

ANTARCTIC

A NEWS BULLETIN

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NEW ZEALAND ANTARCTIC SOCIETY



IS MY DAY DONE?

Scott Base is one of the few Antarctic stations where the husky still has his part to play.

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"ANTARCTIC"

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NEW ZEALAND FIELD PARTIES SET OUT FROM SCOTT BASE

After a two-month lie-up period during midwinter the dog-teams were given a training run on July 22, and despite cold August temperatures (as low as -40° to -50° C) several men made short ledge journeys.

The final August sortie with the dogs was on the 27th, when Bartlett, Porter, Ternahan and Greeks crossed the sea-ice to Cape Royds. Travelling was good as far as Cape Evans, but the final six miles took nearly two hours owing to the rough nature of the fresh sea-ice, which was rafted into stacks and crossed by open leads of water. Two days later the party returned to Scott Base, in bleak, windy weather, in six hours. The dogs were fitter, the gear and equipment had been tested and the old huts at Cape Evans and Cape Royds, restored by a New Zealand team in 1960-61, were checked for damage, all at the cost of a few frost-bitten noses and fingers.

BASE BATTERED

On September 19, after a long spell of fine weather, Scott Base was subjected to hurricane force winds. The weather during the day had been mainly overcast with snow falling and intermittent winds of up to 20 knots. But in the evening the wind swung swiftly to the south and speeds of over 100 knots were recorded, with a maximum of 112 knots or 130 miles per hour. This is probably the highest wind ever recorded at the base.

Throughout the night little sleep was possible, with the howling of the wind, the rattling of stones and pieces of ice on the roofs, and the shaking of the huts. But examination of the base in the morning revealed nothing worse than the filtering of snow through cracks and the blowing over of various pieces of equipment. The sturdy construction of the base withstood winds which would have caused considerable destruction in New Zealand.

SEASON BEGINS

The 1966-67 season began on October 1, when Mr. R. B. Thomson (Superintendent Antarctic Division) and Colin Clark, the new Leader at Scott Base, flew from Christchurch to McMurdo by U.S. Hercules aircraft. Last year's Leader, Mike Prebble, returned to New Zealand with Mr. Thomson on the 8th, and the other members of the 1966 wintering team returned at intervals, the last member, Bartlett, coming out on November 10.

The next members of the new team to fly in, on October 11, were the new postmaster, D. H. Brown, and the Public Relations Officer, John Murphy, who also filled the position last summer. The remaining members were flown down at intervals up to mid-November.

Field operations from Scott Base, like the extensive American projects, were considerably delayed because of ski-trouble on the U.S. Hercules aircraft used to put down parties at their operational bases. Schedules were perforce greatly modified.

CHANGE OVER

On October 6 Colin M. Clark (Christchurch) officially became leader of Scott Base. At one o'clock the Leader for the past year, Michael Prebble (Eastbourne), lowered the New Zealand flag and Mr. Clark replaced it with another. There was no wind and in the temperature of -35° C. the twelve men who have wintered-over stood about the flag pole. Also at the ceremony was the Antarctic Division, DSIR, Superintendent, Mr. R. B. Thomson, and two members of this summer season's support party.

As Leader at Scott Base Mr. Clark

is an Officer of the Ross Dependency. He is Stipendiary Magistrate, a Justice of the Peace, a Coroner, and for the winter season a Postmaster. These powers are vested in Mr. Clark by the Governor-General of New Zealand who is during his term of office Governor of the Ross Dependency.

EREBUS SCALED AGAIN

An ascent of Mt. Erebus was made on September 29 by a New Zealand party. Erebus, the active volcano which dominates the landscape in the McMurdo Sound area, was climbed by Scott Base Field Assistant Roger Bartlett of Dunedin and Science Technician Ray Vickers of Wellington.

Using a motor toboggan, the party travelled twenty-five miles north from Scott Base across the sea ice to Cape Royds on September 27. When a break in the overcast weather conditions occurred, the motor toboggan was driven to 7,000 feet on the western slopes of Erebus and a high camp pitched. From this camp the pair took six hours to tramp to the summit of the active crater, thus becoming the seventh party to ascend the peak since it was first climbed in 1908 by men from Shackleton's expedition.

The return to the hut at Cape Royds was made the same day, and radio contact established with Scott Base.

BUSY SPRING

This ascent of Mt. Erebus, the third by a New Zealand party, brought to a close what has probably been the busiest spring sledging season since Scott Base was opened ten years ago. Since August 12 dog teams have covered over 130 miles, and reached White Island, Station 81 on the McMurdo Ice Shelf, Cape Evans and Cape Royds, while vehicles covering over 300 miles have visited the Emperor Penguin colony at Cape Crozier, the snow-free valleys of the Koettlitz Glacier on the western side of McMurdo Sound and finally Mt. Erebus.

Scott Base reported on November 1 that more sunshine was recorded

at Scott Base in October than during the same month in any of the past three years. However, the average temperature had remained normal. 9,160 units of solar radiation were recorded, about a hundred more than for the past three Octobers.

The average temperature for the month, -19.8°C ., was only 0.5° warmer than last October. The minimum temperature, -39.6°C ., and the maximum -6.6° were also about the same as October 1965.

On October 28 a 61-knot wind was recorded and on the morning of November 1 gusts were reaching 60 knots. These winds abated during the afternoon to a steady 40 knots, but blowing snow limited visibility to about 20 feet.

On October 25 the sun ceased setting and so began the four months of continuous sunlight.

Twenty men from Scott Base went "over the hill" to McMurdo on November 25 to attend a Thanksgiving Day dinner as guests of the U.S. Navy. The dinner, which included such items as roast Young Tom Turkey and Hawaiian Baked Ham, began at 10 a.m. and continued till two in the afternoon.

R.N.Z.A.F. FLIGHTS

Three flights to the Antarctic will be made by the Royal New Zealand Air Force in January. Hercules aircraft of No. 40 Squadron will be used in conjunction with the U.S. Support Force, and they will carry both men and equipment from Christchurch to McMurdo Sound.

Three similar flights were made last year.

No dates for the flights have been decided yet but it is expected that they will take place in mid-January, phased into the Americans' summer air lift operation.

"ENDEAVOUR"

The New Zealand supply ship H.M.N.Z.S. "Endeavour" is scheduled to leave Lyttelton on her first 1966-67 voyage to McMurdo on December 6. Among those travelling on the vessel are the three Scouts, Goulden, Mort and Hunt. The bulk of the cargo is fuel for McMurdo, but among the general cargo are two new generators and a new "International" tracked vehicle for Scott Base.

BREAK OUT

As previously reported, the ice break-out south-west of Scott Base in February and March was the most extensive reported since 1956, and at least equal in extent to those recorded earlier in the century. Apart from the interference with traffic mentioned above, another adverse effect was the coating of Scott Base with spray, leading to corrosion of wires and insulators, while wave action caused disturbance to the seismic records.

There is a bright side. Ice corings have shown that there is deep water in front of the base, and if the break-outs continue, it is possible that "Endeavour" could be tied up in future directly in front of the base. Already, the fact that "Endeavour" can moor at Winter Quarters Bay instead of at a distant ice-edge, and the use of the road, has speeded up



ICE SCAPES

The exceptional ice break-out of last year destroyed some of the ice-sculpture which has been a feature of the McMurdo Sound landscape. Will the pressure ridges build up again?

transport immensely. Wheeled tractors can be used instead of sledges. Last summer some 30 tons of supplies were unloaded plus ten tons of back-loading, in a period of 24 hours.



Because of the large ice break-out in February 1965 and again in February this year, and the consequent temporary destruction of the old sea-ice route from the southern end of the Gap to Williams Field, the scoria road constructed by the Americans from the Gap to Cosmic Ray and Transmitter sites was extended as far as Scott Base. The last section descends directly above the Scott Base hangar and through the Base aerial farm. With the installation of more sensitive equipment and projected regular mid-winter flights, it is feared that this may raise considerable interference with the New Zealand auroral programme. It is therefore planned to divert the route from Scott Base's "back-yard" to join the compacted-snow road by a traverse across snow to the north-east. The solutions reached on these and other problems have clearly shown the great value

of regular consultations between Scott Base and McMurdo.

At these regular monthly interchanges of ideas, during which future policy is considered, one matter which may well be discussed is the suggested use of Arrival Heights as a rocket-launching site. As the New Zealand Quiet Site is in this area, it is being pointed out that if this comes to pass it will be a quiet site no longer!

HANDS OFF

Considerable objections were raised to the erection on the top of Observation Hill of a flashing beacon, not only on the ground that it detracted from the reverence which has always been paid to this historic spot, where the return of field parties from the south was looked out for and where the cross in memory of Scott's party stands, but also because it was a possible source of interference with the auroral physics programme.

As a result of winter conferences between the Leaders at Scott Base and McMurdo, the beacon was removed.

The pressure ridge system in front of Scott Base, one of the "big" tourist attractions of the Antarctic but practically demolished in the big break-out last year, is now building up again and has already cut off access from Scott Base to the sea ice except in one place.

FIRST TIME?

A strange, new, but distinctly pleasant sound broke upon the ears of the native inhabitants of the Ross Dependency soon after Graham Hancock arrived as senior geologist of the northern field party. Graham is a versatile young man; not only is he an able scientist, he is a more than able swimmer (his brother was the conqueror of Cook Strait) and also an accomplished musician, an A.T.C.L. Packed away somewhere in his kitbag was his violin, and if the Adélies and the skuas enjoy Graham's renditions of favourite violin compositions as much as the staff of Antarctic Division when he was prevailed upon to show his musical paces, they are in for a most unusually happy time.

ON THE SPOT

Photographer Guy Mannering had his camera ready at Cape Royds when the first Adélie penguin of the summer strutted up over the ice to the rookery at 4 p.m. on October 20. Guy had been waiting for days to get this shot. At the height of the mating season in late November about a thousand pairs of birds will be terraced around the hilly coastal rookery. At the time, the ice edge may be some 15 miles from Cape Royds.

PROJECT CHANGES

Owing to the inability of the party-leader designate, Dr. A. Ewart, to travel south this summer, the plan for a three-man scientific party to camp at 8,000 feet on Mt. Erebus to examine the basalt eruptions around the crater zone has been cancelled.

The project previously undertaken by the Dominion Museum has now been shouldered by the Zoology Department of the University of Otago, and will be spear-headed by Dr. Choate. Bruce Willis, who was to have accompanied Dr. Ewart, will now assist Dr. Choate.

NEW GENERATORS

Two generating sets which will give Scott Base a greatly improved supply of electricity—twice the capacity of the existing unit—are to be shipped to the Antarctic on H.M.N.Z.S. "Endeavour" in early December. The sets were given pre-delivery tests at Christchurch by the M.E.D. for the Ministry of Works. Two single-phase alternators from Scotland have been coupled to two diesel engines from the United States. The units are mounted on strong steel bases so that they can easily be moved. Ducts from each generator produce hot air for heating purposes.

COMMEMORATION

A special date-stamp is to be used at the Scott Base Post Office on January 20 to mark the 10th anniversary of the first raising of the flag at the base on January 20, 1957.

NEW STATION AT CAPE BIRD

This summer New Zealand is opening a new summer station in Antarctica. This country's main scientific station, Scott Base, is on the southern coast of Ross Island. There is now a summer station 25 miles north at Cape Bird.

The new station can accommodate six men. It was designed and prefabricated at Scott Base during the winter months by Carpenter Raynor Greeks (Lower Hutt) who assembled it with the aid of field Assistant Roger Bartlett (Warrington). The building was made in sections small enough to fit into the cabin of a helicopter and was airlifted to the site by a United States craft from nearby McMurdo station.

The new station is to be named the Harrison Laboratory after John Harrison, killed in a rescue attempt on Mt. Rolleston in June. It will be used by Scientific Field parties of the New Zealand Antarctic Research Programme during the summer months. Biologists will settle in to study bird and marine life until the summer season ends in February. Since Cape Bird is at the northern tip of Ross Island the party will probably be evacuated by a passing ship. Two biologists who worked at Cape Bird, last summer, living in a tent, found the bird life abundant and well suited to their studies because few people visit the area and disturb the rookeries. It is intended in future years that the station shall be used by geologists and any other scientists who may find the site suited to their purposes.

FOR THE FUTURE?

The "home made" Cape Bird hut may be a more significant innovation than it at first appears. For one thing, it cost about a sixth of what a New Zealand-made building of comparative dimensions would have cost. For another, it provided an interesting and worth-while activity for the skilled tradesmen at Scott Base during the winter months. Then, on the spot in early spring, it was easily transferred to its planned

location before the arrival of the new season's personnel and the consequent heavy call on air transport.

Already, with one hut, that at Cape Royds, outgrowing its usefulness, New Zealand is considering the advisability of setting up a satellite base either in the Dry Valley area (where the previously planned combined U.S.-Japan-New Zealand research project has been shelved) or at some such site as Cape Chocolate, where a small team could spend the winter to undertake research work not previously practicable.

1966-7 PROGRAMME

At the new station the natural balance of bird life in a simple situation is being studied by zoologists from the University of Canterbury.

Penguins and Skua gulls live successfully together in a delicate balance of nature. The Skua is the predator and the penguin, the prey.

Such a simple situation is duplicated only in the Arctic or by a controlled laboratory experiment.

Leading the party is Dr. E. C. Young. He first began a study of this bird life balance in Antarctica during the summer of 1959-60. Last summer, Dr. Young established this project at Cape Bird.

Dr. Young went by helicopter to Cape Bird on November 14 with field assistant photographer John Darby.

"At Cape Bird there are about two hundred pairs of Skua gulls preying on two main Adélie penguin rookeries, each with 20,000 pairs of penguins," said Dr. Young.

"There is considerable disturbance within the penguin rookeries and lost eggs or chicks are taken by the Skuas. Actually the Skua scrounges this food rather than outright preying.

"In mid to late summer, when the surviving chicks are big enough to fend for and defend themselves, the Skuas feed from the sea. It is intended to determine the amount of food each Skua pair takes from the rookery."

STUDENTS

Two zoology students later joined

Dr. Young at Cape Bird. Dennis Proctor is going to study Skua gull mortality and Jim Peterson will investigate hormone circulation in the penguin bloodstream.

It is known that two Skua eggs normally hatch and, like the penguins, only one bird is reared. However, the underlying mechanism of this fact is still unknown. In studying the hormone circulation, it is hoped to correlate this with reproductive behaviour.

This work will involve taking blood samples from selected penguins at weekly intervals. Cell counts will be made and further laboratory study done at the University after summer ends.

FACILITIES

Last summer Dr. Young and a field assistant lived at Cape Bird for a five-month season in a tent. However, this spring members of the wintering-over party at Scott Base built a small summer station at Cape Bird. This base will give improved comfort of living, but, more important, it means that the Canterbury University party can be larger and the scientific programme extended.

BURSARY HOLDERS

Rodney East, who will be studying moulting, disease, injury and healing in the Weddell Seal as a member of the Canterbury unit, is the holder for this summer of the bursary provided by the Canterbury Branch of the New Zealand Antarctic Society. Aged 22, Mr. East was selected from five applicants.

Dennis Proctor, who will be studying the mortality rate of Skua gull chicks, has been awarded a Christchurch Lions Club bursary for Antarctic research.

GUESTS AT SCOTT BASE

Visitors to Scott Base this summer have included Prof. R. H. Clark (Victoria University of Wellington), Prof. M. Gage (University of Canterbury), Dr. J. Gabites (Director, N.Z. Meteorological Service), Mr. K. Seal (National Research Advisory Council), Mr. J. Beagley (retiring Superintendent Geophysics Observatory) and Mr. J. Ward (Director, Physics and Engineering Laboratory).

GOSSIP SESSION

During the winter at Scott Base, one afternoon contact was made by Ian Johnson's ham radio set with two high-latitude stations, one a sub-antarctic station, and the other an Arctic station.

After being on the air for an hour ZL5AA picked up the South Pole station and then a few minutes later contacted the French at Dumont D'Urville. For a quarter of an hour a three-way conversation took place between the French, the Americans and the New Zealanders.

After closing down with the Pole Station and Dumont D'Urville, Scott then made contact with the Australians on Macquarie Island and then later with the U.S. air base Thule in N.W. Greenland which is as far from the North Pole as Scott Base is from the South Pole.

Other polar contacts made by ZL5AA during the winter were:

Plateau Station (U.S.A.).
Byrd Station (U.S.A.).
Mawson (Australia).
Vostok (U.S.S.R.).
Syowa (Japan).
Campbell Island (N.Z.).

The Scott Base station also spoke to many DEW line stations in Northern Alaska, Canada and Greenland.

GERMAN TV FILM

A three-man team of West Germans headed by Dr. W. Buesgen was at McMurdo and Scott Base during November shooting a film for Channel 2 based at Mainz. The 45-minute colour television documentary will be among the first films to be screened when West Germany changes to colour TV next summer.

While living for several days at Scott the team filmed a cross-section of life at the base: dog sledging, scientific work, ice-scapes, snow-collection, even men voting in the New Zealand General Election. They planned to visit Byrd Station, the Pole and the historic huts of the pioneer expeditions.

As Channel 2 is a national channel, said Dr. Buesgen, almost every viewer in West Germany will see the film.

New Zealand Bird Banding in Antarctic Regions

by C. J. R. Robertson*

The New Zealand Bird Banding Scheme, formed in 1951 under the Ornithological Society of New Zealand, and now centred at the Dominion Museum, is responsible for the banding of all birds other than game birds within the New Zealand region. Up to 1966 a total of 190,000 birds of 130 species have been banded. Antarctic banding accounts for 8 per cent. of this total.

The first Subantarctic banding in the New Zealand region was undertaken by J. H. Sorensen on Campbell Island during World War II to supplement a study of the birds of that island. Banding there was not resumed until 1956 and since then has been carried out for the Dominion Museum by members of the Meteorological staff resident on the island. Emphasis has been on the albatrosses and especially the Southern Royal Albatross (*Diomedea e. exulans*).

On the Antarctic continent, banding activities have been centred on the Antarctic Skua (*Stercorarius skua maccormicki*) at Capes Hallett, Royds and Bird by Dominion Museum and Canterbury University personnel. Some penguin banding has been undertaken with U.S.A.R.P. bands and in conjunction with their programme.

Studies in all areas are mainly on distribution and breeding biology. The Antarctic Skua studies have provided significant data on life history while movements within the Ross Sea and one to the Northern Hemisphere are recorded.

On Campbell Island some 10,000 Royal Albatross are now banded with about 7,000 being added in the past three years. This has been entirely due to the enthusiasm and hard work of the Meteorological staff who have produced valuable

and detailed observations on habits and breeding. It is generally assumed at present that this bird does not breed until it is at least eight years old and then usually breeds every second year, because of the 12 months needed to incubate the egg and rear the chick. The oldest known bird is at least 33 years old, having been banded as a breeding adult in 1943. Recoveries of banded Royal Albatross along the coasts of Chile and Argentina have given some guide to their movements away from the breeding colony.

Information about the distribution patterns of many birds is unknown and banding is an essential tool towards a greater understanding of the habits of many birds. Anyone finding a DEAD banded bird should immediately notify the Dominion Museum, Wellington, New Zealand, of the Number (or preferably send the band); the Locality where it was found, Date of discovery, and any known cause of death.

SCOTT BASE LEADER NOW CAMBRIDGE STUDENT

M. M. Prebble, Leader at Scott Base, has left for England. He holds a Rotary Foundation Fellowship tenable at Cambridge University for the 1966-67 academic year. He will be a Member of Darwin College and will be doing research work at the Scott Polar Research Institute, whose Director is Dr. Gordon de Q. Robin.

Mr. Prebble's main research work will concentrate on comparing New Zealand Field Work in the Ross Dependency with that of the British in Graham Land now that the initial reconnaissance work has been completed. He will also write up work done during the winter at Scott Base on ice breakout in McMurdo Sound, the mapping of the ocean bottom around Pram Point, and the growth of sea ice in McMurdo Sound.

* Dominion Museum, Wellington.

BOUND FOR THE SOUTH

A Woman's Impressions

by Ethel Cross

I have just returned to my home to do those uninteresting, but very necessary jobs of washing, ironing, cooking and cleaning, after seeing the wintering-over party for Scott Base, and other friends, leave Christchurch International Airport for the Great White South.

