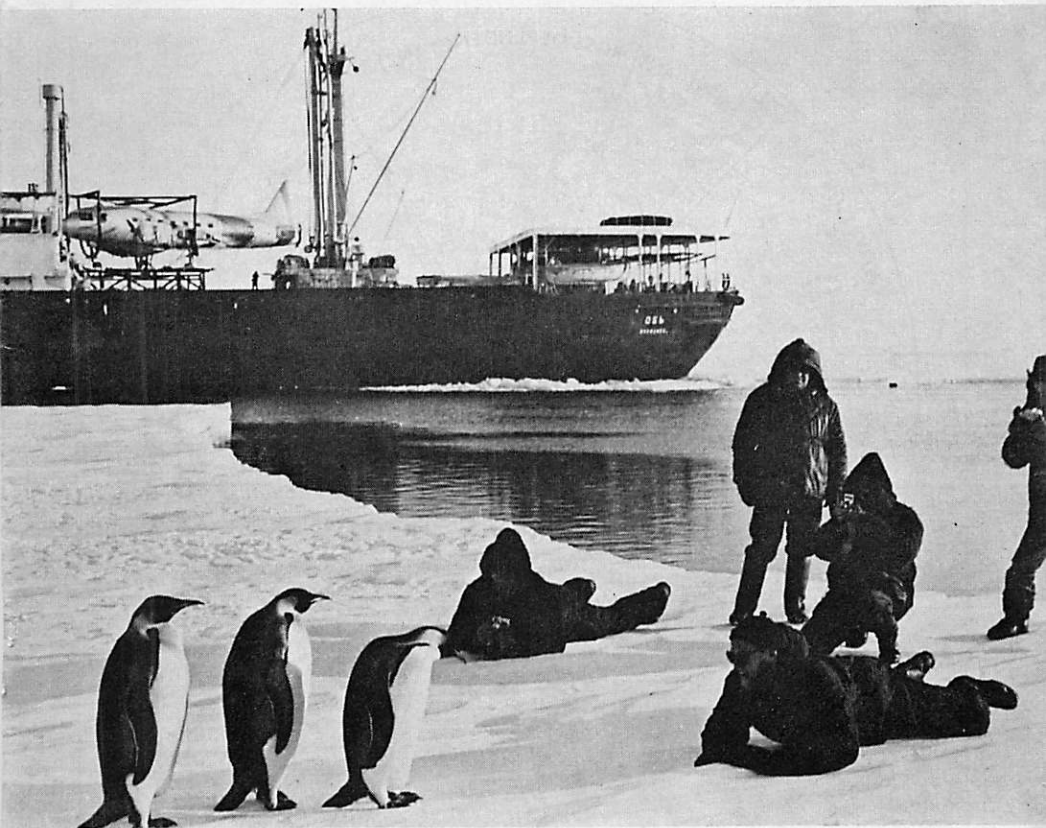


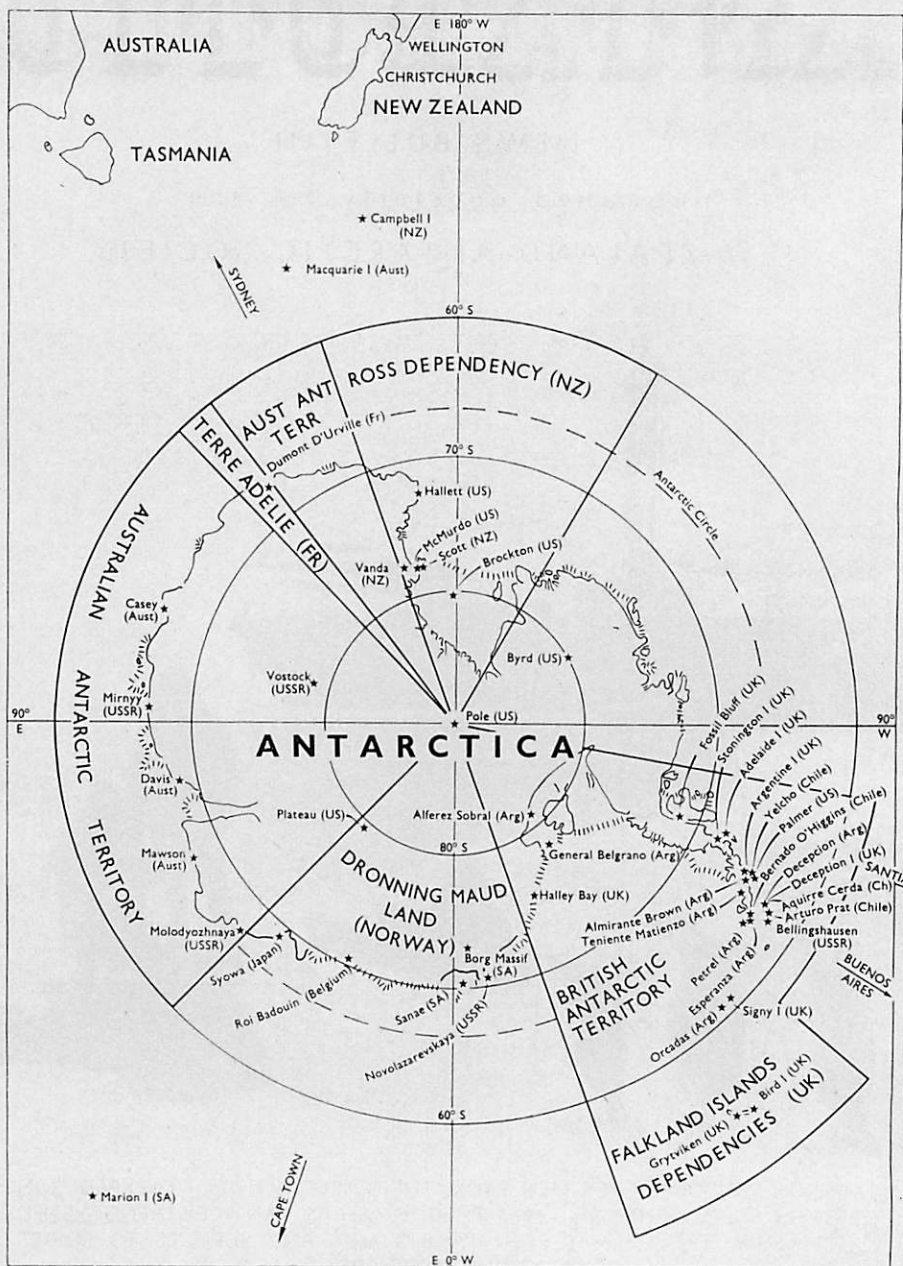
ANTARCTIC

A NEWS BULLETIN

published quarterly by the
NEW ZEALAND ANTARCTIC SOCIETY



EMPEROR PENGUINS FACE MEN FROM THE SOVIET ANTARCTIC EXPEDITION VETERAN SUPPLY SHIP OB—AND THEIR CAMERAS. AN ICE-STRENGTHENED CARGO SHIP, THE OB HAS BEEN TAKING MEN AND SUPPLIES TO SOVIET STATIONS SINCE 1955.



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New President of Antarctic Society

The new president of the New Zealand Antarctic Society is Mr L. S. Donnelley, the president of the Wellington branch. He succeeds Mr H. F. Griffiths, who has completed his term of office.

Mr Donnelley is the Hutt County Council's engineer. He has visited the Antarctic twice.

A new Dominion secretary was appointed at a meeting of the council of the society. Miss Janet Garraway, secretary of the Canterbury branch, replaces Mr V. E. Donnelly, of Wellington.

The council decided to ask the Prime Minister (Sir Keith Holyoake) and Mr L. B. Quartermain to become patrons of the society. As Minister of Foreign Affairs Sir Keith Holyoake is concerned with Antarctica. Mr Quartermain is a former Dominion president, and well-known as editor of “Antarctic” for many years.

Seven-year rebuilding plan for Scott Base

A welcome sight to footsore field parties returning at the end of a long summer, and a home for more than two dozen summer staff, Scott Base has served the New Zealand Antarctic Research Programme for 14 years as the major New Zealand outpost in the Antarctic.

Scott Base was built in the summer of 1956-57 and was designed to remain only three years—the length of time research was then planned to take. After 14 years, however, it still fulfills the roles of scientific station, a comfortable home, and quarters for field parties in transit.

