ship whilst L. S. Cooper and J. R. Lamb will stay on the Island until the American Deep-Freeze aircraft stop flying at the end of the summer, when they will be repatriated on one of the American picket ships.

Work on the Island has proceeded smoothly, and there has been nothing unusual to report unless it be the near swamping on several occasions of the new launch by sea-elephants which decided they would climb aboard for a closer look!

CAMPBELL ISLAND EXPEDITION, 1961

This expedition was sponsored by the Department of Scientific and Industrial Research Botany and Animal Ecology Division and spent from January 1-30 on Campbell Island. It was housed at the old Meteorological camp in the Tucker Cover

and the average wind speed was nine knots with a maximum of forty-three.

Valley. Members were transported south from Lyttelton on H.M.N.Z.S. "Endeavour" and returned to Dunedin on the U.S.S. "Wilhoite". While on the Island much assistance was given by the members of the Meteorological Station. Thanks to the American and New Zealand Navies, seven men were kept in the field for a month at small cost to the Division.

A vegetation map of the Island was made. As full a collection as possible was made of native flowering plants and weeds; several anomalous records were cleared up, new records were made, and some species previously considered rare were found to be relatively common. A bulletin on the vegetation and flora of Campbell Island will be prepared.

Grasses were collected, and experience of them in the field threw light on problems difficult to solve with herbarium specimens. Attention was given to the problem of scrub-tussock interaction, and growth-ring counts made on the species of *Dracophyllum*. Special attention was given to the subantarctic species of *Ranunculus*.

The first studies were made of inter-tidal ecology, and a large collection of sea-weeds made.

Fish collections, bird observations, and invertebrate collecting were carried out.

Special attention was given to a sheep census, studies of sheep behaviour, parasites, general condition of wool, sheep food, etc., and a paper is being written on these matters. Observations were also made of birds and rats.

Specimens of peat were brought back for study of soil micro-organisms. A large collection of living plants was obtained, and some specimens for plastic models collected for the Canterbury Museum.

[For the above information we are indebted to the New Zealand D.S.I.R. Newsletter.]

DUNCAN CARSE ON SOUTH GEORGIA

Explorer Duncan Carse's decision to live alone on South Georgia for eighteen months has been mentioned in "Antarctica" before (vol. 2, no. 8, December 1960).

The following report, published originally in the Johannesburg "Star", reaches us via "Polar Post", the journal of the Polar Postal History Society of Great Britain. The date is not given.

"Greta Garbo made the phrase 'I want to be alone' famous. But she never was as serious about it as 47-year-old Duncan Carse whose prime reason it is for leaving Cape Town today for 18 months' personal 'stock-taking' on a gaunt Antarctic island with only birds, seals and penguins to disturb him. He has rented a square mile of broken rock, crags and tufted grass on the island of South Georgia, 2,500 miles south-west of Cape Point, for 1/- a year for 10 years.

"His nearest neighbours will be 20 miles away over a 9,600 ft. range, but he hopes to be lucky enough not to see them. He is going to this eyrie without any form of communication with the outside world, although he has two sledges and three fibre-glass dinghies. 'I feel it is time to take stock of myself and our community. I don't feel at ease in the community. That presumably means I am at fault, but I need time and distance to get a perspective,' he said.

"His base will be in Undine south harbour on the island's south-west side and he will have few distractions in a climate of near-freezing temperatures, frequent and violent gales, persistent cloud and snow at sea-level for half the year. He will be taken to south Undine Harbour in the British survey ship 'Owen', which sails today, but he has made no arrangements to be picked up. He plans to go overland or by boat

round the island to the whaling stations. 'I shall miss women, wines, good food, music, the theatre and the cinema in that order — but not conversation. I do not expect to be lonely,' he said."

ERRANT BOTTLE

A bottle dropped into the sea from the "Shackleton" at South Georgia (approximately 54° S., 35° W.) on New Year's Day, 1960, was found at Milnerton near Cape Town on April 15, 1961. This bottle had experienced a resultant northerly drift of about 20 degrees of latitude during its general eastward journey. This is very unusual and indicates that the general circulation probably had a marked southerly component during that period.