As I stood there in that overseas lounge, I wondered what these men, clad in modern Antarctic clothing, were thinking. Did they have the same thoughts as the early explorers; was the same sense of adventure there; was there any feeling of regret; any feeling of fear of facing the unknown—that is, unknown to them?

I decided that in spite of the very comfortable surroundings, the amazing clothing worn by the men; "super" cameras slung over their shoulders; modern equipment of every possible type, and a huge modern aircraft sitting on the tarmac ready to transport the men to a new world in just on ten hours, the sense of adventure was still very much alive in our young men of today.

I felt a great sense of pride for the contribution this small country of New Zealand was making in the scientific and other fields of Antarctica, and I also felt that some day, when the time was right, women would also make their contribution to this "great adventure".

As the huge transport, filled with its very valuable "cargo", thundered down the runway, I could only say "Vaya Con Dios"—Go with God.

DEEP FREEZE GUESTS

Early season (November-December) New Zealand guests of Operation Deep Freeze were Sir Ian MacLennan (British High Commissioner), Mr. H. G. R. Mason, M.P., Lieut. W. D. S. Kay-Smith (aide to the Governor-General), Mr. Justice McCarthy, and Mr. Julian Temm (President, New Zealand-American Association).

DEXTER N. WEBB

The staff of Antarctic Division and the members of New Zealand's 1966-67 Antarctic team were among the many who were shocked and saddened by the tragic death on September 25 of Dexter Norman Webb. Dexter was to have flown to the Antarctic two or three days later to be Public Relations Officer at Scott Base, and he spent the last fortnight of his life at the Antarctic Division offices preparing for his task. He had earlier participated with characteristic enthusiasm in the training course at Mount Ruapehu.

His obvious keenness, energy and ability soon won the esteem of us all. New Zealand's Antarctic Programme has been well served by a fine series of Public Relations Officers, but Dexter Webb gave promise of being the most dedicated P.R.O. Scott Base has ever had. As we came to know him better our regard for his work increased, and his winning personality earned him our personal affection as well.

We are sure that readers of "Antarctic" will join in deep regret at this untimely ending of a promising career and in sincere sympathy with his sorrowing relatives and friends.

L.B.Q.

Ralph Waite, Chief Clinical Psychologist in the Mental Health Division of the Health Department, who rendered considerable assistance in the selection of personnel for New Zealand Antarctic teams over a number of years, and himself visited the Antarctic each summer from 1962-63, died suddenly of a heart attack in October.

WITH USARP

A. Anderson, head teacher of the Oaklands School, has accepted an invitation from John Hopkins University of Baltimore, Maryland, to take part as a field assistant in a penguin-study programme at Cape Crozier. Mr. Anderson is a well-known alpinist, and is a member of the Canterbury branch of the New Zealand Antarctic Society.

17th French Antarctic Expedition in Adélie Land

The members of the 1966-67 summer party for Terre Adélie and some of the next wintering team for Dumont d'Urville Base left le Bourget Airport for Australia on November 28. At Hobart they were to board the "Thala Dan" for the Antarctic.

(This information has come to hand just as we go to press, and we apologise for the necessary condensation and for any translation or other errors caused by the hurried preparation. Ed.)

This summer "Thala Dan" will make four trips between Australia and Dumont d'Urville base in Adélie Land.

- (1) dep. Hobart Dec. 3, at Adélie Land Dec. 10-24, arr. Melbourne Dec. 31.
- (2) dep. Melbourne Jan. 3, 1967, arr. Adélie Land Jan. 10, dep. same day for Australian Antarctic bases.
- (3) dep. Melbourne Feb. 4, at Adélie Land Feb. 11-17, arr. Hobart Feb. 23.
- (4) dep. Hobart Feb. 24, at Adélie Land March 2-5, arr. Hobart March 11.

For the summer operations, the first task will be the unloading of the 570 tons (1,620 cubic metres) of cargo on "Thala Dan." This should take only about a week if ice conditions off the Adélie Land coast are favourable. From this point on, absolute first priority will be given to the programme of rocket firings. Some of the planned base-reconstruction projects will be carried out, but reduced in number and importance compared with the programmes of previous seasons: fewer men can be carried for construction teams because of the 26 men of C.N.E.S. (le Centre National d'Etudes Spatiales)—the Space Project team.

SPACE ROCKETS

Expéditions Polaires Françaises has the responsibility of preparing the ground installations required for the rocket firings and an assembly-building for the four rockets. Some of the preliminary construction

work was carried out during the 1965-66 season, while other pre-firing tasks such as the electrical installations and the heating system have just been completed by the wintering team of 1966.

E.P.F. and C.N.E.S. men will be jointly responsible for the unloading and setting up of the Space Project material. The trials and any necessary adjustments will be the responsibility of the C.N.E.S. team.

The actual rocket firing is scheduled to be carried out in the course of a single day, some time between the 10th and the 31st of January 1967, when the meteorological and magnetic conditions are favourable. Immediately after the firings the installations will be dismantled, repacked and loaded on to "Thala Dan" about mid-February, during the vessel's third voyage of the season. The C.N.E.S. personnel will be repatriated at the same time.

These will be the first firings of space-probing rockets on the Antarctic Continent. The "fusées-sondes" are designed to measure two characteristic parameters of the ionospheric regions traversed, the electronic density and the electronic temperature.

The Dragon rockets to be fired are two-stage rockets, made by la Société Sud-Aviation. The second stage and its effective charge will reach a height of about 350 k.m.

NEW LIVING QUARTERS

To cope with the enlarged summer-party, a 25 m. x 8 m. building to accommodate 46 men has been erected by the 1966 winter team. The kitchen-dining room building (18 m. x 18 m.) which was erected last summer (1965-66), and fitted up inside during the winter, will be in working order from the beginning of the new summer party's term. It will allow for the serving of meals

to 100-120 men, 60 at a sitting. This work should be completed before the ship leaves for the return to Australia on her first voyage (December 24).

A new supply system for drinking water will also be completed this summer.

It is anticipated that the wintering-over team for 1967 will number 27. The Leader will be André Hougroun (34).

SUMMER PARTY

Paul-Emile Victor (59) will again travel south and another veteran, Robert Guillard (47) will be in charge of the summer operations. Marcel Renard (40) will be responsible for the unloading operations, and Lieut. A. Bousseau (31) will head the helicopter group of four men.

Two women will travel on "Thala Dan" during the third voyage: Mlle G. Pillet (ionosphere) and Mlle C. Gillet (Head of the Technical Bureau, E.P.F.).

NEW ZEALAND'S ANTARCTICA ON TELEVISION

A full-scale documentary depicting Scott Base and the Ross Dependency and the life and work of the New Zealanders living there, should reach New Zealand television screens next year. **Mike Minehan**, the able and venturesome "Town and Around" reporter, is going south on the first R.N.Z.A.F. flight of the season in the first week of January, and is to spend about ten days with two technicians at Scott Base. He plans to cover such angles as a historical survey of the area, transport (including dog sledging), the unique wildlife, the spectacular scenery, the international friendship and mutual help, and, above all, how men live in the Antarctic and how they are affected by the climatic and other conditions which they must experience.

One thing is certain: in making this hour-long programme "Mike" will have the time of his life.

FRIEND OF BYRD AND MAWSON

The founder of the New Zealand Antarctic Society—and of many other flourishing organisations—**Mr. A. Leigh Hunt**, of Wellington, was honoured at a party at the White Heron Lodge on Saturday afternoon, November 12. The occasion was Mr. Hunt's 90th birthday. Chairman of the gathering was Mr. B. R. Law, who was vice-chairman of the Ross Sea Committee which organised the New Zealand-Ross Sea section of the Commonwealth Trans-Antarctic Expedition. Other speakers with special interests in the Antarctic were Mr. Eric R. Gibbs of Taihape and Mr. L. B. Quartermain of Wellington, President and an ex-President respectively of the New Zealand Antarctic Society. In the course of his already long and very active life, Mr. Hunt formed close friendships with Sir Douglas Mawson and with Admiral Byrd, whose widow and son both sent eulogistic messages for the occasion.

Mr. Hunt is writing a book on Byrd's many close associations with New Zealand, which the Admiral regarded as his "second home".

WOLF WHISTLE

Scientists are not such cold-blooded creatures after all. Dr. Andy Porter, chief scientist at Scott Base last year, describes an important facet of the work there in this enlivening fashion:

"Electrical storms generate very low frequency radio signals which traverse the ionosphere and can be detected all around the world. At Scott Base we use a large triangular loop antenna to detect the signals, and audio frequency amplifiers to record them on magnetic tape. When one listens to a tape recording of the incoming transmissions, what a surprise is in store! Sounds resembling birds chirping, frogs croaking, and even long drawn-out wolf whistles are heard. It's almost as if a mini-skirted Miss New Zealand suddenly put in an appearance at Scott Base. Naturally we call this our Whistler Programme."

NEW SEASON BEGINS AT AMERICAN STATIONS

Deep Freeze 67 set in, initially, in September, when the first four ski-equipped Hercules of the United States Navy VX6 Squadron arrived at Christchurch to prepare for the scheduled opening of the season on October 1.

The aircraft, four ski-equipped Hercules, left Harewood at 90-minute intervals carrying men, mail and fresh provisions. VX6 Squadron Commander, Commander D. Balish, piloted the first Hercules, with Rear-Admiral F. E. Bakutis, commander Antarctic Support Force, key officers and U.S.A.R.P. representatives.

Severe snow storms had lashed McMurdo after the mercy flight earlier that month and the skiway had to be cleared again for the official opening.

MERCY FLIGHT

For the fourth time in Deep Freeze history, an aircraft of VX6 Squadron made an "off-season" mercy flight to Antarctica to bring back a sick or injured man for medical attention. This September 12-14 flight was for the sake of aurora scientist Armand L. Spitz of Fairfax, Virginia, victim of acute appendicitis at Byrd Station.

Only one other mercy flight had been made to Byrd, when in April, 1961, Russian exchange scientist Leonid Kuperov, was suffering from a suspected stomach ulcer. The other two earlier flights had been to McMurdo, one in June, 1964, for injured Seabee Bethel Lee McMullen and one in June this year for seaman Robert L. Mayfield who had been injured in a fall. Unlike its predecessors, September's flight was not effected in total darkness but in the words of the aircraft's pilot, Commander D. Balish, merely "opened the season a wee bit prematurely". Commander Balish was also on the June flight to bring Mr. McMullen back to New Zealand. He is VX6 Squadron Commander.

This last flight was similar to the June bid. In both cases a Hercules

aircraft of VX6 flew from Quonset Point to Christchurch, via Hawaii and Fiji, while in the Antarctic men worked round the clock to prepare the skiways, this time at Byrd as well as McMurdo. Strong head winds put the September Hercules an hour back on schedule, but, even without the proffered aid of a New Zealand Navy frigate as a weather ship, the Hercules touched down at McMurdo in daylight, which lasts for some 12 hours daily at this time of year.

After nine hours' wait at McMurdo, with Byrd suffering from 110-yard visibility, blowing snow, a cloud ceiling of 700 ft., and -30-40° temperature, Commander Balish decided to risk the weather and within three and a half hours was landing his Hercules at Byrd, where Mr. Spitz's condition had shown deterioration.

At Byrd darkness ruled by the time the mercy flight arrived, but oil flares, high-intensity lights and the combined effect of gathered vehicles' headlights made the landing easily possible. Commander Balish commended the station's efforts, reporting that he had been able to see the skiway from 50 miles off.

After 29 minutes of loading the sick man and unloading the remainder of the fresh produce and mail not unloaded at McMurdo, the Hercules left Byrd and three hours later paused briefly at McMurdo for an hour before heading for Christchurch, New Zealand, again. It was back there at 7.53 a.m. on September 14, about 34 hours after it had left, and Mr. Spitz was immediately transferred to Christchurch hospital where his condition was reported as steady.

Four other men were also flown back to New Zealand from the Ant-

arctic. They were Second-class metal-smith J. D. Heist who had broken his foot, and three men brought out an emergency compassionate leave after having received news of deaths in their immediate families.

SUPPORT ACTIVITIES

The inaugural flights from Christchurch to McMurdo were only part of the Navy's support work.

On October 14 one of the Hercules aircraft made what was probably the coldest-ever landing in Antarctic, when it touched down at Plateau Station to unload men, mail and provisions in a temperature of -70° , some ten degrees lower than the usual minimum for Hercules flights.

Outgoing cargo from the Antarctic has already included 47 penguins, 44 Adélie and 3 Emperor, which were headed for New York. The 12,000-mile trip was accomplished in three days, with the cargo portion of the Hercules maintained at below 50°F. , using air conditioning plants on tap at each of the stops.

Picket ships U.S.S. "Mills" and U.S.S. "Thomas J. Gary" kept mid-ocean watch for the flights, U.S.S. "Mills" having been delayed with generator trouble in Newport Roads.

ANOTHER FIRST

Yet another "first" was achieved in November, when for the first time a pure jet aircraft, a Lockheed Starlifter attached to the U.S. Air Force, was not only the first pure jet to land in Antarctica but also the first of its type to land on an ice runway. The Starlifter's first attempt was not successful, as crosswinds five knots above the safe landing maximum prevented it from actually landing, though it had reached McMurdo in a record 5 hour 25 minute flight. It turned round at McMurdo and returned to Christchurch. This flight took 30 minutes less than had the outward trip. Average speed was 490 m.p.h., altitude 35,000 ft.

Three times in the next two days, November 12 and 13, further attempts were frustrated by adverse weather reports, predicting further crosswinds which could cause uneven stress on the Starlifter's drooping wings which in turn would create

a rolling motion adding to the pilot's difficulty in maintaining a heading on the runway.

However, patience was rewarded on November 14 when, despite a crosswind of 12 knots blowing at Williams Field, pilot Captain H. H. Geddes, made a rapid descent of some 5,000 ft. a minute and brought the jet down in copybook fashion — to his relief and that of his 28 passengers, one of whom was Rear-Admiral Bakutis.

Opinion now is that Starlifters could successfully be used in Antarctic support work. The five-hour flight is a reduction of three hours on the average Hercules' time of eight hours to McMurdo, and five on the Super Constellation's ten hours; and the Starlifter has a six and a half thousand cubic foot cargo capacity. This cargo can be unloaded and reloaded in approximately 30 minutes. It can carry a 50,000 lb. payload more than 4,000 miles — 154 men, 123 fully-equipped paratroopers or some 68,500 lb. of cargo.

Between August 20, 1966, and February 10, 1967, some 15,000 tons of surface cargo is expected to be transported to the Antarctic, including 6 million gallons of bulk fuel for McMurdo and Palmer Stations.

The Naval Air Transport Wing Pacific was to fly 15 turnaround flights between Christchurch and McMurdo during November and early December. This group is responsible for the transportation of high priority cargo and personnel from New Zealand.

Dr. Wernher von Braun, Germany's World War II rocket expert, is expected to visit the Antarctic in January. Dr. von Braun, now concerned with the development of Saturn space rockets for the U.S. Apollo lunar landing, is believed to be heading south to seek suitable testing grounds for equipment designed for the Apollo project. He is the director of the George C. Marshall Space Flight Centre of Alabama and of the National Aeronautics and Space Administration. It is also believed that N.A.S.A. officials favour the Antarctic Continent as an emergency landing area for U.S. and Soviet astronauts.

STATION NOTES

PLATEAU

Determined to prove its reputation as the coldest station in Antarctica, Plateau recently recorded a -125.8° temperature, 1.2° colder than the previous coldest recorded at Vostok. Nevertheless, the research programme at Plateau is scheduled to continue for two years, perhaps as a result of the quickly-following swing of the temperature pendulum to a balmy -39° .

The wisdom and forethought of Plateau's designers proved their worth during July when the substitute generator, supposed to take the place of its brother which had been secured for repair, blew a gasket. The outlook would have been bleak, but for the emergency camp, some 1,000 feet away and specially equipped for this sort of emergency. Another generator came into action and the eight men stationed at Plateau moved their quarters. With the advice of the Caterpillar Company, manufacturer of the generators, gaskets were concocted from such material as was to hand and installed, with extreme physical difficulty, into the generators. Outside the mechanical room, air temperature was fluctuating round the -100°F. mark, fuel temperature slipped remorselessly downwards and the emergency generator showed signs of strain. Eight days after the emergency began, however, one of the faulty generators was again functioning, and the personnel were soon able to return to their normal quarters. Scientific activity, reduced before to about 50 per cent. normal, was also restored.

This season a micromet tower will be installed, to allow for the study of meteorological characteristics of small confined layers of shallow air near the ground. A 14,000 ft. by 200 ft. skiway is also planned.

McMURDO

Plans for McMurdo for this season are varied, as suits the soon-to-be-completed largest building in Antarctica. Construction of the building shell to go up on the groundworks

started last year for a two-storey personnel centre is scheduled, as well as the installation of utilities for the mechanical, subsistence and laundry sections. Seven miles of fuel lines over the snow to Williams Field are to be laid, a sewer system and two warehouses installed and the water distribution system from distillation plant to station facilities enlarged.

SOUTH POLE

Here too a skiway, 10,000 ft. by 200 ft., will be readied, and Pole Station's increased fuel capacity will allow it to accommodate aircraft en route to Plateau.

BYRD

Wire aeriels up to 21 miles in length have been installed at Byrd, and here as well a skiway, expected to have been ready before October 1, was to be built. A thermal deep-drill facility is scheduled also.

Veteran mountaineer, and grandson of President Woodrow Wilson 47-year-old Dr. Woodrow Wilson Sayre, left Boston in November on his way to tackle the virgin Antarctic peak, Vinson Massif.

An Everest conqueror without the aid of oxygen or porters, Dr. Savre blames the population explosion for his decision to brave the blinding blizzards and terrific winds that guard the Massif. "Climbing an unconquered peak is the only way to be really alone," he is reported as saying. Three other climbers will join him on this purely private venture. They are Paul H. Dix, Roger A. Hart and Peter Bruchhausen.

November saw two admirals in the Antarctic together, when Rear-Admiral Bakutis took with him as guest the New Zealand Chief of Naval Staff, Rear-Admiral J. O'C. Ross. It was Admiral Ross's first visit to the southernmost limit of the N.Z. Naval Station, an area in which the N.Z. Navy has a specific interest, in the activities there of H.M.N.Z.S. "Endeavour". "Endeavour" carries both aviation fuel and general supplies with each year's Deep Freeze opening.

BIG TRAVERSES PLANNED

Magnum opus of this season's U.S. Antarctic Research Programme will be the 15-week, 1,500-mile, air-supported traverse of the Marie Byrd Land coast. Four base camps will be made by the scientists involved, plus their helicopter support personnel, each camp supporting the party for approximately 20 to 25 days.

Dr. F. Alton Wade, whose first trip to the Antarctic was made 33 years ago, will lead a party of four Texas Technological College geologists to conduct a geological reconnaissance of western Marie Byrd Land. This party should already be in the field, its scheduled dates being from early in the season till mid-December. Its purpose, apart from studying mountain structure and rock layers, is to see if it can relate the Marie Byrd Land mountains to the long chain of Transantarctic Mountains and to the Ellsworth Mountains bordering the Antarctic Peninsula.

Following immediately in the footsteps of this party will be another Antarctic-veteran-led group from the University of Minnesota, under the leadership of Dr. J. Campbell Craddock. This group will study eastern Marie Byrd Land, establishing gravity stations on accessible rock outcrops and doing geological mapping.

Paleomagnetism will be investigated by a Washington University (St. Louis) party which will seek evidence for different magnetic orientations in earlier geologic times, while a three-man biological survey party from Ohio State University will study the primitive vegetation in the ice-free highlands and nunataks of the Marie Byrd Land coast, collecting lichens, mosses, freshwater algae and any of the relatively rare Antarctic insects and mites they may find.

Three University of Wisconsin geophysicists, under the leadership of Dr. C. R. Bentley, will undertake electromagnetic and seismic soundings of ice thickness, obtain gravity and elevation measurements, and measure the earth's magnetic field in an airborne survey.