The base was built by the Ministry of Works to Australian designs, and a substantial portion was pre-fabricated in New Zealand and assembled on the site at Pram Point. Pram Point was chosen by Sir Edmund Hillary in 1956-57, the period of the International Geophysical Year and the first trans-Antarctic crossing.

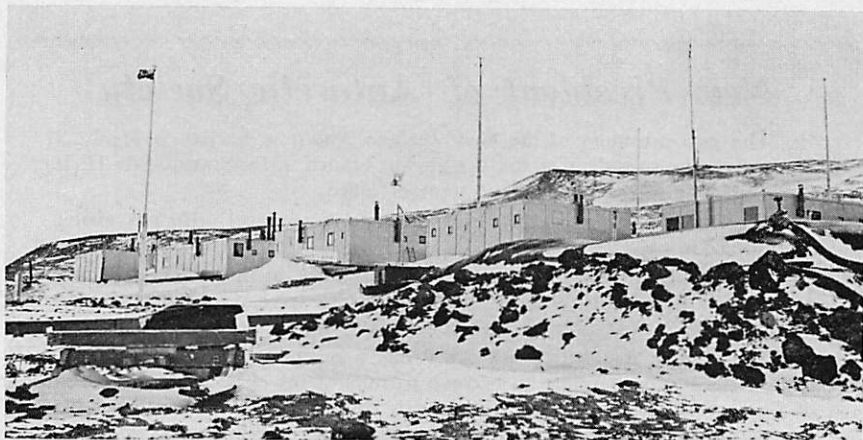
New Zealand's contribution to the I.G.Y. programme was made at Scott Base, where valuable data on aurora, ionospherics, and seismology was collected.

In this article the New Zealand Antarctic Research Programme information officer, Mr Brian Jackson, surveys the role of Scott Base in New Zealand's research in Antarctica.

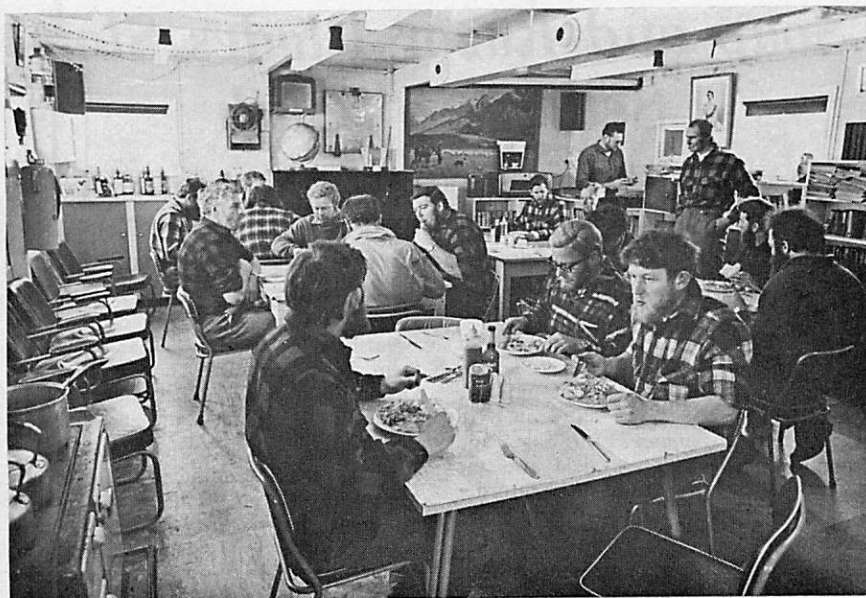
The base now consists of ten huts connected by a covered way, which allows easy access during the winter. Electricity is supplied by a Caterpillar generating plant. If the plant fails, a standby system operated by two Lister engines can be used.

The base has accommodation for 38 people, and facilities for one or perhaps two women provided their stay is short.

Since the base was built, a garage



Scott Base, on Pram Point, Ross Island. This has been a familiar summer scene to many New Zealanders since the base, New Zealand's major Antarctic outpost, was established 14 years ago.



Except for the stove in the corner, this room at Scott Base is not very different from a staff cafeteria in New Zealand. But the occasional beard and the woollen shirts, the New Zealand paintings, and the Queen's portrait, on the walls indicate that it is part of a New Zealand outpost.

has been added and the carpenter's workshop has been added. The Post Office took over E hut four years ago.