A LOT OF ICE

Among the facts disclosed at the Pacific Science Congress is the discovery of a huge channel between the Ross Sea and the Amundsen Sea. It was previously believed that an under-ice channel linked the Ross Ice Shelf and the Weddell Sea, but this has been doubted for some time.

The "new" channel is so deep that soundings in some places have shown bedrock 7500ft. below sea level. Overlaying the rift is many thousands of feet of ice.

Another paper, based on the latest seismic surveys, indicated that the average thickness of ice over the Antarctic continent is about 6500ft. On the ice shelves the average thickness is 1300ft.

Working from soundings and recent surveys, Dr. Edward Thiel has shown that Antarctica is covered with about 5,000,000 cubic miles of ice — including the ice shelves.

The total of this ice is enough to raise the sea level all over the world by about 180ft., if it were all suddenly melted.

Another result of Dr. Thiel's calculations is that nearly 90 per cent. of the world's ice is in Antarctica.

BOOKSHELF

ANTARCTIC WORLD: John E. Euler. Abelard-Schuman, London, New York, Toronto. 222 pages ill., publ. price \$3.75.

Mr. Euler is an American teacher and writer whose earlier book "Arctic World" aroused considerable interest. His new book is an All About Antarctica for the layman. So we have two chapters on "The Face of Antarctica", an admirable popularisation with adequate explanations of such phenomena as katabatic winds and the Antarctic convergence: seven chapters giving us the story of Antarctic exploration from Cook to Fuchs; highlighting the dramatic episodes: and single chapters on whaling, penguins, life in the Antarctic and the problem of territorial claims.

The writing throughout is lively, almost colloquial. Sometimes there is a lack of proportion: Shackleton's "Endurance" voyage gets 8 pages while his remarkable 1907-09 expedition gets 28 lines. And Mr. Euler has not always made certain of his facts. It is surprising to be told that the "Aurora" after landing the Ross Sea party in 1915 returned to Australia for the first winter: that Scott in 1902-03 made "only the feeblest efforts . . . in the direction of the pole", and that "each successive" (Byrd) camp was built on top of the previous one."

It is pleasing to note that still another American writer is prepared to admit that the Englishman Bransfield may have been the first explorer to sight the Antarctic Continent.

Mr. Euler's book which has good illustrations and, for its purpose, useful maps and diagrams, may not satisfy the critical historian, but the ordinary reader will surely find it quite a fascinating compendium.

Bedrock Geology of Antarctica: Alfred R. Taylor: U.S. Antarctic Projects Officer.

This is the first of two brief and non-technical geological studies to be published by the United States Antarctic Projects Officer. LTJG. Taylor's 20-page booklet is primarily a summary of the bedrock geology drawn from a review of previously published reports and from "other surveys and personal reports from geologists who are currently engaged in Antarctic research". After a very brief summary of the Antarctic expeditions in which geological reconnaissance has been carried out, the writer deals with the geology of each of the main areas in turn, with addenda on the structural relationship of the two sections, East and West Antarctica, and on mineral and fuel resources. There is a bibliography, a folding map showing the approximate areas of exposed bedrock, and six photographs.

PUBLISHED IN NEW ZEALAND
Sketch History of Ichthyological Investigations of the Ross Sea: R. G. Miller. N.Z. Science Review, 19:1, 1961.

An Investigation of the Fine Fraction of Some Rock and Soil Materials from Antarctica: G. G. C. Claridge: in N.Z. Jnl. Science 4:3, September 1961, 489-492.

Notothenioid Fishes from Cape Hallett and Ross Sea, Antarctica: R. G. Miller: in N.Z. Jnl. Science 4:3, September 1961, 664-668.

A new-Australian from Russia is manufacturing in Brisbane a "sandwich" building material so light that one man can carry a panel 50 feet long. The Australian Government is to use it in the Antarctic. It consists of "foam-plastic filling between two thin slices" of sheet aluminium.

ANTARCTIC TREATY CONFERENCE

Sixty-four representatives of the twelve "Antarctic" nations met at Parliament House, Canberra, from July 10 to July 24 for the first consultative conference under the Antarctic Treaty which was signed in Washington on December 1, 1959.

The 12 nations are Argentina, Australia, Belgium, Chile, France, Japan, New Zealand, Norway, South Africa, the Soviet Union, the United States, and the United Kingdom.