Mapping, too, features largely in the project. Four U.S. Geological Survey topographic engineers, using electronic equipment, plan to measure the distances between rock outcrops to provide accurate ground control for the preparation of aerial maps after each individual feature's absolute position has been fixed by astronomic observations. Turbine 'copters will take the men from peak to peak. Some 425,288 statute square miles of terrain are, it is planned by the Navy, to be aerially photographed to round out the mapping field operations. A turbo-prop Navy C-130 Hercules will fly the missions needed.

SCIENCE NOTES

The 1966-67 Antarctic research programme will cost nearly seven million dollars and covers a wide range of activities, including a 1,500-mile air-supported traverse of the Marie Byrd Land coast (see above).

Study of scientists who wintered over at the South Pole will, it is hoped, lead to help in planning explorations on and off the earth, in predicting impending breakdowns in men under stress and in selecting men for hazardous missions.

Deep core drilling to penetrate the ice cap at Byrd, studies of fungi, algae and lichens in the Dry Valleys, investigations into the earth's gravity and magnetic fields, into meteorology, the thermal acclimation of Antarctic fishes and the orientation processes of the Adélie Penguin will all be effected, as well as geological and biological studies, with about 150 U.S. scientists travelling to Antarctica to undertake some 50 field projects from October to March.

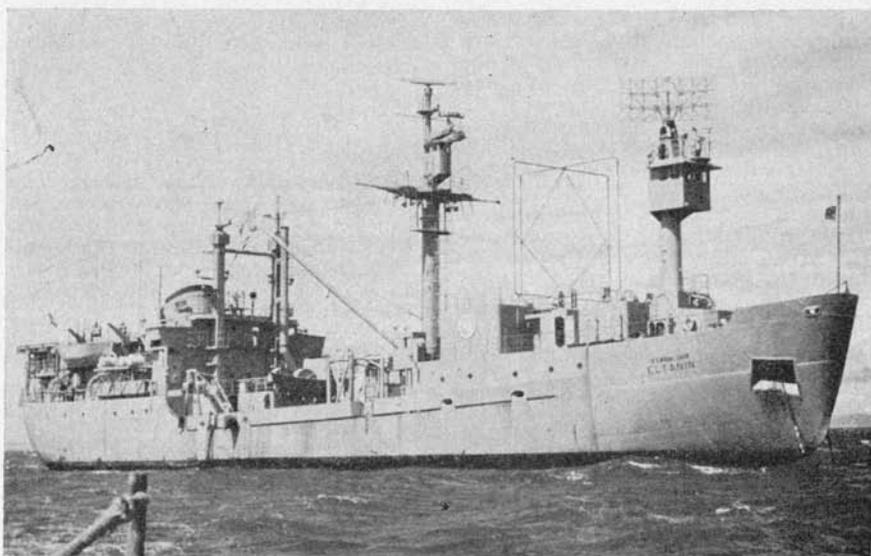
The penguins flown out by U.S. Navy Hercules are to be used in specialised studies by the New York Zoological Society and the Rockefeller University, N.Y., working together under the direction of Dr. Richard L. Penny. Dr. Penny has done considerable work on the Adélie penguins' "time-clock" navigation and sun-orientation and for fur-

ther research needs, ideally, laboratory conditions. Two specialised facilities have been constructed in the non-public part of the New York zoo for testing these penguins' behavioral and physiological abilities, where the penguins will be trained to express angles from an artificial sun, and their responses to programmed photoperiods observed.

Discrimination of light intensity, light quality and time, and the movement of the artificial sun will also be gauged.

Photo-mapping of the Bellingshausen Sea coast will be accelerated this year with the help of Hercules aircraft operating from Byrd, and of the Palmer Peninsula from C-121s flown south from Chile.

"ELTANIN"



The U.S. research ship at Tierra del Fuego during a recent cruise.

The "Eltanin" left Wellington on November 29 on an 18-day cruise in the Tasman Sea to the vicinity of Tasmania. On her return to Wellington she is scheduled to go south on a Ross Sea cruise of two months, visiting the Bellamy Islands and Macquarie Island areas en route before making up to Melbourne.

KIWIS ABOARD

Four New Zealanders will be working on "Eltanin" during all or part of the next few months. With **Peter Harper** for both the Tasman and Ross Sea cruises will be **P. A. Hughes**, of the radio-physics section, Physics

and Engineering Laboratory. He will be operating radio equipment to record satellite signals. Recording at sea ensures a better correlation of shore-station results as well as filling in the large gap between Campbell Island and Scott Base.

On the Tasman Sea cruise in December, oceanographic work will be carried out by **Trevor Barnes**, a technician with the Oceanographic Institute.

Robin H. Falconer of the Victoria University of Wellington will carry out a magnetic survey during the Ross Sea cruise later.

A New Zealand Ornithologist on "Eltanin"

by Peter C. Harper*

On first appearances, the "Eltanin" looks as though her designers were enjoying an expensive joke in ship-building. Closer scrutiny, however, will dispel any misgivings, for beneath her forest of antenna, radars and miscellaneous scientific equipment, the "Eltanin" is a rugged ship well suited to a rigorous working life in the Antarctic.

Because an outline of the "Eltanin's" operating procedures and history have already been given in the September "Antarctic", further comment here would be repetitious. Suffice it so say that the writer was not only impressed with the laboratory facilities and the way in which the various scientific programmes were so smoothly run, but also with the full and unreserved co-operation received from all he met aboard the "Eltanin". This happy environment in which to work is one I feel sure the United Nations would give much to emulate.

The ornithological programme is a comparative newcomer to the "Eltanin" research project. It was begun by the Dominion Museum of Wellington in January, 1965, when the writer had the privilege of joining the ship as ornithologist for Cruise 16, a four-week research programme in New Zealand sub-antarctic waters.

Following this successful exploratory cruise, a further three eight-weekly cruises into the South Pacific between New Zealand and South America, and one excursion into the South Atlantic, have been made. These were Cruises 20, 21, 22 and 23.

The primary objective of the programme has been to study the seasonal distribution and relative abundance of seabirds within the

sub-Antarctic and Antarctic zones of surface water. Coupled with this was the important study into definitive field characteristics of the lesser known species of petrel. This research was approached in three ways: firstly by field observations in the strictest sense, with the usual daily watch periods and logbooks; secondly, by the photographing of birds on the wing, using high-powered telephoto lenses; and finally, by the prudent collection of specimens. Being aboard a research ship provided ready access to the gathered environmental data, which was either obtained through direct contact with the personnel concerned with oceanography and meteorology, or by making use of the very useful data sheets, printed out at the end of each day.

Using these methods, a diverse approach to the ornithological programme was achieved. Apart from the written work, some 1,900 photographs of forty-five species of seabird were obtained. Among the facilities aboard the "Eltanin" is a fully equipped darkroom where both colour and black and white negatives could be processed immediately on completion of the film. As the ship may have to be on station for up to thirty-six hours, it is often possible to photograph birds in the vicinity and develop the film while the "Eltanin" is still on station. Although all these negatives have not yet been examined in detail, the 413 photographs of prions taken at sea throughout the study period have already assisted in positively identifying and separating mixed flocks of prions into their separate species for the first time. From this information, a detailed Pacific summer distribution chart of the Thin-billed Prion (*Pachyphila belcheri*) and the Dove Prion (*Pachyphila desolata*) is now being prepared.

* Associate ornithologist, Dominion Museum, Wellington.

Although weather conditions often prevented the lowering of the ships' twenty-two foot dory in order to collect specimens, this was done whenever possible. These forays proved very successful for although scattered over a wide area, they resulted in over a hundred birds of some twenty species being collected.

A number of birds were also collected through strays striking the ship at night, having been attracted by the strong lights used in facilitating station work on deck. Using the bridge 1,500-watt signalling lights, I managed to attract several additional birds aboard. This is not always easy, for I well remember climbing up the outside of the "Eltanin's" funnel in heavy rain to retrieve a Thin-billed Prion which had landed between two of the four exhausts emitting hot, foul smoke.

During the few months at sea, the "Eltanin" visited five islands, three of which lie within Antarctic waters. These are South Georgia, and South Thule and Zavodovski in the South Sandwich Island group.

During Cruise 22 amidst myriads of Dove Prions, the "Eltanin" made landfall at South Georgia on the 7th of February this year. A small party of scientific personnel landed in Rosita Harbour, one of the small bays inside the Bay of Isles, where despite a time limit of three hours, a good aggregation of birds was recorded. Behind the pebbly beach in an alpine valley, the writer examined and photographed a colony of Gentoo Penguins comprised of moulting adults and well-fledged young. A pair of South Georgian Terns feeding a well-developed chick were located in the rock scree to the right of the bay, while two Georgian Teal feeding in the valley stream proved very photogenic. The South Georgian Shag, Brown Skua and Black-backed Gull were found to be well represented, while within the Bay of Isles nine species of petrel, including a stray Greater Shearwater, were recorded.

Eleven days and nine stations later, the "Eltanin" once more dropped anchor, this time in Fergu-

son Bay, South Thule Island, one of three inhospitable islands comprising the southernmost link in the South Sandwich Islands. On this extremely interesting island, a large colony of predominantly Chinstrap Penguins, with a small number of Gentoo and Macaroni penguins, and one yearling Adélie Penguin, was examined and photographed, occupying sites on a flat basalt plateau lying to the east of Ferguson Bay.

Snow Petrels (*Pagodroma nivea*) were found to be nesting high up in the broken cliff faces overlooking Douglas Strait lying between South Thule and Cook Island. Other petrels suspected of breeding at South Thule include the Silver-grey Fulmar, Cape Pigeon, and the Wilson Storm Petrel.

Perhaps the most extraordinary sight observed during the writer's time on "Eltanin" was an immense rookery of some **ten million** Chinstrap Penguins found at Zavodovski Island, the north-west island of the South Sandwich group. Investigations made on the 6th of March on this active volcano resulted in only two species of resident penguin being found, but comparisons between this community and the more diverse but smaller population at South Thule will prove most interesting, particularly in matters of ecology and mortality.

By comparison, Cruise 23 from Punta Arenas in the Magellan Straits to Auckland, New Zealand, proved remarkable for the paucity of birds during the first few weeks of April, when the "Eltanin" was still within the South American sector of the Pacific. By late April, however, some extremely interesting movements of adult and immature birds of several species were taking place. Most obvious of these were mixed flocks of Thin-billed Priors travelling westwards and fledgling Giant Petrels crossing the Pacific eastwards.

From an ornithological point of view these cruises aboard the "Eltanin" proved very successful and much new information has been gained. The writer is deeply appreciative of the help afforded by Dr. R. A. Falla and the Dominion Museum, and by Mr. R. B. Thomson and the Antarctic Division, D.S.I.R.

News From Australian Stations

No doubt owing to the reorganisation of Australian Antarctic activities following the resignation after a long period of dynamic leadership of Dr. Phillip Law, news of Australian activities is again rather "thin".

STATION NOTES

WILKES

August was a busy month with the preparation of vehicles and equipment for the spring traverse work. The Site 2 field party, consisting of Pfitzner, Groom, Neilson, Bray and Kaloczy, returned on August 19 after a month on the plateau. On that morning the mercury thermometer was frozen: indicating minus 40°F.

Later in the month, Roff, Monks, Groom and Elliott made a short trip with the dogs and sledge on the sea ice for the purpose of taking photographs. While two of them were crossing a thin patch of ice, roped together for safety, a large Weddell Seal came crashing through the ice underneath Monks' feet. Roff, with great presence of mind, for which all men of Wilkes are noted, dropped the rope and grabbed his camera in order to record the event.

ELUSIVE

A reward was offered for the capture of Col and Tina, two very shy seven-month-old Husky pups. Beck and Neilson were the first on the scene at nine o'clock that night. Their plan was to dazzle the pups with a flashlight, then grab them! This was not successful so Humphreys tried his luck next morning during a blizzard when he tackled a dog lying huddled on the snow, only to find he had captured a very bewildered Husky that was already tied up. Taylor crawled under one of the huts to grab Tina and had to be dragged out by the ankles. White caught Colin, the male pup, but refused to divulge the method. Tina is still at large.

The Repstat Construction Company, consisting of Nicholson, Sillick and Taylor, were back in business

after a short stay at Wilkes where they were needed for camp maintenance. During August, Wilkes had a blizzard with an average wind speed of 92 m.p.h., the highest average this year. Fortunately, the only damage suffered was to the cosmic ray balloon-tracking aerial.

The maximum temperature for August was 20°F. and the minimum minus 20.5°. The maximum wind gust was 106 m.p.h.

At Wilkes September started with a fizzer and ended with a bang. On September 1 most of the camp watched a science section release of one of their balloons with creditable efficiency. It rose to 100 ft. then, with a rip in one side, it slowly settled back to earth. Fleet-footed Humphreys dashed across the buildings and caught 1,400 dollars worth of instruments before they hit the deck. A second release with a new balloon resulted in the most useful flight yet.

A 6-man party, led by Base Leader Blyth, spent 3½ weeks of September on a levelling survey along the 70-mile leg of the triangle up to the Dome. Progress continued at the new station Repstat, 1½ miles from Wilkes station.

The fickle sea ice has been stable long enough to allow a visit to Nellie Island. Blundell and Huddy were the first to make the 18-mile return trip over very rough ice and, the following weekend, Elliott, Humphreys and Groom went out. Nellie Island is the home of Giant Petrels.

COMMONPLACE?

First fire for the year broke out in the carpenters' shop one night and provided two hours of excitement for all hands. It was restricted to one building and put out without too much damage.

Maximum temperature during Sep-

tember was 27.5°F.; minimum, minus 25.6°; maximum wind was 61 knots. It was mainly a fine month.

MAWSON

August went out and September forced its way into Mawson lives with a raging blizzard in which winds of 110 m.p.h. were recorded before the anemograph jammed.

Base Leader Morrison, after much labour and effort, watched the 70 ft. tower crash down amid the whirl of movie cameras as a section buckled. Duke was most upset, for his precisely-made antenna was perched on top and reduced to scrap. Taylor had the same luck. His smaller "ham" mast rose at the second attempt after being strengthened by welding by Bill Edgar, only to have the antenna demolished by winds.

A trip to Casey Range was the only official journey last month, all trips over the sea ice being cancelled, owing to the possible unsafe nature of the ice following breakouts during high winds. Lee, Butterworth (radio), Dyer, and Kizaki (scientist) went off to study ice crystals. They had a good trip to the Range and the work was quickly done, but unfortunately the snowtrac refused to start for the return journey, despite all efforts. Eventually Butterworth radioed the rescue party and another snowtrac hurried off to give a tow. All returned safely.

Jones, in between overhauling a Caterpillar tractor and acting as a kitchen slushy, has been "burning it up" on the ice on his motorbike, and now has another addict in Murray who ranges far and wide. Ellyard has been busy checking the effects of atmospheric pressures on his cosmic counting devices which may be distorting the results.

Activity increased around the field store as the big spring trip approached. Cutcliffe compiled lists of food and equipment, Cook built beacons and Quinert is deep in maps and charts. Three of the seven-man traverse party set out on a short one-week trip to McNair Nunatak on September 8 and returned safely. By the end of September preparations were complete for the spring traverse.

WHERE THE DAN SHIPS ARE GOING

Proposed itineraries of the ships for the 1966-67 season are as follows:

M.V. "NELLA DAN"

Melbourne	29-30	November
Melbourne-Macquarie Island		
	1-4	December
Macquarie Island	5-10	December
Macquarie Island-Melbourne		
	11-15	December
Melbourne	16-21	December
Melbourne-Wilkes		
	22	December-1 January
Wilkes	2-7	January
Wilkes-Mawson	8-15	January
Mawson	16-26	January
Mawson-Wilkes		
	27	January-26 February
Wilkes	27-28	February
Wilkes-Hobart	1-9	March
Hobart	10	March
Hobart-Macquarie Island		
	11-14	March
Macquarie Island	15-16	March
Macquarie Island-Melbourne		
	17-21	March
Melbourne	22-23	March

M.V. "THALA DAN"

Melbourne	2-3	January
Melbourne-Dumont d'Urville		
	4-10	January
Dumont d'Urville-Wilkes		
	11-15	January
Wilkes	16-23	January
Wilkes-Melbourne		
	24	January-4 February
Melbourne	5	February
Melbourne-Dumont d'Urville		
	6-11	February

NEW STAMPS

A new series of Decimal Currency Postage Stamps, depicting Australian Antarctic scenes, has been issued.

The set of 10 stamps, each of a different design, range from 1 cent to \$1.00, may be purchased from the Philatelic Sales Section of the Postmaster General's office in each state.

Typical Antarctic multicolour scenes are depicted on each of the stamps, such as the ice-bound ship on the 4c stamp, helicopter support on the 20c stamp, and a meteorological study on the 10c. The \$1 multicolour scene shows a dog team backed by a parhelion phenomenon.

ICE CAP STUDY, WILKES, ANTARCTICA

by A. McLaren*

Wilkes is situated at the western edge of a medium-sized ice cap whose bedrock is separated from the major Antarctic mass by the Vanderford-Totten Glacier trough. The area covered by the ice cap is roughly square (see Fig. 1), about 160 km. across its north-south and east-west diagonals, with bedrock rising to over 250 metres above sea level. The ice flow from the major Continental Plateau is diverted from the area by the Vanderford and Totten Glaciers allowing the ice cap, known locally as "the dome", to exist unaffected by external pressures.

From an elevation of 800 m at the trough in the south, the dome surface rises to 1,389 m. at its summit, then falls off to the sea in the north. Due to its surface regularity, the sector between Capes Folger and Poinsett has been selected for a detailed long-term study of the laws governing movement in an Antarctic ice cap. This has been the subject of the Australian National Antarctic Research Expeditions' glaciological programmes at Wilkes since 1964.

1964 FIELD WORK

In that year the location of the dome summit was determined and a triangular route staked out connecting it with Capes Folger and Poinsett. Crevassing along the coast prevented the route approaching closer than 6 km. to the sea. Approximate surface and bedrock profiles were calculated from barometric and gravity measurements, taken every mile along the route (ref. Morgan, P., 1966, unpublished).

1965 FIELD WORK

The 1965 programme was concerned with the measurement, by repeated surveys, of the strain and flow rates taken at short intervals

around the triangle, and with a more accurate determination of the surface and bedrock profiles. A comparison of the measured strain rates with the calculated stresses would give the flow parameters of the ice. Coupled with detailed accumulation measurements over the region, these will enable a study of the mass budget and change of form of the ice cap to be made.

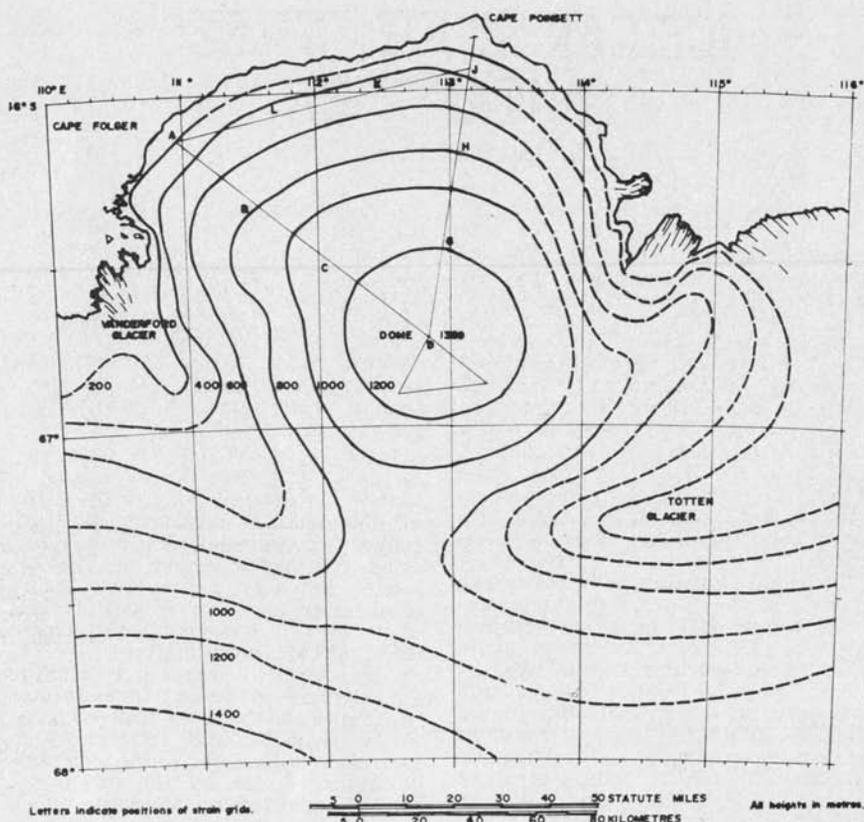
In the autumn a party with two D4s and two Sno Tracs placed a second set of stakes along the route at distances of maximum intervisibility, i.e., between 1.5 and 9 km. but averaging about 4.5 km. All distances between stakes were measured to an accuracy of better than one part in twenty-five thousand using MRA2 tellurometers. Horizontal and vertical angles between the stakes were measured from Wilkes Station to the dome summit via Cape Folger using a Wild T-2 theodolite. Decreasing daylight and excessive shimmer caused by the sun's low altitude precluded theodolite work on the other two legs.