Each hut is heated by oil heaters which circulate warm air through the base. Humidifiers in the sleeping quarters give some relief from the intense dryness of the Antarctic.

Since 1957 Scott Base has been maintained solely for the advancement of science. Programmes have been maintained all the year round in ionospherics, whistler research, auroral physics, geomagnetism, earth currents, seismology, and meteorology.

In recent years New Zealand's Antarctic research programme has expanded, especially in the summer. As a result the base is sometimes overcrowded in the summer.

Within the next seven years Scott Base will be rebuilt. It will be bigger and better. Mr R. B. Thomson, superintendent of the Antarctic Division of the D.S.I.R., has said that a building pro-

gramme covering the seven-year period may begin within two years.

Scott Base will be rebuilt on the same site, hut by hut. A hut will be erected each year, and smaller huts will be rebuilt together in the year. Reconstruction on the same site will be possible because of efficient waste disposal and the absence of pollution round the base.

If the old Scott Base is torn down to make way for the new, many New Zealanders will have treasured memories of the life they led there. It is quite likely that a new base will have a de-salinisation plant, and ice gathering parties will become a thing of the past.

Electricity may come from a more automated source, and the comforting rumble of the sturdy diesels of the generating plant will no longer drift into the bunk rooms.

Scott Base today is not equipped to meet the needs of the future. A new base will assist New Zealand to maintain its research programme.

Soap and Razor Blades Slow Sellers in South

Shopping in the Antarctic has its problems, and its advantages. Soap and razor blades are slow sellers at the ship's stores which are the American stations' shops, cigars and cigarettes dry out because of the low humidity, and beer and soft drinks freeze in the extreme cold.

But if you are living at Byrd or Amundsen-Scott South Pole Stations you can run a charge account like you do at home. The ship's store at Byrd Station offers penguins for sale, and scientific parties in the field use the stores as mail order houses. They order supplies by radio, and delivery is by the first available Hercules aircraft.

Each of the four permanent American stations in Antarctica has its ship's store but because of the limited staff at the smaller stations, such as Byrd and Pole Stations, a hospital corpsman (medical orderly) has to do the clerking behind the counter. He runs the store, sees patients, drives vehicles, and has to turn his hand to all kinds of jobs. A credit ledger is kept for all men at Byrd and Pole Stations, and when they check out through McMurdo Station on their return home, the accumulated bills are paid.

In the winter months when the men are cut off from the rest of the world, the ship's store becomes a form of recreation. Men can't amuse themselves outside so they come into the store when it is open and browse just as they would at home.

Penguins are one of the most popular items at the Byrd Station store. But buyers don't get a smartly dressed Adelie for their dollars; they have to accept a cloth stuffed substitute.

Each store's stock ranges from penguins and penguin charms to stereo sound equipment. The men also buy patches and stationery for individual commands, Antarctic licence plates, lighters, glasses, ash trays and plaques,

sweatshirts, towels and sweaters. All of them bear the well known Operation Deep Freeze insignia designed by Walt Disney Productions in the early days of the operation.

Next year the main ship's store at McMurdo Station will not have the problems of dry cigarettes and cigars or frozen beer and soft drinks. Storage of liquor both hard and soft requires a heated warehouse. At present, when the heat rises, the four rows of cases of bottles at the bottom of the stack are subject to extreme cold and the contents freeze. This is a real problem because the warehouse holds 20,000 to 25,000 cases.

But next month, when the beer and pop are nearly sold out before fresh supplies arrive by ship, heating ducts will be installed in the floor of the warehouse to prevent the contents of the bottles from freezing. And a humidified room will be constructed in the warehouse to store cigars and cigarettes and keep them normally moist.

Photographic film is not a problem in the Antarctic climate. It contains its own moisture in an airtight pack, and can be stored almost indefinitely without loss in the cold.

Clerks in the ship's stores have to wait until January for stock to fill their empty shelves. Two supply ships arrive at McMurdo Station with the soap, the razor blades, the beer, and everything else for all the stations except Palmer Station on the Antarctic Peninsula. It is resupplied from South America.