The Treaty provides for freedom of access of scientific expeditions to any part of the continent, for interchange of scientific information obtained and for the exchange of scientific personnel.

Under its terms no military activities may be carried on there.

Existing territorial claims are frozen and future activities of any country cannot affect the status quo as it existed at the date of the signing of the Treaty.

It will remain in force for a minimum period of about 34 years.

EXCHANGE OF INFORMATION

The Canberra Conference hammered out a scheme for Governments to notify each other of plans for Antarctic expeditions and stations.

New Zealand moved for the exchange of information, but did not set out the manner in which Governments should exchange this information.

The Russian delegation moved an amendment that the Governments exchange the information "through diplomatic channels."

The conference accepted this.

It was agreed that Governments should furnish the information as early as possible, but before the end of each November. It would include details of:

Any military equipment in Antarctica. Ships, aircraft and other vehicles sent to Antarctica. Dates,

itineraries and routes of expeditions. Bases and subsidiary stations and whether they are for winter or summer operations. Occupations and specialisation of personnel, including military personnel and their arms. Work programmes, including scientific investigation. Transportation facilities and communication equipment.

Delegates said these arrangements for information exchanges would help each country plan its own expeditions and scientific programmes.

NUCLEAR POWER

The limited use of nuclear power as a future source of energy in Antarctica was agreed to.

This is regarded as a long-range precaution to allow for the development of nuclear-powered land trains and sleds.

The United States is anxious to establish a nuclear station for lighting and other power arrangements.

Russia has a nuclear icebreaker in the Arctic which she could switch to Antarctica.

Delegates also agreed to co-operate in combining mail services, and to exchange weather information with each other on a government to government basis.

The information will be passed between the 12 member Governments through their representatives on the World Meteorological Organisation.

The exchanges will not include daily weather reports, but the interpretation of weather patterns from long-range research.

HISTORICAL SITES

An unexpected disagreement occurred over the preservation of historical sites.

Argentina opposed the "indiscriminate erection" of memorials in the absence of precise definition.

The Argentinian delegation was concerned that the Antarctic might be dotted with cairns and plaques marking landing places, camps and other sites of historical interest, as this could lead to sovereignty claims when the treaty was reviewed in 30 years.

With the term "sites" altered to "tombs, monuments and buildings" the resolution was adopted.

The Conference had before it a report on how New Zealand Antarctic research workers had rehabilitated the huts built by Shackleton at Cape Royds in 1907-08 and by Scott at Cape Evans in 1911-12.

WILD LIFE

A resolution aimed at conserving living resources in Antarctica was adopted. The resolution calls for the protection of these resources "from uncontrolled destruction or interference by man."

Animals and plants indigenous to Antarctica shall not be unnecessarily disturbed and shall not be destroyed or injured.

Alien forms of flora and fauna should not be deliberately introduced, except when rigidly controlled having regard to their chance of survival, capacity of reproduction and utilisation by man.

Regulations aimed at preventing serious harm to wild life include the disallowing of dogs to run free, the use of firearms close to breeding colonies of birds and seals, disturbance of bird and seal colonies by persistent attention from people on foot and the discharge of oil from ships in a manner harmful to birds and animals.

Another rule will discourage helicopters from flying low over places where birds congregate in large flocks.

The rules aim at making the Antarctic a reserve rather than a sanctuary, and at preserving the natural balance of wild life by preventing uncontrolled destruction.

They will not bar legitimate commercial activities, or the taking or killing of animals for food or scientific and zoological purposes.

NO SECRETARIAT

The conference decided against establishing an expensive permanent secretariat, and agreed to a five-point plan governing administrative arrangements between consultative meetings.

Member Governments shall consult through diplomatic channels on matters of common interest relating to the treaty area.

Ratification of consultative meetings recommendations by member Governments will be communicated to each other through diplomatic channels.

The United States, the depositary Government designated in the treaty, shall inform all signatory governments through an office set up in Washington when any recommendation is ratified.

The plan overcomes objections by Argentina and Chile that a central co-ordinating office would give a powerful advantage to the country where it was established and that a permanent secretariat was unnecessary.

Australia will handle all administrative arrangements arising from the current meeting, and Argentina will take over the administrative role at the next conference.