Three-arm rosette strain grids with radii of 100 m. were established at the corners and third points of each side of the triangle to detect the components of strain in directions other than along the route. A six-arm rosette with radii of over 1.5 km. was established at the summit to obtain a more accurate picture of strain conditions at that point.

The depth from ice surface to bedrock was measured by seismic methods every 16 km. and, during a later traverse, at the corners of 16-km. squares within the triangle. This provided an accurate control for the bedrock profiles drawn from gravity measurements of this and the preceding year.

Snow accumulation measurements were taken every 1.6 km. along the route.

* Antarctic Division, Dept. of External Affairs, Melbourne, ANARE Glaciologist at Wilkes, 1965.



During the summer of 1965-66 a full survey of the stakes set out the previous autumn was accomplished, again using the tellurometer MRA2s and T-2 theodolite. Better visibility during this season, resulting from the higher sun, produced considerably faster progress, the traverse being carried out in only six weeks. All the strain grids and accumulation markers were remeasured and further stakes set out at the edge of the crevassed area at Cape Poinsett.

In the autumn of 1966, the line from Cape Folger to the dome summit was again remeasured and an additional strain grid installed running 24 km. south-east and south-west of the summit to determine conditions on the southern slopes. This, and the large triangle, are to

be resurveyed in the summer of 1966-67 and in future years.

INSTRUMENT PERFORMANCE

Little trouble was experienced with any of the instruments used on the traverses, despite temperatures down to -45°C . With muffs supplied by the manufacturers, the warm-up time of the tellurometers was never greater than ten minutes, or five minutes if they had been kept in a vehicle. However, it was found impossible to measure lines longer than 5 km. over flat surfaces using the standard 17-in. circular reflector, due to the low signal strength received. For grazing shots of greater distance, a 48-in. reflector was used at one end of the line. This was found sufficient for all distances en-

countered. Power for the tellurometers was supplied by 12 V Nickel-Cadmium batteries which gave a good performance in the cold.

A 100-m. invar tape, whose length was little affected by the temperature range experienced, was used to measure the arms of the rosette strain grids.

CONCLUSIONS

Preliminary calculations show that the strain rate of the ice at the dome summit is about 2 to 3×10^{-4} m/m/yr., compared with 3 to 4×10^{-4} m/m/yr. at Cape Folger and up to 22×10^{-4} m/m/yr. at Cape Poinsett. The flow rate 8 km. inland of Cape Folger is about 15 m/yr. and is over 125 m/yr. near Cape Poinsett. The complete results of the 1964 and 1965 field programmes are undergoing analysis at the Department of Meteorology of the University of Melbourne.

MAWSON LEADER

Mr. John C. Erskine of Griffith, N.S.W., has been appointed leader at Mawson for 1967.

Mr. Erskine has held many senior engineering positions in various parts of the world, including Malaysia, Africa, and England. Since 1953 he has been self-employed mainly in the civil engineering field and in developing a large irrigation farm in the Riverina. He served in the Royal Engineers and Commando Units of the British Army in World War II in the Middle East, Sicily and Italy, rising to the rank of Major.

REPSTAT

Wilkes Replacement Station

Repstat is to have another team of professional tradesmen, who will erect more buildings, complete the covered walk-way, install the generating sets and wiring. Piping for hot water heaters will be placed in position ready for the radiant heaters.

The team will have individual sleeping cubicles, and the mess and kitchen were going concerns last year. The recreation room will be in use—if ever there is time for recreation.

VETERANS MEET

We are indebted to Mr. H. G. King, Librarian, Scott Polar Research Institute, Cambridge, for this account of the party on board "Discovery" in October to launch Wilson's "Discovery Diary".—Ed.

About 70 people accepted a joint invitation by the Directors of the Blandford Press and the Scott Polar Research Institute to attend a party on board "Discovery" to celebrate the publication of Dr. Edward A. Wilson's "Discovery" Diary on October 3.

It was a mild clear evening after a day of rain and "Discovery", floodlit for the occasion, stood out like a sparkling jewel on the ink black riband of the Thames. Below decks all had been given over to the party—the wardrobe, the mess and even the tiny cabins which still bear the names of their occupants of over 60 years ago. Most of the guests squeezed into the wardrobe and the atmosphere was more tropical than polar. What a night for an autograph hunter though—the conversation was almost drowned by the clang of polar medals! Sir Raymond Priestley, now the doyen of the Antarctic explorers, and "Bunny" Fuchs led the vanguard. Representing the past generation of pioneers were Mrs. Frank Debenham, Mrs. Richard Eyre (Skelton's daughter), Miss Vera Hodgson and Father Jim Wilson, E.A.W.'s brother. But stealing most of the limelight and very much still representing and embodying Scott's first expedition were Jimmy Dell and Frank Plumley themselves, who emerged from a gruelling ordeal of press and B.B.C. interviewing seemingly unscathed.

During the course of the evening speeches were made by Mr. Richard Harman, Director of the Blandford Press, who spoke of the diary as "the major publishing event of the year"; by Dr. Gordon Robin, Director of S.P.R.I., who congratulated the editor, Mrs. Shirley (Miss Ann Savours), and spoke warmly of the friendly and harmonious co-operation between the Institute and the publisher; and by Sir Vivian Fuchs, who, comparing expedition tech-

SPRING TRAVERSE FROM BASE ROI BAUDOIN

A six-man, three-month traverse party left the Belgian-Dutch base, Roi Baudouin, on September 25, led by T. van Autenboer, geologist and leader of the wintering team.

The tractor train comprised one heavy tractor drawing heavy sledges, three light vehicles (two of them carried on heavy sledges) and two dog teams with light sledges. The route followed led directly to the depot established previously in the central area of the Sor Rondane mountains. From here it was scheduled to head first towards the east and then, after refuelling at the same depot, towards the west.

TRAVERSE PROGRAMME

Glaciology: Determination of the speed of flow of the glaciers from the markers set up and their position determined on the previous traverse. Determination of the thickness of the glaciers by gravimetric measurements. Study and collection of samples of particular phenomena.

Geology: Reconnaissance geology of unexplored areas. Study of certain key problems in the mountain structure.

General: Surface meteorological observations. Collection of biological specimens. Geomorphological observations.

niques then and now, welcomed the publication of this diary as an inspiration "to the up-and-coming generation of young explorers and scientists".

Thus passed a memorable evening in the annals of polar publishing. The following day, in Cambridge, came a delightful postscript. Jimmy Dell brought his wife and members of the family to the S.P.R.I. and spent the afternoon looking at the books and manuscripts and having a yarn with the staff. We reciprocated with a presentation copy of **The Book** duly signed by all of us.

PROGRESS

Leaving the base for the Sor Rondane mountains on September 25, some of the dogs were harnessed up to the sledges while others were left free.

During the first three days visibility was very poor and the train advanced on compass. The surface was bad also, and speed was reduced to two or three kilometres per hour.

On the fourth day the sun came out again and the first landmark was sighted, Romnes Peak. This was reached on the 29th, after the train had been compelled to halt for vehicle-maintenance, and to repair a fault in the starter due to cold.

On the evening of September 30 the train reached Smalegga, the men well pleased to have covered this first leg of their journey, 200k.m., in five days. Here they located the depot in its glorious framework of mountain grandeur. It was barely snowed in, and the various members of the team quickly organised their several projects.

BACK TO THE DOGS

The sno-cat proved too heavy and cumbersome and it was decided to abandon it in favour of dog-teams and the light, easily handled snow-vehicles while crossing the areas of ice and crevasses. Work will commence with surveys and local measurements. Then the earlier traverse route will be followed to the extreme eastern and western points of the mountains in order to re-position the glaciological markers.

The team at this point was enjoying fine weather with blue skies. The temperatures recorded were: night, -35°C. ; day, -20°C.

AT BASE

Maurice Doneux acted as Base Leader in Van Autenboer's absence on the traverse.

Spring activity at the base began with a trip to the atmospheric-electricity station 8 k.m. from Roi Baudouin. Profile measurements were made there with a proton magnetometer. One of these profiles crosses the junction of the floating shelf on which the base is built and the continental ice which rests on a rock base.

PLANS FOR 1966-67 SUMMER

The 24 men of the 1966-67 summer party will leave Belgium in December. The team comprises the Leader, 10 oceanographers, a zoologist, six other scientists (1 atmospheric electricity, 2 photogrammetry, 3 geodesy-topography) and six men for logistic support.

Three oceanographers will embark on "Magga Dan" on December 2 to carry out a programme as far as Cape Town. The remaining oceanographers and the other personnel will leave Brussels on an Air Force plane on December 27 and rejoin the ship at Cape Town on December 30. "Magga Dan" is expected to reach King Leopold III Bay on January 30, 1967, and to leave the Antarctic about February 6.

The summer programme hinges around oceanography, photogrammetry, geodesy, glaciology and geology. Members of the 1966 wintering team will take a full part in implementing this programme.

BASE TO CLOSE DOWN

After the summer programme, scientific activity at Base Roi Baudouin will be temporarily suspended and the base will be evacuated. All scientific apparatus and the more important technical plant will be taken back to Belgium for servicing.

The 1966 Belgian-Dutch expedition which is completing its wintering-over is to be the last of the three

Belgian-Dutch expeditions which began in 1964. For financial reasons the Dutch Government has found it necessary to cease its co-operation with Belgium.

THE FUTURE?

Belgian Antarctic activities will, however, continue during the temporary closure of Base Roi Baudouin, in the form of collaboration with another country with which negotiations are in train. "Magga Dan", after her return call at Cape Town, will carry out a prolonged oceanographical cruise in the Indian Ocean in accordance with a programme drawn up by the Royal Institute of Natural Sciences, in which 18 men will take part. "Magga Dan" will return to Antwerp about mid-April.

STAMPS

The Belgian Post Office issued on October 10 a series of three special Antarctic postage stamps:

1F Emerald Green. Dog team and surveyor.

3F Violet. Adrien de Gerlache and the "Belgica".

6F Red Ochre. Weather balloon and the "Magga Dan".

There is a surtax of 50c., 1.50 F. and 3 F. respectively for expedition funds.

(LATE NEWS)

SANAE 8

From November 28 to December 22 the team for the coming year will undergo a rigorous and intensive training spell at the South African Military College. This course has been devised by the physical training experts of the South African Army and the South African Federation for Youth and Sport to prime the team for the arduous living conditions in the Antarctic. The course includes physical training, fire fighting, cooking and lectures on various aspects of antarctic conditions and living under those conditions.

This course was introduced last year and has proved to be most valuable in building up an excellent team spirit and an allround improvement in performances.

Eighth Japanese Expedition Sets Out For Syowa Base

JARE 8 was scheduled to leave Tokyo on December 1 on board the icebreaker "Fuji" under the command of Captain Mitsutoshi Matsuura, who was second in command during the last expedition.

The scientific party of 40 men will be led by Dr. Torii, geochemist, who will also be the leader of the wintering party consisting of 24 men. Dr. Tetsuya Torii has spent several months during the summer season in the Dry Valley area since 1953 and found a new mineral, "Antarctite". Deputy-leader Kou Kusunoki will lead the summer party of 16 men. Most of the summer party are oceanographers, marine geophysicists and radio scientists.

The sailing schedule of the "Fuji" is as follows:

Tokyo (Dec. 1, 1966)—Fremantle (Dec. 16-22)—**Syowa Station** (Jan. 6-Feb. 27, 1967)—Cape Town (Mar. 8-14)—Colombo (Mar. 30-Apr. 3)—Tokyo (Apr. 19).

The aircraft on board the ship are two Sikorsky S-61A helicopters and a Bell 47GA helicopter. There are 35 officers, including 14 aviation officers, and 147 men on board the ship. Besides, there are one engineer (civilian, Maritime Self-defence Force), 3 pressmen (2 writers and one TV cameraman), and two observer scientists (Dr. Kiyoshi Kaneshima, professor of geochemistry, Ryukyuu University, and Dr. Wakefield Dort, Jr., geologist at the University of Kansas, U.S.A.).

The oldest member of JARE VIII, Dr. Torii, is 48; the youngest (K. Kanda) is 21; Dr. W. Dort (Univ. of Kansas, U.S.A.) and Dr. K. Kaneshima (Ryukyuu Univ., Okinawa) are observers, and there are three pressmen.

With the increase in the numbers of scientists at Syowa Station, the programme at the station will be further expanded, and will continue upper atmosphere physics, geomag-

netism, meteorology, biology, glaciology, oceanography, seismology, geomorphology, and human physiology.

An oversnow traverse will be made late in 1967 from Syowa to the position of about 45° E. and 75° S.

In terms of logistic support at the station, the new vehicles and buildings which will be brought by the 8th JARE are:

- 2 KD60 diesel oversnow vehicles (about 7 tons each).
- 2 KC 20 gasoline oversnow vehicles.
- 1 2TD20 6×6 cargo truck with hydrocrane.
- 1 Toyota 2FQ15-C (¾-ton carrier).
- 1 mess hall (6×16 m.).
- 1 aeronomy laboratory (6×23 m.).
- 1 air traffic control shed (5.3×5.3 m.).
- 1 garage (10×10 m.).
- 1 balloon inflation shelter (4×6 m.).

In all, including scientific equipment, 400 tons of cargo will be delivered by airlift. If the ice and weather conditions are favourable for the ship's navigation, the ship will tie up alongside the fast ice of Ongul Island, perhaps one or two miles from the station. In that event, the transportation will be executed by surface vehicles and sledges.

During the whole voyage of the "Fuji" upper atmosphere physics, geomagnetism, seismic profile, oceanography, gravity, meteorology, and hydrography programmes will be carried out.

For the coming year, 1967-68, an estimate of expenditure is being prepared for the government and the final approval will, it is hoped, be made by the Diet before the end of this year. About 700 million yen (£1 equals about 1,000 yen) of expenditure is required. The main objective

for the 1967-68 season is the inland traverse, if possible from Syowa to the Pole. Another is the preparation for the launching of a rocket for observing the upper atmosphere. The number of the wintering party at Syowa will be increased to 30. The summer party will consist of 10 men.

The mailing address of "Fuji" is as follows:

Wigmores Ltd., 7 Collie Street, P.O.
Box 228, Fremantle, W.A.
Ellerman & Bucknall Ltd., P.O.
Box 812, Cape Town.
Embassy of Japan, No. 10, Ward
Place, Colombo 7, Ceylon.

The Department of Polar Research is to move to a new home about November 15. The address will be: Kami-saginomiya, 5-27-28, Nakano-Ku, Tokyo, Japan.

At the 11th Pacific Science Congress in September attended by some 2,000 foreign scholars, a symposium on Pacific-Antarctic Sciences formed part of the geophysics division of the Congress.

The Japan Association for the Advancement of Science has awarded the Prince Chichibu prize (in memory of the Emperor's late brother) to the JARE I (1957-58) wintering team, led by Dr. E. Nishibori.

AT SYOWA

Dr. A. Muto reported on October 16 that his team at Syowa had been carrying out their scheduled work successfully. The large snow-car KD60-1 of nine tons with two sledges, eight tons, was given a test run on October 1-3 on the inland ice, and performed well. This vehicle has four beds and a big water tank. It is the type of vehicle which will be used on the projected long inland journeys towards the South Pole by JARE IX or X.

RESEARCH SHIP IN WELLINGTON

The 1,452-ton stern trawler "Umitaka Maru", distant-water training and research vessel of Tokyo University of Fisheries, which left Tokyo on October 15, arrived at Wellington

on November 14 carrying in addition to her 36 officers and crew, 34 marine navigation cadets. They were on their way to the Antarctic for a circumnavigating cruise, sailing clockwise round the Antarctic Continent.

Master of the ship and leader of the expedition is Captain K. Ozawa, assisted by Dr. Makato Ishino. The "Umitaka Maru" visited Wellington to load provisions.

Information obtained during the survey will be processed by the university. It will be made available to all countries, including Russia, which is Japan's biggest competitor in the whaling industry.

Three whaling experts will maintain a constant daylight watch to count the whales and from their figures shore scientists will be able to estimate the whale population. Researches will be made into many branches of oceanic studies. There are about a dozen experienced scientists on board.

The Tokyo University of Fisheries has its origin in a Foundation of Fisheries established in 1889. It is now a self-contained institute comprising three faculties and with chairs in 29 separate fields on the subject.

Mr. S. G. Brown, of the National Institute of Oceanography, British Museum, will assist Japanese specialists in their oceanographic surveys.

"Little is known about Antarctic fish stocks," said Mr. Brown. "Practically no commercial fishing has been done in this part of the world because of the distances involved. If we find evidence of good prospects for profitable commercial fishing, many countries will be interested."

"Umitaka Maru" is expected to return to Japan on March 11 next year after calling at Buenos Aires and Fremantle.

A similar expedition will be undertaken next year by three Japanese whaling companies using a whale transport vessel. The ship, the "Chiyoda Maru", will call at Wellington in February.

Outline of Chilean Research

[Portion of an article in the Chilean press commemorating the second anniversary of the foundation of the Chilean Antarctic Institute.—Ed.]

Chile, as an Antarctic country, has been concerned from the beginning in the exploration of and scientific knowledge about Antarctica; undoubtedly, the development of its activities has had to remain in relation to the material and human resources of the country.

The first attempts at scientific research in our Southern Territory were carried out from 1947 and were pursued further during the IGY, when our country constructed its first Antarctic base for purely scientific purposes. Unfortunately, the "Risopatron" Base was burnt down in its first year, cutting short the hopes of many scientists.

In 1961 the second stage of scientific research commenced, with the transfer of the "Presidente Gabriel Gonzalez Videla" Base to the University of Chile, to develop a plan of scientific activities in meteorology, geomagnetism, glaciology, seismology and polar medicine. This base operated as a scientific centre until 1964, when the Chilean Antarctic Institute commenced its activities.

The scientific work carried out by the organisation during its first two years, whilst relatively modest because of insufficient funds, has represented a great step forward because of the organised and centralised way in which it has been undertaken.

During the 13th Chilean Antarctic Expedition (1964-65), for the first time 10 scientists under contract to the Chilean Antarctic Institute carried out an extensive working plan in the fields of marine biology, ecology, geomorphology, crystallography and seismology. During this season, the first vulcanological station in

Chile was installed in the "Presidente Aguirre Cerda" Base on Deception Island, consisting of a suitable seismograph for registering local earthquakes of volcanic origin—which are very frequent there, a rare exception in Antarctica—and of thermographs of the sub-soil to measure the heat released by extinct volcanoes which at one time formed the very special structure of this island.

The results obtained during this expedition have given rise to various scientific publications that the Institute has had printed and distributed widely throughout specialised circles both at home and overseas.

During the season just past (1965-66), once again 10 scientists took part under the auspices of the Chilean Antarctic Institute, engaged this time in ecology, in a census of pinnipedia, lichenology, vulcanology and seismology. The tasks relating to ecology and lichenology have as their object to study in a qualitative and quantitative manner the fauna of terrestrial invertebrates and the lichen associations which are so peculiar to Antarctica, and which tasks are directed towards compiling a complete bio-geographical sequence throughout the whole country, including its Antarctic Territory. Apart from the purely academic interest, this research tends to explore the food-producing possibilities of the Antarctic and Sub-Antarctic soil and the possible use of certain lichens for medicinal purposes. The census of pinnipedia, which was started during the tenure of the last Antarctic Commission, is endeavouring to obtain a complete record of the fauna of seals, sea-elephants, sea-leopards and sea-lions which inhabit O'Higgins Land (Antarctic Peninsula), the adjacent islands and the surrounding seas, for the purpose of considering adequate protection measures which will ensure their possible future exploitation. This is the first time that a census of Antarctic fauna has been initiated on a large scale, and during

the last season the South Shetlands Islands were thoroughly examined, thanks to the excellent support given by Navy helicopters.