RESULTS

More than 20 resolutions were carried, nearly all unanimously.

The U.K. High Commissioner said that his Government would introduce a contentious subject at the next conference, jurisdiction over persons in the Antarctic.

"We believe that Governments must not long delay the drawing up of a formula for jurisdiction," he said.

HAPPY ENDING

At the closing session delegates expressed their satisfaction at the mutual understanding which had been achieved at the conference.

The Soviet Ambassador (Mr. Ivan Kurdiukov) quoted an old Russian proverb to illustrate the point:

"Don't break the tie of friendship, because, however efficiently you may bind it later, there will still remain a knot."

Mr. Kurdiukov added: "There were no knots left after this meeting."

Delegates said it was one of the most harmonious international conferences ever held. The delegates unanimously agreed to recommend to their Governments the acceptance of an offer by Argentina to hold the next meeting in Buenos Aires on a date to be agreed upon.

GREETINGS

The New Zealand wintering-over party at Scott Base received this message on July 28 from the Antarctic Treaty Consultative Meeting in Canberra:

"Greetings from Canberra to all who are wintering in the Antarctic area. Your work still involves great persistence, courage and self-sacrifice in the best traditions of Antarctic exploration. We hope that the practical measures we are recommending unanimously to our Governments will help all expeditions and stations by confirming and extending co-operation in the peaceful Antarctic among the twelve nations here represented."

S.C.A.R. Conference

The 5th meeting of the Special Committee on Antarctic Research will open in Wellington on October 9. SCAR meets annually to organise future scientific research in the Antarctic and to co-ordinate the work of the different countries. The 1960 meeting was in Cambridge, England.

It is expected that there will be present about 70 delegates and advisers from Argentina (2), Australia (6), Chile (2), France (7), Japan (3), Norway (2), New Zealand (15), South Africa (4), the United Kingdom (4), the United States (12), and the Soviet Union (4), as well as about 8 men representing such specialised organisations as the International Geographical Union and the Special Committee on Oceanographical Research.

An informal welcome will be tendered to visiting delegates and advisers on Sunday, October 8, in the Conference Room, Easterfield Building, Victoria University of Wellington, which will be the venue of the SCAR meeting. The meeting itself will commence on Monday, October 9. At 4.15 on that day there will be a Mayoral Reception at the Council Chamber, Town Hall, and in the evening a reception by the Royal Society of New Zealand.

On the evening of October 11 the New Zealand Government will tender a reception in the Student Union Building, where after dinner a Maori entertainment will be presented. On Friday, October 13, at 8 p.m., under the auspices of the New Zealand Antarctic Society, a lecture will be given in the Lecture Hall by M. Paul-Emile Victor, who will speak on "French Polar Expeditions". This will be followed by a film, "The Antarctic".

Among the distinguished men attending the Conference will be:

Ing-Gen. G. R. Laclavere, President of S.C.A.R.

Prof. K. E. Bullen, of Sydney University, Vice-President. (Professor Bullen was educated at Auckland and Cambridge, and was at one time lecturer in Mathematics at the Auckland University.)

Rear-Admiral Rodolfo N. M. Panzarini, Director of the Argentine Antarctic Institute.

M. Paul-Emile Victor, Director of Expeditions Polaires Francaises and a polar explorer since 1934.

Dr. T. Nagata, Professor of Geophysics at the University of Tokyo, and twice leader of Japanese Antarctic expeditions.

Dr. Tore Gjelsvik, Director of Norsk Polarinstitut.

Dr. G. de Q. Robin, Director of the Scott Polar Research Institute, Cambridge. Dr. Robin was born in Melbourne. He was a member of the Norwegian British Swedish Antarctic Expedition 1949-52.

Sir Vivian Fuchs, Leader of the Commonwealth Trans-Antarctic Expedition, 1957-58.

Dr. Harry Wexler, Director of Research, United States Weather Bureau, who has been three times in the Antarctic as Chief Scientist of the U.S. I.G.Y. programme.

Dr. Paul A. Siple, Scientific Advisor, United States Army Research Office. Dr. Siple first visited the Antarctic with Admiral Byrd in 1928-30 as a Boy Scout, was Leader at West Base in 1939-41 and Scientific Leader at the Pole Station in 1956-57.

Dr. Thomas O. Jones, Director United States Antarctic Research Programme.

ANTARCTIC SYMPOSIUM AT SCIENCE CONGRESS

During the Tenth Pacific Science Congress held at Honolulu from August 21 to September 6, a special feature was the **Matthew Fontaine Maury Memorial Symposium for Antarctic Research**. Captain Maury was an American oceanographer who last century fought untiringly for international scientific co-operation in Antarctic research.

At the Symposium 22 papers were presented, covering a wide range of topics, by scientists from Argentina (4), Australia (1), Japan (1), New Zealand (2), the United Kingdom (2), the United States (11), and the U.S.S.R. (3). The New Zealanders contributing were D. M. Garner, "**New Zealand Contributions to a Study of the Physical Oceanography of the Ross Sea Sector of the Southern Ocean**" (read by Brodie and Burling), and Ian C. McKellar (with Richard P. Goldthwait, U.S.A.), "**New Zealand Glaciology**".

Papers of special Ross Dependency interest were by S. B. Treves, U.S.A., "The Geology of Cape Evans and Cape Royds, Ross Island, Antarctica", and Robert L. Nichols, U.S.A., "Multiple Glaciation in the Wright Valley, McMurdo Sound, Antarctica".

Air Route Talks

Possibility of a South Polar air route linking Australia, South America, North America and Europe was discussed at a conference in Canberra between Chilean delegates to the Antarctic conference and the permanent head of the External Affairs Department.

Aviation experts say that the South Polar route would be as short as existing routes between Melbourne and New York and Europe and would give direct access to South American markets.

WHALING AGREEMENT

The Dutch Ministry of Agriculture and Fisheries announced on August 1 that an agreement had been reached between four of the major countries engaged in Antarctic whaling.

Japan, Norway, Britain and Holland have agreed on "basic" shares for the 1962-63 season.

These will give Japan the largest allocation of 33 per cent., Norway 32 per cent., Britain 9 per cent. and Holland 6 per cent. of the total.

The remaining 20 per cent. goes to the Soviet Union under an earlier agreement.

The news has been welcomed by whaling industry sources in Britain, but they point out that there are still further questions to be settled before the Antarctic whaling industry — the major source of whale oil for world markets — finally resolves the problems that have beset it over recent years.

Past failures to agree on the division of the total catch allowed under the International Whaling Convention led to the concentration of more whale catchers than was necessary in the Antarctic waters as different countries vied with each other to win the greatest return before the total limit was reached.

This finally led to the withdrawal of Holland and Norway from the convention, claiming that they were unable to afford this annual costly race.

As a result, the convention suspended its "ceiling" on the total catch for two years, with the result that catches have increased despite serious warnings that whale numbers were declining.

Self-imposed, voluntary limitations by all the whaling countries have not entirely removed the danger, and this is one of the problems that will have to be faced in the future.

For the present, The Hague announcement will have no effect on catching in this season's Antarctic operations. Each country will be expected to observe its unilaterally declared quotas, in operation before the Hague announcement.

BYRD MEMORIAL

The Richard E. Byrd Fellowship reports that arrangements are well advanced for the erection of the Memorial on Mount Victoria, Wellington, New Zealand.

Dedication Day is planned for March 11 next and a large-scale ceremony is being organised. Most of the cost is already covered but contributions will be welcomed from any others who desire to support the project.

Any who wish to help in this way, or to join the Fellowship, and who would like further information are asked to contact—

The Secretary, Richard E. Byrd Fellowship, 24 Trelissick Crescent, Wellington. Phone 36-635.

FAR FLIER

A giant petrel, not yet a year old, has flown 6,000 miles from Macquarie Island to Buenos Aires, Argentina.

It has been identified by an aluminium band placed around its leg as a chicken in the nest at Macquarie Island on January 8 this year.

Giant petrels, with a wingspread of six feet, are the largest members of the muttonbird family and resemble the smaller albatross known as the Mollyhawk.

About 9,000 petrels have been banded — 8,000 of them at Macquarie Island, and the other 1,000 in deeper Antarctic regions.

So far 120 birds have been recovered, mainly from the east coast of Australia, various parts of the southern coast and Fremantle, the New Zealand coast and as far afield as Norfolk Island, Fiji, Tahiti, South-West Africa, and the east and west coasts of South America.