The study of caenozoic volcanism carried out in the South Shetlands will clarify in part the geological development of this group of islands, whilst it is linked to the other petrographic regions which have been determined along the length of Chile. Conjointly with the geo-morphological studies finalised during the 1964-65 season, the geological research which was carried out in the South Shetland Islands will make it possible to present a general scheme of the present structure and of the geological history of this interesting chain of sub-Antarctic islands.

Finally, the seismological tasks carried out during the last expedition had as their object to ensure the success of seismological studies in the "O'Higgins" and "Pedro Aguirre Cerda" locations which are designed to study regional and local seismicity, as well as planning future extensions. In passing, it is interesting to point out that in spite of the aseismic character of the Antarctic Continent, the seismological studies which have been carried out there are of special importance, both because of it being surrounded by active seismic arcs, as well as because of the observations regarding the Earth's crust which can be deduced from these records.

On attaining its second anniversary following its official inauguration, the Chilean Antarctic Institute is in a state of full preparation for the scientific activities to be carried out during the next Antarctic Expedition, but at the same time, future plans are being prepared for ambitious penetration moves towards the South Pole.

In effect, one of the goals of the Chilean Antarctic Institute consists of the installation of a scientific base located to the south of latitude 72° in O'Higgins Land, and which would fundamentally be concerned with geophysical research and the physics

of the upper atmosphere. To achieve this, a joint effort with the universities of the country and logistic support which can be provided in a combined form by the three branches of the Armed Forces will be necessary. Whilst it is certain that this enterprise represents an enormous economic effort from the technical and human point of view, it is essential that Chile should have an inland base on the continent so that she can carry out truly novel research projects at that point, whose results will raise our country to the position which it should occupy among Antarctic nations.

COMMEMORATION

The newspaper "El Mercurio" recalled on August 30 that it was fifty years before, on August 30, 1916, that the Chilean vessel "Yelcho", commanded by Piloto 2o Luis A. Pardo, rescued the members of Sir Ernest Shackleton's expedition on Elephant Island.

In order to commemorate the jubilee of this rescue exploit, the Chilean National Library organised a ceremony in the auditorium of the Library on September 6, when Admiral (R) Senor Rafael Santibanez delivered a historical and geographical oration. This was followed by the opening of a commemorative exhibition, in which besides an enormous scale model of O'Higgins Land and numerous maps, there was a display of books, diaries, documents, portraits and relics associated with Piloto Pardo and his expedition.

THOSE RARE ISSUES

We would be greatly indebted to any reader who could let us have copies of the issues which are almost or completely out of print. See inside back cover.

A very few copies of Vol. 3 no. 5 (March 1963) have come to hand. Any reader whose set is complete except for that issue may have a copy until the extremely limited supply is exhausted: price 5/-.

NEW BRITISH BASE TO BE BUILT AT HALLEY BAY

After ten years of occupancy, the British Antarctic Survey base on the Ice Shelf of Coats Land, east of the Weddell Sea, is to be replaced by a new station.

The Halley Bay base was established in January 1956 on the Brunt Ice Shelf of Antarctica (lat. 75° 31' S., long. 26° 36' W.). As the nearest rock outcrops are 200 miles inland it was necessary to build it on the snow surface of the ice shelf. The original huts are now 50 ft. below the surface, and as the ice has moved 3½ miles seaward since 1956, they have been subjected to pressure from all directions, have become deformed, and in some places have been crushed. Moreover, a crack now extends from the ice edge to the base-site, so there is the possibility that the whole area, base and all, will eventually calve off as one large berg. The base has been added to piecemeal over the last ten years, and the buildings are consequently on different levels, linked by a network of tunnels and ladders. The difficulty of maintaining such a base and the attendant hazards of fire and poor ventilation, as well as the precariousness of the present site, has made it necessary to build an entirely new base three miles further inland. All the main buildings will be erected in 1967, thus they will start life on the same level.

The new base will consist of seven buildings spaced 20 ft. apart in pairs down a central tunnel, and the accumulation of snow between them will provide a natural fire-break.

Each building is 72 ft. by 19 ft. by 13 ft. high. The construction and size of each is identical throughout, to ensure swift simple erection. This also simplified the manufacture and enabled the maximum use to be made of prefabricated techniques. The foundations are formed by a carpet of expanded and corrugated metal on the snow surface. The main

grillage beams are then laid on this carpet. The hut construction is of welded steel portal arches linked by timber rails and purlins. This structure is clad overall with prefabricated insulated panels to form the roof, walls and floor. Each panel measures 8 ft. wide by 10 ft. high by 3 in. thick and is filled with glass wool.

Since the buildings will rapidly become buried no windows are included in the design. A ceiling is provided at 7 ft. 6 in. high, with storage space in the loft above. The roof is pitched to ensure good drainage of melt water and is waterproofed by a complete covering of Isobutyle sheeting.

Access to each building will be by extendible shafts at each end. These shafts will also be the points of entry for all services, including chimneys, ventilation, snow chutes for water tanks, aerial feeders and electrical supplies. Heating will be by electrical fan heaters which will ensure a good circulation of warm air. Fresh cool air will be introduced in controlled doses through the access shafts and tunnels.

THE BUILDINGS

Of the seven buildings two will be dormitories for a total of 40 men. Each dormitory will be divided into two-man cubicles containing two-tier bunks, and will have its own wash-room and drying room. The third building will be allocated to the lounge/recreation room, base office and radio room, and the fourth building will house the kitchen and dining room, an anthracite stove being used for cooking.

The fifth building will house two 100 kw. Morrison diesel generators, but the engine radiators will be re-

motely mounted in the tractor garage in an effort to prevent overheating. Bulk fuel will be supplied from a 5,000-gallon inflatable rubber pillow tank which will lie inside a corrugated steel tunnel alongside the generator shed. The sixth building will be the tractor garage and base workshop. The seventh will be the scientific block containing the laboratories and general working space.

BIG WORK FORCE

Even in a good ice year it is only possible for ships other than icebreakers to stay at Halley Bay for a maximum of three weeks, so two ships — the R.R.S. "John Biscoe" and M.V. "Perla Dan" — will go there this year (1966-67) to provide the maximum number of workers over the critical relief period. Twelve builders, with a work force of 80 men, will erect as many buildings as possible before the ships depart, and eight builders will then continue work throughout the winter with the help of the base personnel. It should be possible to continue the scientific programmes without interruption. The base will be completed in 1967-68 with the construction of various outbuildings, such as the non-magnetic huts, ionospheric hut and balloon shed. The men will transfer to the new base when convenient, but changeover will not be completed until mid-1968. The old base will then be abandoned.

FIELD WORK 1965-66

SUMMARY OF OPERATIONS

Topographical survey was carried out in the Cape Kater area in the northern part of the Antarctic Peninsula, on Adelaide Island, in the vicinity of Stonington Island, Marguerite Bay and in the Tottan Mountains east of Halley Bay. On Adelaide Island, measurement of heights by barometer on the Piedmont Plateau was continued, but was hindered by bad weather and loss of the Lansing Snowplane. In the Stonington area, a local triangulation scheme incorporating an existing survey for 1:50,000 mapping was reconnoitred and partially observed. A reconnaissance traverse was made over the Heim and Antevs Glaciers (67°20'S., 66°48'W.), to link the Marguerite Bay

triangulation scheme to that of the Loubet Coast. (The Loubet Coast base was occupied from February, 1956, to April, 1959.)

In the Tottan Mountains, angular observations and tellurometer traverses were carried out in the central and eastern ranges of the Heimefrontfjella. One peak of the Milorgknausane in Dronning Maud Land was occupied in order to link the completed Heimefrontfjella survey to that of the Norwegian-British-Swedish Expedition (1949-52) in Dronning Maud Land. Nunataks in the Milorgknausane were surveyed. The projected programme for survey in the Vestfjella was abandoned after the crevasse accident in 1965 (see December, 1965, "Antarctic"), when three men were lost together with some of the results of survey work in the eastern Heimefrontfjella. It was necessary to repeat some of the missing observations and these were completed by the end of the season.

In the Cape Kater area, the Royal Naval Antarctic Survey Party from H.M.S. "Protector" carried out a reconnaissance in preparation for linking the existing triangulation in the Gerlache Strait to that of the Trinity Peninsula (northern Antarctic Peninsula) and Joinville Island.

GEOLOGY

Geologists from Stonington Island worked in the north of Marguerite Bay and mapped most of Horseshoe Island in detail. Geological reconnaissance was also continued on the east coast of Alexander Island south of 71°S., extending the work carried out in previous years. On the east coast of the Antarctic Peninsula, the southern part of Mobiloil Inlet was mapped and important fossil collections made.

In the Heimfrontfjella, the north-eastern block was mapped and found to be formed of highly metamorphosed Basement Complex rocks, except for the north-eastern end where sediments and volcanic rocks occur.

In the 1965-66 summer, geologists also worked on raised beaches and associated features in the South Shetlands, and carried out a reconnaissance of Marguerite Bay and other

localities on the west side of the peninsula.

OTHER SCIENCES

At Halley Bay, an ice-deformation was begun on the Brunt Ice Shelf. A continuous line of markers and strain-stake networks was set up between Halley Bay and the inland ice sheet, and the line was surveyed and levelled by theodolite. Surface accumulation studies were continued.

Comprehensive programmes of geophysics were continued at Halley Bay and the Argentine Islands. At Halley Bay, installation of a new all-sky camera has allowed the old one to be used for experimental colour records. Biological work has continued at Signy Island in the South Orkneys and medical research at Halley Bay.

Six stations were again manned throughout the 1966 winter: Adelaide Island, the Argentine Islands, Deception Island, Halley Bay, Signy Island and Stonington Island. The wintering party totalled 81 men.

THE COMING SEASON

The new season commenced with the sailing from Southampton of R.R.S. "Shackleton" on October 4 and R.R.S. "John Biscoe" on October 25. "Shackleton" proceeded south to Deception Island to take off a man. Fortunately, ice conditions were favourable and the ship managed to get in on November 7, and then sailed immediately for Punta Arenas.

Among the passengers on board the "Biscoe" is the glaciologist, Dr. Charles Swithinbank, who was a member of the Norwegian-British-Swedish Expedition and later worked with the Americans on the Ross Ice Shelf, wintering at McMurdo and also with the Russians at Mirny. He will be working with an assistant in the south-western part of the Antarctic Peninsula, and will carry out a series of survey flights in the Survey's Otter aircraft, using a new radio-echo sounder developed at the Scott Polar Research Institute. With this apparatus it is possible to obtain a continuous profile from the top and

bottom surfaces of a glacier and ice sheet. Trial flights in the Arctic have proved extremely successful, and a great advance over the old slow and laborious method of seismic shooting which only gave a discontinuous series of measurements.

RESCUE MISSION

When R.R.S. "Shackleton" was at Port Stanley in the Falkland Islands in October on her first southern voyage of the season, an emergency call was received from Deception Island. A diesel mechanic of the wintering party at the British Argentine Islands base had been taken ill and flown by B.A.S. Otter to Deception Island, where he was most of his time at the Argentine Base Primero de Mayo in the care of an Argentine civilian doctor. "Shackleton" spent a mere two hours at Port Stanley instead of the usual several days. On the way to Deception more ice than expected was encountered. The sick man was improving when she arrived, but he was taken to Punta Arenas in the Magellan Strait for hospital treatment. He is reported as "making good progress".

UNUSUAL SIGHTING

On November 5, when 60 miles north of King George Island, the "Shackleton" sighted a leopard seal and pup on a floe. The pup's weight was estimated as 120 to 150 pounds.

THE STONINGTON ISLAND TRAGEDY

We now have some more details about the tragic loss of Tom Allan and John Noel, from Stonington Island, which was reported in the September issue. Sir Vivian Fuchs, Director of the British Antarctic Survey, writes:

"The camp site was examined in detail and it was revealed that they had been living in an excavated cave 8 ft. in diameter. Neither the main tent nor the emergency tent had been erected. The sledges had been unloaded and the boxes stacked to form a windbreak. The cave had been dug near to, and partly beneath one

sledge, the top being 1½ ft. beneath the original surface. When found, another 5 ft. of snow had formed above the sledge and this was so hard packed by the wind that it took four men two days to dig it out.

"Inside the cave were their sleeping bags, primus stove, fuel and rations, besides personal equipment. It is therefore clear that being unable to erect a tent in the blizzard which had arisen, the men, quite correctly, found protection beneath the surface.

"On the surface the dogs will have been continually buried by snow, and being attached to their traces will have needed to be dug out and brought to the surface every few hours. This is the normal practice in such conditions and the men will have taken turns at doing this. One team was found dead on the surface, while the second team lay buried, which indicates that this work was going on. Allan was found fully dressed, with a shovel beside him, 100 yards from the camp site, and it seems probable that in going to dig up the second team he missed his way in the dark and the driving snow. He would then have wandered searching for the entrance to the cave.

"Meanwhile Noel, alarmed at the failure of Allan to return, must have gone to the entrance and stood shouting in an effort to guide him back. Noel was found with his head and shoulders above the surface and his legs in the tunnel entrance to the cave: he must have remained at his post for a long time—until becoming exhausted with his effort, and with the constant noise and buffeting of the high winds blowing around him, he fell into a sleep from which he did not wake.

"The rescue party sent out from base brought the bodies back to Stonington Island, where they have been buried on a promontory overlooking Marguerite Bay."

**Have you BOUND your
Volume 3
with the INDEX available?**
(See Dec. 1965 issue, p. 215)

NOT VANDALISM

[A New Zealander who is in touch with events in the Antarctic Peninsula area has suggested that a wrong impression might be given by the report in our March issue of "vandalism" at the Admiralty Bay hut of the British Antarctic Survey. We have therefore made enquiries and have received a first-hand report which throws a different light on the events to which the original Press report referred.—Ed.]

The Admiralty Bay base was closed in a hurry in the 1961-62 summer by the "John Biscoe". A few days later "Shackleton" was sent to make sure the hut was properly closed. "Shackleton" returned the following year and found that the hut was already in poor condition, with bedding, etc., very damp. In this area there is rain in summer, and the hut is on low-lying swampy ground. Following alarming reports, "Shackleton" again visited the hut in 1965-66 and found that it was "in a mess" through dampness and the ravages of wind. A generator was got going, the hut was cleaned up and more roofing put on. A small Argentine party had evidently used the hut during one summer but, says our informant, "probably left it far better than they found it". There was no evidence of any vandalism by anybody, and no windows, doors or ventilators were open or damaged.

RICHARD BROOKE

Richard Brooke, who as a young Royal Navy Lieutenant was one of the two Englishmen who wintered at Scott Base in Hillary's team in 1957, has been appointed Head of the Administration of the Mountaineering Association, one of the most responsible mountaineering appointments in Britain.

He will be remembered as a leading participant in the preliminary trail-finding sledge journeys in January 1957, and for his leadership of the northern party which worked in the mountains west of McMurdo Sound in early 1958.

SOVIET PLANS FOR TWELFTH ANTARCTIC EXPEDITION

"Spring is coming to the ice-clad continent. The sun is shining and the temperature rising . . . only -50°C . at Vostok Station."

That was how Yu. A. Habarov, Director of the Soviet Arctic and Antarctic Institute, explained to a "Pravda" correspondent on October 20 why the 11th Soviet expedition would shortly be returning to Russia, and the 12th expedition would be setting out for the Antarctic.

WINTERING

Wintering at **Mirny** have been 67 men, comprising in addition to the leader 27 scientists, 10 radio operators, 3 pilots, 13 mechanical engineers, 8 employees in the mechanical engineering shop, 1 quartermaster, 3 cooks and 1 accountant.

At **Novolazarevskaya** have been 14 men, 9 scientists, 1 radio operator, 3 mechanical engineers and a cook.

The **Molodezhnaya** team of 42 comprised 20 scientists, 15 carpenters, 2 radio operators, 2 cooks and 3 mechanical engineers.

The 12th Expedition will carry on with the work initiated by previous expeditions along the coast of the Southern Ocean and in the inland regions of the continent. The following fields will be covered: aerometeorology, geophysics, glaciology, geology, hydrology, biology, transmission of radio waves and acclimatisation of man to polar conditions.

Important work will be carried out in Enderby Land and Queen Maud Land. About 80 members will winter over at Molodezhnaya and Novolazarevskaya stations. Hydrographic research will continue in and around Alashev Bay under the direction of V. Maltsev, a scientist and member of six previous expeditions. The resulting data will be used to improve existing oceanographic maps and compile new ones.

The Soviet technical and scientific base in Enderby Land continues to grow steadily with its centre in Molodezhnaya, which looks more like a "capital" every day.

The scientists will keep in mind the needs of Soviet whalers operating in Antarctic waters. The latter will be kept informed by radio from Mirny of hydro-meteorological conditions.

LONG TREK PLANNED

During this coming summer an expedition will be undertaken from Molodezhnaya into the interior of the continent towards the "white spot", which extends southwards from the coast of Queen Maud Land. Two sledges and a tractor will be employed on this 3,000-km. trip, which will take a course from Alashev Bay towards the Pole of Relative Inaccessibility. From here the party will proceed to Novolazarevskaya Station in the Schirmacher Oasis. Glaciological, geophysical, seismic and gravimetric studies will be undertaken during the trip and measurements will be taken for the first time of the thickness of the ice cover in this area.

A party of geologists will set out from Alashev Bay for the inland areas of Antarctica to study geological and geographical phenomena in the central mountains of Queen Maud Land, which cover several tens of thousands of square kilometres. The party of geologists under the direction of Professors M. Ravic and D. Solovyev, will be assisted by several aircraft belonging to "Aeroflot", which will enable them to carry out hundreds of landings which would be impossible otherwise. They will visit the Sor Rondane

Mountains, Yamato, Voltat, etc. The expedition will end in Novolazarevskaya.

More than 300 scientists, seamen, pilots, tractor drivers and builders will take part in the new expedition. The head of the expedition will be a polar veteran, V. Gerbovic. In charge of the air party will be an experienced pilot, L. Kluyev. A geographer, P. Senko, who has spent three winters in Antarctic will take charge of all seasonal work of the 12th expedition.

The "Ob" will be the first vessel to reach the Antarctic coast. It will have over 100 members on board, together with several thousand tons of cargo and goods. These include tractors and snow-cats, aircraft, the first aluminium house for Molodezhnaya Station, scientific equipment, provisions and various other things. The remainder of the expedition will be flown in January from Moscow to Australia. From Fremantle they will be taken to Antarctica on board the "Ob".

As in previous expeditions, a number of foreign scientists will take part in the new expedition.

NEW MODEL HOUSES

This year Antarctic scientists will be moving into new aluminium houses. The construction of these has been undertaken by the Strelinsk shipyards. This is the first time polar houses have been constructed not of bakelised plywood, but of aluminium panels.

Aluminium, the experts say, can stand up to ice pressures. The most important thing about it though, is that it is much lighter than materials previously used. A panel of Arbolite weighs 3.5 tons, but an aluminium panel of the same size weighs in all 215 kg. Aluminium houses are also more easily assembled.

This summer the first two aluminium houses will come into use. Polar workers will be comfortable in the large light rooms. The size of one of these new buildings is fairly large: length — 25 m., width — 9 m., height — 5 m. Twenty men can easily be accommodated. So that snow

does not pile up against the houses, they have been built on piles rising 1.5 m. above the ground. The unusual "filling" of each individual panel (there is a layer of foam plastic between two sheets of aluminium) keeps the heat in.

A RADIO REPORT

L. Dubrovin, Deputy Leader of the 11th Expedition, reported by radio on October 6:

"V. Tripolnikov has a very interesting job. By means of seismic equipment he studies the oscillations of fast ice in the Davis Sea. Despite the width of the ice belt which reaches out 600 km. from the Pravda Coast, the fast ice in the Mirny region experiences constantly noticeable oscillations. These are caused by the swell and the waves originating around some overturned iceberg or a crumbling ice barrier.