HISTORIC FILM

Film recovered from under 10 feet of half-melted ice on the ship "Endurance" during the Shackleton 1914-16 Antarctic Expedition, was shown to an enthusiastic audience at the Wallace Theatre at Sydney University on June 11.

The film, which was part of a 55-minute 16 mm. black and white documentary of the expedition, was taken by veteran Australian photographer, Captain Frank Hurley.

The film, titled "Endurance", with commentary by Commander F. A. Worsley, an expedition member, was shown as part of the Eighth Sydney Film Festival.

"Endurance" was trapped on January 18, crushed by an ice floe in the Weddell Sea, and had to be abandoned on October 27, 1915.

Captain Hurley returned to the ship and, diving through the deck which had been cracked by the ice, he recovered three of four sealed cases of film from the darkroom.

GLACIER ICE-BOX

An Argentine doctor and rancher, George Aversano, has constructed a refrigerated chamber 36 feet under the La Monja glacier, in the South Orkney Islands where there is an Argentine Navy weather station. Dr. Aversano spent a year at the station. After the laborious process of excavating the chamber, he stored quarters of beef in it, and took temperature readings at hourly intervals. Beef taken back to Argentina on Navy transport was found to be fit for consumption. As it is practicable to enter these waters throughout the year — with icebreaker help in the winter months — the doctor believes that such natural refrigerators in the Antarctic may be of real commercial value before many years pass.

"In this age of space flights," he says, "it is silly to talk about difficulties in reaching Antarctica."

WEATHER RECORDS

High altitude meteorological rockets are to be used for the first time in Antarctica during the coming operational season, by the Americans.

It is expected that if the rockets are successful this season they will replace the weather balloons at present in use in Antarctica.

The weather rocket is a metal cylinder a little less than 3 in. in diameter which has small fins at the bottom and stands about three feet high.

The rocket has a standard engine of the type originally designed for firing from the wing of an aircraft, but modified for meteorological use. It will be launched from a 3-in. steel pipe mounted on a tripod.

The rocket is capable of soaring to a height of 35,000 ft. when it will eject its instrument payload and float back to earth, transmitting information to a ground receiving station. Supporting the payload as it floats back down is a metallic parachute which can be tracked by radar.

It is unlikely that the rockets will be in operation in Antarctica until late this season as the consignment of less than 50 being taken by ship is not due at the base in McMurdo Sound until January. The rockets will be fired from the Ross Island base only.

ERRATA

"Antarctic", Vol. 2, No. 10, June 1961, p. 404, "South Pole Veteran": for "left" read "led".

Vol. 2, No. 9, March 1961, p. 353, sketch map. "Butter Point" is wrongly shown as south of Blue Glacier. It is in fact north of the Bowers Piedmont Glacier some 15 miles further north.

THAT WONDER DRUG!

Dr. Albert Crary, Chief Scientist of the United States Antarctic Research Program, is one of those who think that the Antarctic may hold a treasure of valuable drugs waiting to be tapped.

In a talk to the headquarters staff of the National Science Foundation, he said the possibility that the Antarctic holds an antibiotic treasure is suggested by the following:

"We have found that animals in the Antarctic are relatively free of bacteria, and it has been suggested that this may be due to the possible presence of antibiotics in algae plants there. This should be followed up."

WHY THEY GO

Erving Volbrecht, an American meteorologist, visited the Australian stations Mawson and Davis last summer, travelling aboard the "Magga Dan".

Mr. Volbrecht made a special point to question the Australians about why they go to such a barren spot as Antarctica.

He found they had two major motives — "good pay" and "to get away from women".

Among several minor motives, some wanted lots of skiing, others who were older said their children were grown up now and they wanted to complete long-standing research projects, or to get away and think.

Some "just wanted to go".

The officer commanding U.S. Navy Antarctic advance headquarters at Christchurch said recently that scientists felt they were getting "only so much" out of Antarctica, because their major investigations were limited to six months. Now they were wanting to find out what was going on during the rest of the year.

Better aircraft, better ships and greater knowledge had already contributed to a lengthening of the operational season.