"Soviet scientists continue to collaborate with members of other foreign Antarctic expeditions. Closest collaboration exists between our scientists and our Australian neighbours at Mawson and Wilkes, the members of the Belgian-Dutch Expedition and the Japanese polar workers.

"Taking part in our expedition are scientists from Poland, Hungary and the U.S.A., while our geologist, L. Klimov, is working at McMurdo Station."

STOCK IN HAND

During the 1965-66 summer the Eleventh Soviet expedition established stocks for two to three years at the Soviet Antarctic stations. At **Mirny** four reservoirs with a total capacity of about 4,000 cubic metres were constructed and filled with diesel oil, aviation petrol and kerosene.

At **Molodezhnaya** eight reservoirs with a total capacity of more than 6,000 cubic metres were constructed and stocked.

The tanker "Frederic Engels" discharged approximately 10,000 tons of petroleum products at the two bases. The tanker sailed from Batum on January 31, was in the Antarctic from February 27 to March 23, and returned to Tuapse in the Black Sea on April 19.

NEW POLAR SHIP

The designing of a big research ship fit for navigation in austere polar conditions has begun in Leningrad. The new ship will be able to make long trips to the southern ocean. Its solid hull and big power plant will enable the vessel to break through ice on the approaches to the shores of Antarctica. It can also be used in the Arctic regions.

Twenty laboratories, to be set up on board the ship, will ensure the fulfilment of a complex of research in oceanology, geophysics and aerometeorology. The ship will be able to take a helicopter on board and a special "shaft" in the hull will enable scientists to use oceanographic instruments.

MINERALS?

Antarctica has promising mineral resources, including gold and diamonds, according to Yevgeny Tolstikov, a prominent Soviet Polar research scientist.

Writing in "Pravda" on the newly-completed Soviet Atlas of Antarctica, he said the frozen continent's other main mineral resources were beryllium, mica rock crystal, graphite and radioactive materials, the Soviet news agency, Tass, reported on September 25.

FIRE

Again a fire is reported at one of the South African bases, this time at SANAE. The fire broke out in the night of November 9, in the sub-station near the main base. Fortunately it was nothing serious and no injuries were sustained.

N.Z. ANTARCTIC VETERAN ENGAGED

Congratulations to Arnold Heine, whose engagement to Jan Hardwicke of Soil Bureau, D.S.I.R., has just been announced. Arnold was at Scott Base in 1956, and the latest of his ten sojourns in the Antarctic—all working ones, including a wintering over—was this spring, shorter than usual because of an operation only a few weeks earlier. Our readers will join us in hearty congratulations to the happy pair.

THE VETERANS PASS

A. K. JACK

An Australian physicist who was stranded in Antarctica for almost two years during Shackleton's 1914-17 trans-Antarctic expedition died in Melbourne on September 26, aged 81.

He was Andrew Keith Jack, of Caulfield, who later became head of the munitions establishment in the Department of Supply.

After taking his B.Sc. in 1912 and his master's degree two years later while science master at Dookie Agricultural College, Mr. Jack sailed in the "Aurora", one of the expedition's ships, to McMurdo Sound.

In May, 1915, the ship, on which the party intended to winter at Cape Evans, was blown out to sea before it could land stores or equipment.

Ten men, including Jack, left behind, had to exist on the equipment and stores left by previous expeditions. Three of the party were to die before help came.

During the long wait, Keith Jack acted as meteorologist. He was extremely painstaking and conscientious, neat and precise in all he did, and popular with his companions.

In March, 1916, the "Aurora", which had become ice-bound, escaped from the ice far to the north of Oates Land. The Aurora Antarctic relief expedition was organised and picked up the seven survivors from Cape Evans in January, 1917.

On his return to Melbourne, Mr. Jack volunteered for the AIF, but was seconded to the munition establishment at Maribyrnong.

Mr. Jack was a fellow of the Institute of Chemistry and a fellow of the Royal Australasian Chemical Institute.

He is survived by his wife and a daughter.

At the time of his death he was still using the watch which Shackleton gave him after the expedition.

Argentine Antarctic Programme for 1966-1967

The Argentine Antarctic Institute has forwarded us the tentative programme for scientific and logistic operations at the Argentine bases during the 1966-67 summer and the 1967 winter. A summary follows:

The organisations involved, in addition to the Institute itself, are the Naval Hydrographic Service, the Naval Antarctic Group, and the Argentine Army and Air Force.

ANTARCTIC INSTITUTE

The summer party, CAVIAA (Campana Antártica de Verano del Instituto Antártico Argentino), will comprise Institute personnel and others who will be engaged on maintenance work at Almirante Brown Base and on completing the erection of a new auroral tower at General Belgrano. The winter team (CINIAA) will be composed of Institute personnel.

In addition to the stations mentioned above, the Institute will be responsible for the scientific programmes at Deception Island and Puerto Paraiso, as well as on the icebreaker "General San Martín" and the transport "Bahia Aguirre". The programmes include auroral photography at General Belgrano, a continuous record of the nuclear component of cosmic rays on a north-south profile on board the "General San Martín", ichthyological studies and the collection of biological specimens at Puerto Paraiso, the collection of samples for analysis of radioactivity at Deception Island, limological, geological and geochemical studies on the lakes of Deception Island, and sea-ice studies from ships and aircraft.

At Almirante Brown a ramp is to be constructed for the launch "Kolenten".

NAVAL HYDROGRAPHIC SERVICE

In addition to the relief of the personnel at Deception Island and the Orkney Islands, the Naval Hydro-

graphic Service will inspect all the lighthouses, beacons and signal lights installed by Argentina in the Antarctic. Oceanographic work will be continued in Drake Strait and the Weddell Sea.

At the Naval base Orcadas (Orkney Islands) an extensive programme in meteorology, aurora, geomagnetism, glaciology, biology (birds and mammals) and snow studies will be undertaken. At Deception Island the Service will carry out research in meteorology, aurora, ionosphere, glaciology, biology and snow research. At Hope Bay (Esperanza) the main work will be in marine biology (paleo-botany and paleo-zoology) and the collection of fossils for later classification and study.

NEW STATION

A new base is to be established on Dundee Island, the aero-naval station "Petrel". Here, work will be undertaken to determine the practicability of constructing a landing strip on solid ground on the island.

ANTARCTIC NAVAL GROUP

Prior to the commencement of the summer season, in the second fortnight of November, with the object of gaining information on the state of the ice as an aid to ship movements, the aero-naval group was to carry out exploratory flights in the Mar de la Flota area. The sea-going tug A.R.A. "Comandante General Irigoyen" from Ushuaia was to undertake surface observations in the same area. When the ships rendezvous in the operational area, reconnaissance flights were to be made as circumstances required, and preparations made to evacuate the bases by air if this should prove necessary.

A.R.A. "Bahia Aguirre" will relieve and re-provision the bases in the Antarctic Peninsula area and take in material for building the new "Petrel" station.

A.R.A. "General San Martin" will relieve Orcados Base and then proceed to the Weddell Sea to relieve the General Belgrano and José M. Sobral Bases before returning to Ushuaia. She will then attempt a record penetration of the Weddell Sea before completing the work of relief, re-provisioning and inspection, and the transport home of the working parties.

Operations will conclude with the return to Buenos Aires in the first fortnight of March, 1967.

ARMY OPERATIONS

The Army will be responsible for re-provisioning Esperanza, General Belgrano and Sobral Bases.

AIR FORCE

The Air Force will relieve and re-provision Teniente Matienzo Base. Air photography and reconnaissance investigations will be carried out of new areas for landing strips for Beaver, Otter and newer-type aircraft.

RESTORATION

The stone hut at Hope Bay on the Antarctic Peninsula built and occupied throughout the 1903 winter by three men, Gunnar Andersson, Duse and Grunden, of the Nordenskjöld expedition of 1901-3, marooned when the "Antarctic" sank, has been almost completely rebuilt by an Argentine party.

The larger hut on Paulet Island in which another marooned party of six men from the same expedition also wintered in 1903 is still there but minus a roof. Some relics of the ill-fated Swedish expedition still remain.

ADVICE FOR COVER COLLECTORS

We regret to report that "Dill Reports the News", the informative weekly news-sheet which has been issued for several years by Joachim Dill of West Germany, ceased publication at the end of November. Prac-

tically every issue has had some helpful advice to cover collectors on obtaining philatelic covers from Antarctic ships and bases and collectors will miss Herr Dill's encyclopaedic knowledge of the "stamp" world.

We reprint from a recent issue (without any alteration of the English) some general advice to novice collectors, including those who wish to obtain stamped envelopes from the Antarctic.

"Printed Matters Postal Rates are allowed only, if a printed clipping is in a non-sealed cover; blank cartoons do not be a 'Printed matter', nor a cover within nothing. If you have to forward covers for postmarks, ship mail, airmail, which are to be mailed as 'printed matters', please enclose in each any piece of printed paper. Please do not expect, that your correspondents or the ship's pursers or airlines' clerks will do that for you. If no printed paper in an envelope, you risk the loss of your covers: According to the rules of the Universal Postal Union, covers which cannot be considered as 'printed matters', may not be forwarded to the addressee and, if there would not be on them the sender's address, they could not be returned".

ANTARCTIC ASSOCIATION

The fourth Annual Dinner of the South African Antarctic Association was held in Pretoria on June 4. To honour the request by SCAR that 1966 be regarded as Antarctic Year to commemorate ten years of international co-operation in the Antarctic, representatives were present from the United States, the United Kingdom, Belgium, Australia, Japan and France. Highlights of the evening were the lively and stimulating speech by Professor J. A. Gledhill referred to below, and the presentation to Mr. Marten du Preez of the Antarctic Medal.

Also to commemorate the decade, a large-scale exhibition under the auspices of the Association was arranged for October 11-14 in Pretoria. Lectures were given and a dinner held in Johannesburg. Transport was arranged for school children from neighbouring towns.

Life At The South African Antarctic Base

[Reprinted from an article by S. Kavanagh, Leader of SANAE VII, in "Antarktise Bulletin", March-May, 1966]

The position of SANAE base is 70° 18' south latitude, and 2° 21' west longitude. It is situated on an ice shelf, which is 900 to 1,000 feet thick, and 15 kilometres (10 miles) from the ice cliffs. The ice cliffs form the seaward edge of the ice shelf which is so characteristic of Antarctica. All around is only ice. The nearest rock outcrops are over a hundred kilometres to the south in the direction of the geographical south pole.

The present base was built in 1962 by the third expedition led by Marten du Preez. Though it was then constructed on the surface of the snow, it has sunk and been covered by snow from the frequent blizzards, so that access to the quarters is now gained by vertical shafts over twenty feet in depth.

Although we have had problems with uneven settling of buildings, the base is still in a good condition. The present expedition is South Africa's biggest expedition to the Antarctic so far and has fifteen members: a leader, a medical doctor, two diesel mechanics, radio technician, radio operator, three meteorologists, three upper air physicists, a geomagnetist and two geologists.

By April the research programme was in full swing, after the whims and fancies of the various apparatus have been mastered. Although not functioning perfectly yet, their peculiarities are known and we know where to allow for errors. The men have settled to a solid programme of work. Scientific data are collected daily (and nightly), most of which will ultimately be processed in South Africa and thereafter find their way to many parts of the world. Already in our short stay here scientific data transmitted amounts to over 50,000 groups, mostly of

meteorological significance.

To each machine and piece of apparatus an apt nickname, sometimes not very flattering, has been given, the name implying the amount of trouble we initially had with the particular item. Beast and Jezebel are some of the mildest.

By April the sun hardly appears above the horizon, and within the next month it will disappear altogether for two months. But this winter night is compensated for by two months' continuous sunshine in summer. The temperature has already reached low levels of near 50°C.

The monotony of the icy plains is relieved by mirages of icebergs which slowly float past beyond the horizon. These mirages appear, of course, upside down. To the south occasionally on a bright day we see the upside down mirages of the rocky outcrops. The sun is often ringed by the most complete halos. Refraction distorts the shape and size of the moon into grotesque shapes and sizes, sometimes quite alarming when it seems to be right on top of you.

Enough stores are in the base to enable us to live for months without going outside. But still we regularly go outside to do meteorological observations and to watch the impressive stars, moon and auroras.

All are busy. Besides being busy with the research programmes, every member of the expedition has to do his share of the house work, help to fill the snow smelter to keep us regularly in fresh water supply. Floors are scrubbed regularly to get rid of the dirt which falls down through the shafts. Diesoline drums are to be excavated from under the snow.

Mostly life runs smoothly, only upset at the most inopportune moments by the unpredictable behaviour of apparatus. Some items just cannot get accustomed to the low temperatures.

SANAE NEWS

In September the South African Department of Transport reported as follows:

Research at Sanae is progressing satisfactorily. Unfortunately, the photometer used in conjunction with the Airglow programme has failed completely with the result that it has had to be abandoned.

Owing to the disappearance of the sun, work was restricted to the base. With the advent of the summer, the geologists are preparing to continue their work in the mountains. The men are enjoying excellent health and are in high spirits. They are looking forward, even at this early stage, to their return to South Africa.

In the meantime in South Africa we are busy nominating the next expedition to be known as Sanae 8. Adam Fleetwood Gilfillan Rossouw has been appointed as leader. Mr. Rossouw is 40 years old. He is married and is the father of two young sons. Mr. Rossouw holds a Master's degree in chemistry and is at present a senior research officer attached to the National Building Research Institute of the South African Council for Scientific and Industrial Research. Mr. Rossouw will be detailed to investigate the behaviour of the building structures at Sanae.

SANAE HELD THE KEY TO A SPACE RESEARCH PUZZLE

Addressing members of the South African Antarctic Association on June 4, Professor J. A. Gledhill of Rhodes University, Grahamstown, gave an example of the "practical" value of international research in the Antarctic. South Africa began ionospheric studies at its base, SANAE, in 1962 and a series of Rhodes University men saw to it that the study was close and un-

interrupted, and that the results were speedily made available.

Professor Stoker of **South Africa** attended a cosmic ray conference in Kyoto, **Japan**, in 1961, at which he heard a paper read by a group of **Russian** scientists who predicted that the outer radiation belt came right down into the ionosphere only a few hundred miles north of SANAE. Prof. Gledhill then learned from the satellite observations of a **Californian** professor that in one of his maps the so-called South Radiation Anomaly was directly overhead at SANAE, so that the South Africans were in a unique position to study the effects produced by the penetration by the particles in the radiation belts.

The next partner in this international detection game was a **Canadian**, one of many research workers who had particle counters in satellites during 1962 and 1963. Dr. McDiarmid's observations were at the conjugate area to SANAE, the other end of the line of force of the earth's magnetic field that runs through SANAE. There was a remarkable correlation between the occasions when the satellite passing through the conjugate area registered a high count of electrons, and periods of disturbance of the ionospheric layers at SANAE, disturbances of a nature which Prof. Gledhill had predicted. His paper on the subject read at the International Space Research Symposium in **Argentina** last year aroused great interest.

The study of ionospheric disturbances at other places beneath the radiation belt, including New Zealand's **Campbell Island**, now helped to fit the pieces of the puzzle together and thus to make possible a great step forward in man's knowledge of the ionosphere—which makes long distance radio communication possible.

And as Professor Gledhill points out, "Had we not gone to SANAE, we would never have found the key to the puzzle."

50 YEARS AGO

In December, 1916, the seven survivors of the ten men marooned when "Aurora" was blown out to sea in May, 1915, were facing the bleak prospect of a third winter in the Antarctic. "Aurora", they thought, must have been sunk with all aboard her.

Richards remembers* —

"For the rest of 1916 our time was well filled one way and another, and the task of getting seals for meat and fuel was a never-ending one. Our effective numbers had by now been reduced to five men, for in August I became ill, presumably as an aftermath of the severe physical stress during the earlier sledging season, and remained more or less useless for the rest of our stay. In addition, another member of the party displayed some aberrations in behaviour and ceased to become an effective working unit.

"Personal relationships between all of those who wintered in 1915 and 1916 were very good. There was no ill-feeling and no grudges were nurtured. We had fierce arguments from time to time, but they were quite good humoured. The long polar night did not appear to adversely affect our spirits, nor create any particular psychological problems. Possibly we were too busy. . . . However we did look forward with some anxiety to see what January would bring forth."

Joyce in his diary describes the events of late December 1916 and early January 1917.**

"I then prepared for another journey to the South, picking out Wild and Gaze to accompany me. My object was to pick up the geological specimens which I left behind on my journey back from South. Our clothing was inadequate and would

* "The Ross Sea Shore Party, 1916-17", 1962 SPRI.

(Prof. Gledhill's address is published in "Antarktiese Bulletin" No. 16, July 1966: copy in the library of the Antarctic Division, D.S.I.R., Wellington.)

not allow us the liberty of staying out too long. We started off with excellent weather. Our dog team consisted of 8 dogs, this included the puppies. The specimens were about 48 miles from Hut Point. . . . One of the objects was to erect a cross over Smith's grave. This cross was made out of some wood which was found around the hut. Gaze and Jack made a good job of it. On the cross the following was carved: 'Sacred to the memory of Rev. Spencer Smith who died on March 9, 1916. A Brave Man.' On the fourth day out this cross was erected on a cairn over the grave 12 feet high."

Back at Cape Evans:

"After a rest we started to prepare for another year's isolation. Killing and bringing in all seals. Our one conversation was: will a relief ship be sent down to us, and the probable fate of Shackleton and party. Most of us thought the 'Aurora' had been squeezed by the ice and probably gone down.

"On January 10 after breakfast Richards went out of the hut and sang out 'Ship O!' We made one wild rush out of the door and sighted the ship and gave three hearty cheers and shook each other by the hand. I then harnessed the dog team up and packed the sledge with as much gear as possible and started out on the sea ice. We had to be very careful as the sea ice was breaking up and the ship was about 8 miles away. . . . When about 5 miles I saw 3 men coming out to meet us . . . on coming closer I recognised the walk of Shackleton . . . I gave him the old Nimrod cry and he answered. On coming up to him he said 'Joyce, old man! More than pleased to see you. How many of the party are alive?' I told him we had lost 3, then the 3 of them laid down flat on the ice. I thought they had gone dilly but I found it was a prearranged plan with the Captain of the ship to let him know how many were alive. After this he gave me a cigarette which was nectar after being without tobacco for such a long time."

**From his own transcript of his log in Turnbull Library.

MEETING IN SANTIAGO . . .

Santiago, Chile, was this year the venue of three important gatherings at which representatives of the nations engaged in Antarctic research conferred on matters of common interest. We are indebted to Dr. R. K. Dell, Director of the Dominion Museum, for this outline of the Oceanography Symposium and of the 9th meeting of S.C.A.R.

Professor G. A. Knox and I arrived in Santiago several days before the commencement of the Symposium. A large exhibition on national activities in the Antarctic had been organised and was displayed in the University of Chile. We spent Monday, September 12, setting up the New Zealand exhibit. This had been organised by the Antarctic Division of D.S.I.R., and the small explanatory pamphlet in Spanish which had been supplied proved very popular. All the SCAR nations had furnished exhibits and the exhibition was freely open to the public.

OCEANOGRAPHY

From 13th to 16th the Symposium on Antarctic Oceanography was held in the main building of the very modern State Technical University. All the SCAR nations were represented by some 120 participants in all and a very full programme of scientific papers was delivered. The papers were divided into the following sections.

- (i) Surface and upper layers.
- (ii) Deep waters.
- (iii) Ocean floor.
- (iv) Coastal waters.
- (v) Pack ice regime.
- (vi) Productivity.

The aim of the Symposium was "to review the present status of research and to point out areas and problems requiring attention in the future". Amongst the important general conclusions which resulted from the Symposium were the following:

1. Pack Ice Regime. It became very obvious that one of the least known of the Antarctic areas was that of the floating pack ice. Important lines of research advocated were studies on ice formation and disintegration, its extent, the predic-

tion of ice cover, the movement of waves through the pack and the associated life, especially on the sea floor below and in the sea itself just beneath the pack.

2. Disturbance of the Antarctic Ecosystem. The removal of a high percentage of the Baleen Whale population from Antarctic waters is the only major change which man has made to the Antarctic ecosystem. Pelagic sealing and the exploitation of krill is likely to be undertaken during the next few years. Every possible step should be taken to examine this relatively untouched ecosystem before it is further disturbed so that we may have standards for the future.

INTERLUDES

On Saturday, September 17, an official trip to the coast of Valparaiso was planned by our Chilean hosts. We passed through the coastal hills, skirted Valparaiso and visited the Marine Biological Station at Vinar Del Mar. This station, built in part over the sea, has a qualified staff, very good laboratories and a good library. Most of the work in progress is concentrated on the local marine resources. After a magnificent lunch we went back to Valparaiso and were able to visit the "Eltanin" which had just berthed.

Sunday was the Chilean National Day and the following Monday was the day of the Army. These were both national holidays. On Monday afternoon the SCAR delegates and observers were invited to a grand parade of the Armed Forces of Chile before the President of the Republic. On Tuesday morning, September 20, delegates and observers assembled for the 9th meeting of SCAR.

S.C.A.R. MEETING

Professor Knox was the official New Zealand delegate and I was an observer. All the SCAR countries were present with such representatives as Sir Vivian Fuchs and Sir Alistair Hardy (United Kingdom), Admiral R. Panzarini (Argentina), Dr. P. Law (Australia), Professor d'Etigny (Chile), General R. Laclavere (France), Professor Nagata (Japan), Dr. Gjelsvik (Norway), Dr. Naude (South Africa), Professor G. Avsiuk (U.S.S.R.), and Dr. M. Steyaert (Belgium), under the presidency of Dr. L. M. Gould (United States) and with Dr. G. Robin (United Kingdom) as secretary. The first plenary session considered reports from the Working Groups, noted major SCAR activities since the last meeting, the relationships with other international bodies and the publication of the SCAR Manual. Certain major considerations relating to the future activities and objectives of SCAR, and the structure and effectiveness of the Working Groups were referred to meetings of the delegates.

WORKING GROUPS

The Working Groups on Oceanography and Biology also met during the course of the meeting. That on Oceanography elected a Convener (Dr. D. Leipper, U.S.A.), held a joint meeting with that on Biology to try to define more precisely their overlapping spheres of interest, and lay down a programme for investigation, particularly of the pack ice and Antarctic benthos.

The Biology Working Group had a very full series of meetings under the Convenership of Dr. M. Holdgate. Many of its deliberations concerned recommendations to be made to the meeting of Antarctic Treaty Nations in November. These concerned particularly protected species, protected areas and pelagic sealing.

S.C.A.R. DECISIONS

The final plenary session of the 9th SCAR held on September 23 agreed on the following points:

- (a) The terms of President and Vice-President were to be four years

instead of three years. Dr. Gould was re-elected President and Admiral Panzarini Vice-President.

- (b) That full SCAR meetings of national delegates and two to four Working Groups should be held every two years.
- (c) That the Executive would meet in alternate years, together with some Working Groups and Sub Groups.
- (d) The 10th Meeting will be held in Japan in 1968.
- (e) A Symposium on Antarctic glaciology will be held at Dartmouth College, Hanover, U.S.A., in 1968.
- (f) A Symposium on Antarctic Biology will be held in 1968, probably in the United States or Europe, the subject to be the Antarctic Ecosystem.
- (g) Many of the Working Groups need to be vitalised to make them more effective. The need for the establishment of sub-groups was recognised and some re-organisation of Working Groups was planned.

The organisation of the arrangements for the Symposium and the SCAR meeting by the Chilean National Committee was superb. Many social functions were organised and it was arranged for delegates and observers to meet the President of Chile at a special reception.

FOURTH ANTARCTIC TREATY CONSULTATIVE MEETING

The Fourth Consultative Meeting of the Signatories of the Antarctic Treaty took place in Santiago, Chile, from November 3 to 18. Previous meetings were held at Canberra in 1961, Buenos Aires in 1962 and Brussels in 1964. The New Zealand delegation for this meeting comprised Mr. J. Shepherd, Counsellor at the New Zealand Embassy in Washington, and Dr. E. I. Robertson, Assistant Director-General of the Department of Scientific and Industrial Research.

There were eleven items on the agenda, four of which dealt with aspects covering the implementation

of the Agreed Measures for the Conservation of Antarctic Fauna and Flora recommended at the Brussels meeting but not yet in formal effect. (The Recommendations of Consultative Meetings do not become binding until ratified by all the Treaty Powers.) In the case of the Agreed Measures, however, the Treaty Powers have accepted the provisions as "interim guidelines" for their expeditions.

New Zealand put forward two draft proposals for better co-ordination and exchange of information on activities under the scope of the Agreed Measures.

Some of the topics to be discussed were sealing, tourism, telecommunications, meteorology and logistics. Other "house-keeping" items related to the formal status of meetings of experts under the Treaty, and the question whether states acceding to the Treaty are automatically bound by previous Consultative Meeting Recommendations.

In his speech at the opening session, the leader of the New Zealand delegation expressed the hope that although some of the issues which were to be discussed involved very real problems, these would not obscure the need for co-operative and effective action. New Zealand hoped also that good relations between the Antarctic Treaty Powers would serve as a starting point for friendly co-operation in other spheres.

FAUNA AND FLORA SPECIALLY PROTECTED AREAS

Among the Agreed Measures laid down at the eighth meeting of SCAR in 1964 for the conservation of Antarctic Fauna and Flora, certain criteria were included for the establishment of specially protected areas. These criteria included such points as the existence in an area of unusual communities of plants and invertebrates, or rare species of birds or mammals and the need to protect long-term scientific studies on species or communities vulnerable to disturbances.

Among the 15 areas recommended as "Specially Protected Areas" by the recent SCAR meeting are the following situated in New Zealand's Ross Dependency:

At **Cape Hallett** (79° 19' S., 170° 13' E.), a rectangular area—a slope rising from the beach—near Seabee Hook and east of Willett Cove 450 m. from west to east and 300 m. from north to south. It includes a patch of particularly rich and diverse vegetation supporting a considerable terrestrial fauna. It also includes part of an Adélie penguin colony and of a skua breeding area.

At **Cape Crozier** (77° 31' S., 169° 19' E.), the easternmost point of Ross Island. A strip extending 3 km. inland from the coast between Bomb Peak and a point 4 km. west of Williamson Rock, the Rock itself and all ice shelf and fast ice within 4 km. of the coastline. The site of the first Emperor penguin colony ever found and also of Adélie penguin and skua colonies.

Beaufort Island in the western Ross Sea (76° 55' S., 167° 05' E.), which supports an interesting and representative avifauna, including a large population of Adélie penguins and probably a small colony of Emperors. The island (some 6 km. by 4 km.) is very vulnerable to human pressures, the only helicopter landing ground being within the Adélie colony.

Sabrina Islet and the adjoining rocks (66° S., 163° E.) in the Balleny Islands. It has important bird colonies including the recently discovered colony of Chinstrap penguins, the only one known on this side of Antarctica.

In the **Taylor Valley**, close to the termination of the Taylor Glacier (67° 26' S., 160° 50' E.). One of the few large colonies of the Emperor penguin located wholly on land.

SCARLOG

The Working Group on logistics, SCARLOG, with Paul-Emile Victor of France as Chairman and Frank E. Bastin of Belgium as Secretary, plans the completion of an "Accident Prevention Manual" which it is hoped to have completed by November 1967. The manual will cover such



Syowa Base on Ongul Island. Heliport in foreground.

ANTARCTIC STATIONS

8

SYOWA

Syowa is the sole base of the Japanese Antarctic Research Expedition. The locality is $69^{\circ} 0' 24''$ S. Lat., $39^{\circ} 35' 24''$ E. Long. Syowa was established as an Antarctic station site in 1956-57 for the International Geophysical Year. It is located on the north-east corner of East Ongul Island, which is three miles distant from the Antarctic Continent, off Prince Olav Coast. The first recorded sight of this island was by the Norwegian expedition under Lars Christensen in his flight in 1937. It is an interesting fact that Syowa lies approximately 100 miles south of the

point $67^{\circ} 15' S.$, $39^{\circ} 35' E.$, which Captain James Cook reached on January 17, 1773, in history's first recorded crossing of the Antarctic circle.

During the search for an IGY station site, the Japanese Antarctic Research Expedition succeeded in penetrating Lütow-Holm Bay in 1957 for the first time after the attempt made by the U.S. Operation High Jump in 1947. Because of the light ice conditions prevailing at the time, the expedition ship "Soya" was able to approach close to East Ongul Island, where a station was built and called Syowa after the name of the present Syowa era of Japan. Subsequent expeditions, however, encountered increasingly heavy pack ice. As a result, the expedition of 1958 failed to complete the resupply, and the station was vacated for that winter. After the failure in 1958 to break through the pack ice off Prince Olav Coast, the Japanese Antarctic Research Expedition adopted a new

topics as safety measures called for at base, on the trail and during air and sea operations, inter-base rescue operations and survival.

The Group also proposes to issue a yearly Information Booklet on actual Antarctic operations.



Above, the elements may rage, but . . .

method of supply operation to Syowa. Relief operations are now characterised mainly by air lifts, using large size helicopters to ferry personnel and material from the ship moored 40 to 100 miles north of the station at the edge of the fast ice.

However, activity at the station had to be temporarily discontinued and Syowa was closed in February, 1962, because of the superannuation of the relief ship "Soya" and the lack of aircrews necessary for transportation. On the other hand, the necessity for a long-range and continuous study of the Antarctic was keenly felt and the reopening of Antarctic activity was strongly voiced in Japan. In response to this demand, the Japanese Government decided to reopen the Antarctic research programme with the target year set at 1965 upon the completion of a new ice-breaker, "Fuji". The seventh wintering team consisting of 18 men arrived in 1966.

Ongul Island is a series of weathered and eroded ridges of metamorphic sediments and valleys filled with sand and gravel. The high points of the ridges are cleared of snow by the wind, while the valley troughs and hollows are filled with snow which melts to form lakes in the summer months. Here, the climate is rather mild, unlike inland Antarctic stations, and clear summer weather is not exceptional. Syowa is in the vicinity of the Antarctic continent across Ongul Straits and the ice of the continent rises smoothly to the limitless névé of the interior. The coast in this area, named Soya coast after the relief ship, extends to the south and there are many rock exposures in the vicinity. There is evidence that, in the past, the ice extended much further seaward.

Since 1966 Syowa has been greatly improved and enlarged as a permanent scientific station. The principal scientific work at the base is in the fields of upper atmosphere,

middle and low atmosphere, magnetism, glaciology and biology.

The structures are placed on exposures of rock. When Syowa was established in 1957, three standard wooden panel houses and one power room were erected. In the subsequent years additional buildings have been constructed. On the occasion of the reopening of Syowa in 1966, eight were added to the old station. First, a warehouse was built for the summer support party, sleeping quarters and winter storage. Then, a new generator hut and a lavatory were built. These were followed by a combined radio communications building and a new ionospheric laboratory. Several smaller buildings were also erected, including a reefer, a transmitter building and a new geomagnetic observatory.

In the power hut, the installation of two 240 h.p. 35 kva diesel generators and a snow melting apparatus came as part of the construction. The helicopters were used as flying booms to lift the generators into place. The snow melter/water heater utilises both the exhaust and the radiator coolant from the generators. The system is capable of melting 1,800 litres of water from 10°C. to 40°C. in three hours. The station is now equipped with flush toilets

and hot and cold water is piped into the galley. Sewage disposal is accomplished by means of a Mercedes Unimog truck and a 600-litre tank.

About one half of the old passage was replaced by 2-metre diameter corrugated culvert. Several antennas were installed, including a rhombic antenna for the communications transmitter, an ionospheric-sounding antenna, four riometer antennas and a VLF antenna. A new surface meteorological data recorder was installed. This equipment, in addition to recording the standard surface weather elements, shows visually and simultaneously the mean value of wind speed and direction as well as relative humidity. Through the analog computer, all of the standard surface data are automatically typed out in coded form every three hours.

Japanese Antarctic activity will now be carried out on a permanent basis and JARE 1966/68 is scheduled to put in the next wintering team of 24 men. This figure will be increased to 30 the following year. Aside from the traverse to the South Pole from Syowa, the Japanese Antarctic Research Expedition is contemplating the construction of a new inland station and also the launching of observation rockets from Syowa.

IS ANTARCTIC WHALING DOOMED?

Further evidence of the catastrophic decline in whale stocks in Antarctic waters is afforded by the final statistics of the 1965-66 catch, presented to the 18th meeting of the International Whaling Commission in London, which concluded on July 1.

To quote the official press release: "Ten expeditions (5 Japanese, 3 Soviet and 2 Norwegian) operated in the Antarctic in the 1965-66 season and caught a total of 1 blue whale, 2,318 fin whales, 1 humpback whale, and 17,583 sei whales, a total of 4,091 blue whale units (1 blue whale equals 2 fin, 2½ humpback or 6 sei whales). In addition these expeditions caught 4,538 sperm whales in

the Antarctic. In the previous season there were 15 expeditions (7 Japanese, 4 Soviet and 4 Norwegian) which caught a total of 20 blue whales, 7,308 fin whales and 19,874 sei whales amounting to 6,986 blue whale units in all and also 4,211 sperm whales. The total production of baleen and sperm oil from the 1965-66 pelagic season amounted to 678,708 barrels (1 barrel = approximately one-sixth of a ton);

this compared with 1,017,611 barrels from the 1964-65 catch."

Land stations at South Georgia showed an even greater drop in output:

1964-65 2 stations 1,150 whales
1965-66 1 station 239 whales

(The killing of blue whales was totally prohibited following the withdrawal of objections earlier lodged against the complete ban imposed by the 16th meeting of the Commission. The one blue whale listed as caught was killed for scientific purposes.)

DISTRIBUTION

The area round the South Pole Cap is divided into six areas, I (120°W-60°W), II (60°W-0), III (0-70°E), IV (70°-130°E), V (130°E-170°W), VI (170°E-180°W). The waters south of New Zealand form part of areas V and VI. The 1965-66 catch was distributed as follows:

Area	Blue Whale Units	%L
I	14	0.4
II	2439	59.7
III	963	23.6
IV	106	2.6
V	361	8.8
VI	202	4.9

The bulk of the whaling was therefore carried out in the waters south of the Atlantic Ocean.

AGREEMENT

The three main whaling nations have at last agreed on a global limit to their catches of the fast-disappearing mammals in the coming season. A total quota of 3500 "blue whale units" a year has been set, with Japan receiving 46.7 percent, Russia 30.5 percent, and Norway 22.8 percent.

The overall quota considerably exceeds the 2000 unit level advised by scientists last June as being the highest to ensure preservation of the whale. But for some time there was danger that the quota scheme would break down—the whaling industry has traditionally been a scene of international disagreement.

Japan and Norway have agreed to cuts in their quotas — from 52 to 46.7 percent and from 28 to 22.8 percent respectively — to allow Russia to increase hers from 20 to 30.5 percent.

STRONG MEASURES PROPOSED

To lay plans for checking the slaughter which threatens to extinguish whole species of wild life, a meeting was called in London recently by the International Union for the Conservation of Nature, together with the World Wildlife Fund, the Fauna Preservation Society and the International Council for Bird Preservation.

It was decided to try for an inter-governmental conference to be held in 1967. A plan has already been formulated which presupposes action on the governmental level.

John Gulland a British fisheries scientist, proposes that the United Nations take formal control of the remaining stocks of whales, under a treaty, and regulate the harvesting so as to restore their numbers.

GOLDEN ERA OVER

For the great majority of Norway's whaling men the golden age of the Antarctic is over, says the Oslo correspondent of A.A.P.-Reuter.

Whaling is no longer profitable and most of the husky Norwegians who spent half the year earning big money in stinking factory ships in the frozen south have become shore-based workers or are serving in Norway's merchant navy, now of 15 million tons and still growing.

Since World War II Norway has earned about \$550 million in foreign currency from the sale of products of Antarctic whaling.

At one time, more than 10,500 Norwegians were whalers. In 1930-31, Norway had 21 floating expeditions and maintained six land-based stations in the Antarctic.

Other nations joined in, and 10 years ago six other nations sent expeditions to the Antarctic—the Soviet Union, Japan, Britain, the Netherlands, South Africa and Argentina.

Twenty expeditions set out to catch a fixed quota of 14,500 blue whale units.

Last year only Norway, Japan and the Soviet sent expeditions to catch a quota of 4500 units.

Only two Norwegian expeditions went to the Antarctic last season. Next season, there may be only one.

When the financial yields from whaling started to decline, Norwegians pin-pointed the trouble: too many expeditions chasing too few whales.

Despite the international convention, regulating the seasonal catch, scientists continued to issue warnings that the blue whale would become extinct.

That has not yet happened, but the sight of a big blue whale in the Antarctic today creates something of a sensation.

Finding whaling unprofitable, Norwegian shipowners began years ago to branch out into new areas of enterprise, and tankers are now a big part of the mercantile fleet.

This year, Mr. Jahre is entering the fishing industry by refitting the *Kosmos IV* whaling factory as a fish-processing factory with a capacity of 7000 tons of frozen fish.

RIGHT WHALE NOT EXTINCT

Two skindivers who drove a mother and calf whale out of Sydney Harbour early in September, may have saved the last of a rare species on the N.S.W. coast.

Ex-New Zealander Dr. W. H. Dawbin, now a whale expert attached to the Zoology Department of Sydney University, has identified the whale as the rare Southern Right variety.

Underwater photographer John Harding took pictures of the whales in the Harbour. Dr. Dawbin described the photographs as "incredible".

"The last confirmed sighting of this species near Sydney was at Newport six years ago," Dr. Dawbin said. "They hadn't been seen for years before that and many people thought they were close to extinction. You could have knocked me down with a feather when I saw photographs of these whales in Sydney Harbour.

"The odds against them blundering into the Harbour are incalculable.

"The Southern Right Whale was the foundation of the Australian and Antarctic whaling industry in the

1800s. They were considered the "right" whale to catch, hence the name. They were slaughtered by the thousand.

"In the Antarctic, 200,000 of them were killed by the American whalers alone.

"By 1900, the herds had been decimated and Australian whalers had to turn to the sperm whale in eastern States and the hump back in Western Australia."

In 1929, with sightings of the Southern Right almost non-existent, the Australian State Governments put the species under total protection. This late step to save the species was followed by other governments throughout the world. However, protection did not produce new herds.

KERGUELEN (France)

During the July-September quarter, the weather was relatively mild, with only passing snow-falls and the mean temperature oscillating about 1°C. Despite the usual tempests, out side work was able to be carried on. The projects carried out included the construction of shelters for the water tanks and for the transformer of the hydrogen plant, the setting up of a transformer for the sole use of the scientific laboratories, and the construction of the exit road from the quay. Demolition charges were used to clear away the rock.

Meanwhile plumbers, masons and electricians were kept busy on interior construction work and repairs.

A strong hurricane in July damaged two "losanges" of the aerial system: these were replaced on the 27th of the same month.

SUBSCRIBERS PLEASE NOTE

As announced in our September issue, the annual subscription to "Antarctic" for non-members of the Society is now 25/-. Prepaid subscriptions will of course be honoured.

SUB-ANTARCTIC ISLANDS IN THE NEWS

CAMPBELL ISLAND

(New Zealand)

This year has seen the addition of yet another building on Campbell Island — a seismological hut! Mr. R. Martindale of DSIR paid a short visit to install seismological equipment. This equipment will be maintained by the Senior Ionosphere Observer, Colin White.

Mr. Martindale arrived on the American picket ship "T. J. Gary" and travelled with another "first timer" to the island — Mr. P. Roberts of the Zoology Department, Victoria University of Wellington. Mr. Roberts will be on the island until mid-December and will be studying plankton and unique marine life around Campbell.

Gordon Surrey, who has extended his tour to 24 months, continues to do sterling work in the field of bird-banding for the Dominion Museum. Gordon, ably assisted by Dave Paull, has made several trips to Courretjolle Peninsula and Bull Rock and has banded over 1,200 Mollymawks.

A number of Royal Albatross chicks have been coming to Perseverance Harbour this year. Four of these chicks have been killed by Sea Lions — a tragedy indeed, as these chicks are surely one of Nature's most delightful creatures.