ANTARCTIC ANAESTHESIA

It is reported in the British Medical Journal that convenient portable apparatus has been constructed for the administration of a new anaesthetic, halothane, under Antarctic conditions. This apparatus requires no protection from extremes of temperature other than prevention of condensation within the vaporizer. Dr. J. F. Nunn, of the Royal College of Surgeons, says that an intelligent layman could be instructed to administer the anaesthetic under an operating doctor's direction. The operation could be performed in a hut, caboose or possibly a tent with open heating, where the temperature could be raised to at least 64° F.

THESE DANGEROUS SCIENTISTS

Scientists could despoil the Antarctic continent in the process of investigating it, said Dr. Robert Cushman Murphy, of the American Museum of Natural History in New York.

He was briefing a party of about 100 scientists about to leave for the Antarctic.

"I need hardly remind you that in almost every other land area he (man) has transformed primordial conditions to such an extent that we have only a highly imperfect idea of what they once were," Dr. Murphy said.

Noting that scientists were now going to the Antarctic in ever-increasing numbers, he urged that expeditions take care not to upset the natural balance of life in the region.

He deplored as childish the enmity that skua gulls aroused in some visitors because the gulls preyed on penguin chicks and eggs. The relationship between penguin and skua presumably had endured for millions of years, he said.

SOCIETY NEWS

FULL COLOUR CALENDAR FOR 1962

ANTARCTIC CALENDARS

Inspired by the success of the Antarctic Calendar venture of last year, the Society Council approved the project of an issue for 1962. Accordingly, after much investigation by publicity officer Mr. W. Hopper, a calendar of four-colour plates, at three months to an opening, will be produced. The plates depict striking and topical Antarctic scenes. The issue will be double that of last year's publication and will be available by mid-October. An order form will accompany this issue of "Antarctic". Prompt delivery can be assured. The calendars will also be on sale at Scott Base and possibly at certain stationers. Price, including envelopes, 6/6.

JUNIOR MEMBERSHIP

Since the Rally in Wellington in October 1960, the question of Junior Membership has been before the Society. This was the subject of a report by a sub-committee of Messrs. Helm, Wilson and Dixon to Council, which report has now been sent to branches for comment. It is certain that provision for Junior Membership at a nominal subscription with a Bulletin available to the school concerned, will eventuate.

WELLINGTON BRANCH

During Mid-Winter Week a very fine Antarctic window display was arranged in a city store. This was arranged by the Wellington Branch of the Society with the co-operation of Antarctic Division D.S.I.R., the American Embassy, Victoria University of Wellington, the Dominion Museum, and the Turnbull Library. This display, which depicted salient

aspects of past and present Polar endeavour, created great interest.

CHRISTCHURCH BRANCH

This branch will welcome Mr. I. H. M. Williams to the post of Secretary-Treasurer. With reluctance the branch felt it should abandon its plans for a rally during September of this year, but is currently participating in an Antarctic Week arranged by the Christchurch Public Relations Office.

DUNEDIN BRANCH

A veteran of the N.Z. Component of the Trans-Antarctic Expedition, Mr. M. R. Ellis has recently been elected president of the Dunedin Branch. On August 16 last the branch was lectured by Dr. Trevor Hatherton, his subject being "The Scientific Results of the International Geophysical Year".

DO NOT MISS THIS

The New Zealand Antarctic Society is most gratified to announce that on the evening of October 13 at the Lecture Hall, Easterfield Building, Victoria University of Wellington, under the auspices of the Society, M. Paul-Emile Victor will deliver an address on the subject:

French Polar Expeditions.

No man is more highly qualified to speak on this subject, as M. Victor is the Director of Expeditions Antartiques Francaises, and has been intimately associated with Polar exploration, both Arctic and Antarctic, for over twenty years.

M. Victor is an excellent English speaker, and has a keen sense of humour. His address will be followed by the screening of a film, "Antarctica".

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.

BRANCH SECRETARIES

Wellington: Miss H. R. Burr, Box 2100, Wellington.

Canterbury: J. H. M. Williams, 85 Waimea Terrace, Ch'ch.

Dunedin: J. H. McGhie, Box 34, Dunedin.

"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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Of our predecessor, the "ANTARCTIC NEWS BULLETIN", only the following numbers are available:

5-6, 8-10, 12-20.

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