(We are indebted for the above notes to Robin Foubister, Officer in Charge, Campbell Island, for 1966-67. — Ed.)

The 1966-67 Campbell Island party comprises:

- R. Foubister, Officer-in-Charge.
- D. Paull, Senior Met. Observer.
- A. M. Bromley, Met. Observer.
- W. G. Little, Met. Observer.
- M. L. Hodgson, Met. Observer.
- P. J. Shone, Met. Observer.
- W. L. Johns, Radio Technician.
- A. B. Dreaver, Ionosphere Observer.
- G. L. Therkluson, DSIR Technician.

H. W. Steuth, Cook.

H. J. van Berkum, Mechanic/Handyman.

C. R. White, Senior Ionosphere Observer.

C. G. Surrey, Coöx, repatriated November 23, 1966.

SNARES

(New Zealand)

The University of Canterbury is planning a four- to six-man biological expedition to the Snares Islands, south-west of Stewart Island, this summer, as a preliminary to a later more extensive effort planned to tie in with the International Biological Programme. This year's party hopes to be on the islands for from four to six weeks in late December and January. The Leader-designate is Mr. John Warham.

The United States Navy will provide logistic support for the expedition and the party will probably leave New Zealand on December 28 on the picket ship U.S.S. "Thomas J. Gary" en route to her ocean station. The men will land next day at the boat harbour on the north-eastern side of Main Island by small boat. In the event of bad weather precluding this, the landing may be made from U.S.S. "Mills" two or three weeks later. The party will be picked up in two sections in late January or early February for return to New Zealand.

The team's stores will of necessity include a 44-gallon drum of water.

MARION ISLAND

(South Africa)

The living quarters at Marion Island were completely destroyed by fire on the night of June 25. Radio equipment and medical supplies also went up in flames. Fortunately no lives were involved and the men escaped with minor injuries.

The personnel were accommodated in another building and the South African Air Force and Navy carried out rescue operations. The research ship, the M.V. "RSA", was sent to the island with supplies. Members of the South African Department of Public Works renovated the old living quarters. All are now housed comfortably.

GOUGH ISLAND (South Africa)

The shock of the fire at Marion was hardly absorbed when it was reported from Gough Island that high winds, which have been plaguing the island lately, destroyed a store housing building materials. This was only a small out-of-the-way building and has, therefore, no serious consequences.

The members of the expedition are all well.

MACQUARIE ISLAND (Australia)

August slipped by fairly quickly. Much of the month engaged all in cleaning up buildings and the station area, with repainting and minor additions. Most of the interiors of the huts have taken on a different hue. Three men trudged to Hurd Point, Caroline Cove, Green Gorge and Lusitania Bay in deep snow and low temperatures to complete buildings. Kraehenbuehl and Edwards in the island's only plateau vehicle, the Gnat, jolted and ploughed their way to Caroline Cove.

Disaster nearly overtook the main source of entertainment when the last film projector excitor lamp blew out, but this was soon rectified.

A large number of bull seals were returning to the island.

During September, the much-awaited equinoctial gales arrived. During the same period the Elephant seals started to form into large harems on many parts of the island. The seal harems of most interest are along Hasselborough Bay from Catchme Corner to Hasselborough Corner and along Buckles Bay from Garden Cove to Halfway Hill. Many of these harems have already built up to 200 lactating cows, after hav-

ing their pups, and then are watched over by a three-ton beachmaster bull who shows a lot of fight towards other bull seals, and man alike, who may venture nearby. The gauntlet is run by those whose job it is to obtain blood and milk samples from cows and pups. Others do a daily seal count and search for bulls and cows who were branded in previous years and returned to the island to pup and mate.

An attempt was made to replenish the fowl population by incubating chickens but unfortunately a disease killed them off. A lot of interest centered around the tri-wheeled vehicle, the Gnat, after it had broken down at Mount Tulloch. It was decided to bring it down from the 800-ft. high plateau to the beach, then to base, for modification.

AUSTRALIAN FRIGATE TO THE RESCUE

On October 20, as a result of urgent radio messages from Macquarie Island that a radio-man, Colin Lebbon (34), was very ill and in considerable pain, H.M.A.S. "Queensborough", then exercising in Tasmanian waters, rushed the 1,500 miles to the island with a surgeon on board.

The frigate anchored half a mile off the island, after battling 50-60-knot winds and mounting seas in hail and snow, on the morning of October 22. "Queensborough" had rolled as much as 35 degrees, a 35-ft. swell repeatedly washed over the decks and the barometer fell to 28.4 in. The island was covered in snow and looked like a huge iceberg through the storm.

A boat was lowered in charge of Lieut. Cdr. M. Aston and the sick man was transferred at 4.30 p.m. after a tense half hour for those on the island and those on the ship. Mr. Lebbon was attended by Dr. John Millar, who diagnosed a stone below the kidney. The ship reached Hobart at 8 a.m. on October 25 and the patient was flown to Melbourne.

Bouvet Island Weather Station Considered Practicable

(Condensed from an article by J. J. Taljaard
in "Antarktiese Bulletin", March-May, 1966)

Third time lucky! This was certainly true of the third South African Expedition to Bouvet Island during February and March 1966. The first two South African Expeditions were only partially successful owing to lack of air support and inclement weather.

As a result of the experience gained the expedition this year was a well-planned and thoroughly executed effort in which the M.V. "RSA" (the ice-strengthened ship of the South African Department of Transport) and the S.A.S. "Natal" (the hydrographic ship of the South African Navy) took part. The "RSA" carried two Wesland Wasp helicopters of the South African Air Force.

The "RSA" sailed from Table Bay on February 22. On board were ten scientists under the leadership of S. A. Engelbrecht, Director of the South African Weather Bureau. There were also two photographers as well as fifteen Navy and Air Force personnel. Captain B. V. Hegarty of the South African Navy was in overall command of the expedition.

The "Natal" provided comforting support. Two biologists, three physicists for ionospheric, air glow and geomagnetic observations, and a meteorologist for radio-sonde soundings were accommodated on the "Natal".

After a fairly rough passage the "RSA" arrived at Bouvet Island on March 3 at 1100 SAST.

Although Bouvet has always been regarded as most inhospitable and as a spot where fine weather seldom prevails for more than a few hours, it was indeed a magnificent sight to see this white snow-covered island basking in fine weather. Operations could be started immediately. During the next six and a half days more than one hundred landings were made at numerous localities.

The first landing ever on top of

the ice shelf on Bouvet was made by a South African helicopter and the first men to set foot on top were S. A. Engelbrecht and T. Winsness, the Norwegian geologist.

During the next few days geological samples were taken, the island was volcanologically and glaciologically examined and the fauna and flora was studied.

During the six days the expedition was able to determine the following:

- (a) There are two sites on the island, one of 32 morgen on the eastern ice plateau at 860 feet above sea level and one on Rustad Hill, 1,150 feet above sea level, where manned meteorological stations could be built.
- (b) A rocky shelf, West Wind, projects from the foot of the western lava cliffs. The shelf appeared between January 1955 and January 1958, when the American cutter "West Wind" visited the island and was first to discover its existence. The geologists of the recent expedition consider it to have been created by a massive rockslide from the adjacent rock masses. As the rock pile extends 500 yards seawards and is about 1,000 yards long, it is evident that the rockslide which might have caused it must have been one of the largest in history and was probably caused by an earthquake.
- (c) The nett accumulation of snow and ice on the island varies considerably from year to year, and the movement of the glaciers (eastern ice plateau) is so slow that hutments placed more than 1,000 yards from the shore will

in no way be in danger of being pushed over the edge.

- (d) Although a certain amount of risk of fresh volcanic activity always exists at Bouvet, it will nevertheless be no greater than that pertaining to Marion and Tristan da Cunha.

The ice plateau is considered to be most suitable and safe for the establishment of a manned scientific station. The area is a shallow valley about 500 yards wide and probably more than 1,000 yards long in the direction of the slope. Thorough probing showed that the "concave" surface is probably clear of all but the smallest crevasses, although further afield they definitely reach greater dimensions.

A small polar tent and a wooden "hut" (a box measuring about 4 by 6 by 5 feet) with some glaciological equipment were erected. The tent was used as a shelter and a store for emergency rations, while glaciological investigations were in progress. The hut was left behind with emergency food and fuel supplies inside and as a marker on the ice for future expeditions. A safe area was demarcated with sturdy poles, and mapped. An ice core more than 20 feet long was recovered for chemical and ice budget studies.

BOUVET ISLAND

(Norway)

The South African Government has given provisional approval to the establishment of a weather station on Bouvet Island. It is believed that satisfactory arrangements can be made.

Bouvet is one of the least known of sub-Antarctic islands. Discovered by Pierre Bouvet de Lozier in 1739, the first recorded landing was by one of the Enderby's whaling captains, Norris, in the "Sprightly" on December 16, 1825. In 1928 a few rough habitations were erected by Norwegian whalers, and the island became a Norwegian dependency in 1930. It was visited by the "Norvegia" in 1931. In 1939 a small party from "Discovery II" landed with

difficulty on the eastern extremity of the island. Then came the South African landings from "Transvaal" in 1955, on the east coast and at Cap de la Circoncision, and the combined British-South African landings in 1964.

We regret having quoted on p 302 of our June issue a newspaper report on Bouvet Island which was incorrect. "The first human beings ever to set foot on Bouvet" were of course not the South Africans this year. We are indebted to Mr. Charles Lagus, who was on "Protector", for the following correction:

"H.M.S. 'Protector' landed a party there in March 1964 by helicopter, during which visit a geological and photographic survey was made. A South African icebreaker was present at the time and landed its own Hiller helicopter which had to be rescued by the Royal Navy when its batteries failed on the island.

"At that time it was stated that several automatic weather stations had been built by them, but destroyed by the adverse weather. An unidentified lifeboat, in good condition, was found at 50 yards from the sea."

These earlier landings were referred to in "Antarctic", Vol. 4, no. 2, June 1965.

We have received from the South African Antarctic division of the Department of Transport a more detailed account of the 1966 landings.

CROZET

(France)

September brought unusual humidity with fog and snow-falls. Strong winds slowed down the rhythm of outside work without bringing it to a standstill. A hundred metres stretch of roading from shore towards the station buildings was constructed and the painting of the exterior of the buildings is on the way to completion.

Radio transmission has been improved by the installation of a "Zepelin" antenna and the bringing into service of a 1 KVA transmitter.

ANTARCTIC BOOKSHELF



THE SEA AND THE SNOW, by Philip Temple. Cassell, Australia. 186 pp., 23 ill., map. N.Z. price 34/-.

Philip Temple's latest book is such that every reader will turn the last page with regret. It will be a shame if this story, like that of so many other successful expeditions, does not become widely read. Unfortunately only tragedy and the lack of preparation which invokes tragedy, seem to make the headlines in which almost any oversight is excused.

Temple tells of the experiences of the 10-man expedition led by Warwick Deacock which successfully sailed a small boat from Sydney over 10,000 miles of Southern Ocean to Heard Island and return, and made the first ascent of the dormant volcano Big Ben, whose Mawson Peak rises to above 9,000 feet. Their vessel, the 63-foot gaff-rigged auxiliary schooner "Patanela" was skippered by veteran mountaineer and now veteran small boat, blue water sailor H. W. Tilman. With only one other experienced small boat man aboard, the tale of the transformation of the whole company into creditable seafarers has all the tang and spice of before-the-mast days.

Leaving Sydney in early November 1964, the next two months take them across the Bight to Albany, thence north-westward with the south-east trades almost to Madagascar before running down across the forties to Kerguelen and on to Heard Island in the fifties.

This almost completely snow- and ice-covered island, which was the site of an ANARE station for many years, affords no safe landing places and few possible ones. The adventure of landing a five-man climbing party with one month's stores by inflated rubber raft is an exciting one; the problem of quitting the island one month later by the same means even more so.

While the "Patanela" returned to Kerguelen, 300 miles to the north

and where she could be anchored safely, a five-man climbing party successfully climbed to the summit of Big Ben, but not without the display of considerable fortitude and resourcefulness in the face of many setbacks and physical obstacles. Ashore or afloat, extreme discomfort was always with them, yet obvious satisfaction was experienced in the overcoming of all difficulties in the execution of many scientific tasks, and in the mutual respect and comradeship which shines through the tale. The return journey of Heard Island-Albany-Sydney, reached on March 14, 1965, was, with the aid of the prevailing westerlies, a quick one, with many daily runs indicating speeds of eight knots.

The reader is left to ponder on the acme of discomfort—whether it be in the dry cold of Antarctica, the damp cold of the sub-Antarctic, or the drenching cold of ocean sailing. Philip Temple has left us with a well-written book which points the finger to the acceptance of challenge and the overcoming of difficulties as man's deepest satisfaction.

J.H.M.

NEW LIFE OF SCOTT

Cassells have published an important new biography of Captain Scott. The writer, Reginald Pound, is well known as a biographer ("Gillies, Surgeon Extraordinary", "Evans of the Broke"). His "**SCOTT OF THE ANTARCTIC**" is expected in New Zealand before Christmas. The price here will be 44/6. We expect to publish a review in our next issue.

SOCIETY BADGE

The badges referred to in our last issue are now available from Branch Secretaries at a cost of 6/6 per badge plus postage (normally New Zealand 4d., surface rate overseas 7d.). The badge is an attractive circular one featuring a penguin surrounded by the words "New Zealand Antarctic Society".

THE YOUNG DOCTOR WILSON

Edward Wilson: **DIARY OF THE "DISCOVERY" EXPEDITION TO THE ANTARCTIC, 1901-1904.**

Edited by Ann Savours. 416 pp. 47 reproductions of Wilson's own watercolour paintings, numerous pencil drawings, five maps. Foreword by H.R.H. the Duke of Edinburgh. Blandford Press. New Zealand price £7 5s.

It is our policy that "Antarctic" reviews shall be candid and informative, but restrained. It is hard, however, not to become lyrical about this splendid volume. This is not because of any outstanding literary merit: field party diarists in the Antarctic are not concerned about niceties of style. But here is the day-by-day description, by a leading participant, of one of the most significant of all polar expeditions, and one which has been relatively scantily documented. Here too is, worthily presented, the self-revelation of the young explorer of 30 who was to become the legendary "Bill" Wilson, of whom the greatest living Antarctic veteran once said to the writer, "He was the nearest approach to a perfect man I have ever met."

It is a deeply moving experience to read what this man wrote "primarily", as he says, for his young wife, just as he wrote it, with no more editorial fuss and bother than is essential to explain allusions which would otherwise perplex the reader.

What sort of man emerges from this natural, unforced writing? Clearly a sensitive, thoughtful, deeply-religious man: a man dedicated to his often arduous, sometimes perilous work.

"Skinning birds from breakfast till 7 p.m. in the coal bunker, one of which is now empty and has been given to me as my work-room and store-room for bird skins. Not quite an ideal palace, floor and walls of sheet iron, half an inch of coal dust everywhere, no entrance or exit but a coal shoot through which I have to drop down from on deck, and two

of these give the only light and air the place can boast."

He is a man with the artist's eye for beauty of colour and form, and, too with a lively sense of humour:

"In the north at noon there was a splendid sunrise with a heavy bank of cloud arranged for all the world like wavy hair and wherever the sunlight caught these waves and curls, it was broken into the most delicate opal or mother of pearl tints, all colours of the rainbow—pale rose, pure lilac, emerald green, lemon yellow and fiery red, all blending one with another, but with no apparent arrangement. So that a wisp of cloud, standing like a stray curl in the blue sky, would be lit by pink and brilliant lilac and then would begin to shine at one end with a light that can only be compared with the light you see in a vacuum tube with a current sparkling through it, or perhaps the colour is more exactly what you get with incandescent barium. . . .

"I see all this has gone on to the most poetically dirty sheet of paper which will materially assist the reader to imagine the beauty of the scene."

He is withal a modest man:

"Then the skipper told me he had taken the long journey towards the South Pole for himself and had decided that to get a long way south the party must be a small one. He said that he had decided himself that it must consist of either two or three men in all . . . in any case, would I go with him? My surprise can be guessed. It was rather too good a thing to be true."

He is a candid self-critic. He had been having a running war with the "stuffy Arctic explorers" who objected to what they regarded as too much fresh air:

"Had a row over the ventilation . . . at breakfast . . . I got deadly sick with everyone all round, and so

went up to Crater Hill by myself to walk it off. Came back with an angelic temper."

Here is a man of strong convictions who could speak his mind when candour was needed, and does not conceal the fact when he believes someone has been unfairly treated:

"The whole ballooning business seems to me to be an exceedingly dangerous amusement in the hands of such inexperienced novices as we have on board. There is one man who is supposed to know all about it, who has had a week's instruction in ballooning at Aldershot. He was not the one to go up."

For many readers the most absorbing part of the whole diary will be Wilson's description of his southern sledging journey with Scott and Shackleton, the first real penetration of the Great White South. Even under the most gruelling conditions Wilson is still the artist. On the last day of 1902, at their farthest south off Shackleton Inlet:

"As we got deeper and deeper in among this chaos of ice, the travelling became more and more difficult, . . . we were faced by crevasses ten, twenty and thirty feet across, with sheer cliff ice sides to a depth of 50 or 80 feet. . . . A very beautiful sight indeed, but an element of uncertainty about it. . . . The prismatic colours of the ice crystals were wonderful too today, forming what looked literally like a carpet of snow, glittering with gems of every conceivable colour, crimson, blue, violet, yellow, green and orange and of a brilliance that would put any jewel in the shade. Our supper got upset in the tent sad to say, and we are so short of food that we scraped it all up off the floor cloth and cooked it up again. It was a soup so didn't suffer much. Another dog died today from sheer weakness."

It is all good reading. It is all a fascinating revelation of a great man's reaction to two stimulating and demanding years, and of the man himself. To see the Antarctic through Wilson's eyes is an experience no one should miss. This book

is not cheap, but it is abundantly worth what you will pay for it. About 250 of the 400 pages were written in the Antarctic, much of the remainder in sub-Antarctic waters, and for good measure we have 20 pages of Wilson's diary-description of a journey through the North Island of New Zealand. There are biographical notes on the members of the expedition and a brief but useful introduction which outlines Wilson's life and the story of the expedition. The maps are adequate for their particular purpose, and the index is comprehensive and useful. Miss Savours as editor has done her difficult job extremely well.

L.B.Q.

AUSTRALIAN EXPLORER HONOURED

Victorian explorer Mr. J. M. Bechervaise in Adelaide on November 3 was presented with the John Lewis gold medal—a year after it had been awarded to him.

When the award, by the SA branch of the Royal Geographical Society of Australasia, was agreed last year, Mr. Bechervaise was in the Antarctic with the American expedition in McMurdo Sound.

Since then he has been working abroad.

The John Lewis medal, awarded for exceptional feats in exploration, research or literary works, was presented by the president of the SA branch of the RGSA (Mr. K. Peake-Jones) at the branch's annual meeting.

Mr. Peake-Jones described Mr. Bechervaise as an inspiration to all modern youth with an adventurous spirit.

Mr. Bechervaise, a schoolmaster, has led three Australian expeditions to Antarctica, the last one to Mawson in 1959-60. During the third expedition he was awarded the M.B.E.

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Some other issues are in very short supply. Copies of available issues may be obtained from the Secretary of the Society, P.O. Box 2110, Wellington, at a cost of 5/- per copy meanwhile. Indexes for volumes 1, 2 and 3 are also available, 3/- each.

Copies of our predecessor, the Antarctic News Bulletin, are available at 5/- per copy, except for numbers 9 and 10. The copies of numbers 1, 2, 3, 4, 7, 11, 17 and 18 are authorised reprints.

The New Zealand Antarctic Society

comprises New Zealanders and overseas friends, many of whom have seen Antarctica for themselves, and all of whom are vitally interested in some phase of Antarctic exploration, development, or research.

The Society has taken an active part in restoring and maintaining the historic huts in the Ross Dependency, and plans to co-operate in securing suitable locations as repositories of Polar material of unique interest.

There are currently two branches of the Society and functions are arranged throughout the year.

You are invited to become a member. **South Island** residents should contact the Canterbury secretary, **North Islanders** should contact the Wellington secretary, and **overseas** residents the secretary of the New Zealand Society. For addresses see below. The membership fee includes subscription to "Antarctic".

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