When the ships come in, however, most of the men who have been at the

VUW PARTY MAKES RICH FIND OF FISH FOSSILS

The richest deposit of fossilised fish ever discovered in the Antarctic has been found in South Victoria Land by the Victoria University of Wellington geological research expedition. Fossil fish remains were located in sedimentary rocks laid down in rivers and lakes during the Devonian period—about 350 to 380 million years ago.

Dr P. J. Barrett, who discovered the first fossil bone of a land-living vertebrate, the fresh-water amphibian called a labyrinthodont, in the Transantarctic Mountains, nearly three years ago, is the leader of the VUW expedition, the 15th from the geology department. The two members of the party specifically involved in the search for fossil fish are Dr A. Ritchie, curator of fossils at the Australian Museum, Sydney, and Mr G. Young, assistant curator at the Bureau of Mineral Resources, Canberra.

The VUW party was working early this month in the area between the McKay and Darwin Glaciers on the western edge of the Transantarctic Mountains, about 120 miles west of Scott Base, when the fossils were discovered. Dr Ritchie and Mr Young reported that they had found abundant fossil remains of many types of extinct fish. In some instances the scattered fish plates and bones were so numerous as to cover entire layers of the rock.

No complete fish have been recovered

but the individual bones are so well preserved that it will not be difficult to reconstruct these ancient fish, the earliest and best-preserved evidence of back-boned animals ever found on the Antarctic continent.

In the isolated northern end of the Warren Range the party was able to relocate and excavate a fossil discovered in 1968-69 by an earlier VUW party. The fossil was the complete lower jaw of an air-breathing, lobe-finned fish. It was weathering out of a hard sandstone ledge, but the 1968-69 party did not have the equipment to remove it safely.

On a later trip back to the Warren Range area Dr Barrett's party climbed and explored an unnamed peak. More fish fossils were discovered near the top of the peak. At the party's camp on the Deception Glacier below this peak Mr Young found the jawbone of a gigantic prehistoric fish. The jawbone was preserved in a natural mound in the hard sandstone, and contained conical tusks and several small teeth, indicating that it enjoyed a carnivorous diet. This jawbone is one of the largest and best preserved found anywhere in the world.

In the same area Dr Ritchie discovered the complete head of a primitive armoured fish known as *Bothriolepis*. Only fragments of this kind of fish have ever been discovered in the Antarctic before.

The discovery of the fossils is important because they throw light on the ancient animal life of Antarctica. Also they have similarities with fossils from other continents.

SLOW SELLERS continued

stations during the summer are ready to return home. Therefore most of the supplies are put into storage until the following October when the summer support men return.

Understandably, when the shelves are almost empty, and everyone is waiting for the ships to enter McMurdo Sound, the store clerk has to tell his customers: "If you don't see it on the shelves, it's on the ships."

"AURORA AUSTRALIS" BOUGHT FOR MUSEUM

One of the rarest books about Antarctica—only 100 copies were produced—has been bought by the Canterbury Museum. It is "Aurora Australis," which was set in type and printed at Cape Royds by Frank Wild and Ernest Joyce during Shackleton's 1907-1909 expedition.

Two copies of the book were offered at auction at Sotheby's in London last month. The museum made a successful bid of £450 for its copy, and the second copy also came to Christchurch. It was bought by Mr P. J. Skellerup, a member of the New Zealand Antarctic Society, and one of the caretakers at Cape Royds last season.

There are two copies of "Aurora Australis" in the Alexander Turnbull Library, Wellington, but it is not known whether there are any others in New Zealand. Mr Skellerup's copy was given by Shackleton to Miss Belle Donaldson as a Christmas present in 1910.

The museum's copy, which has been acquired for the polar research library in the proposed national Antarctic centre, was presented by Shackleton to Mr Henry Nuttall, chairman of the council of the Manchester Geographical Society.

The book is inscribed: "With kindest wishes from the editor, in remembrance of the practical help to our scientific results and the always sympathetic attitude towards the expedition. This book was made in the Antarctic. Ernest Shackleton, August, 1911."

"Aurora Australis" has been described as the first volume ever published in the Antarctic, although it was never actually offered for sale at a place of business there. Shackleton, who was editor of the "South Polar Times," produced on Scott's first expedition in 1901-1904, decided that the expedition magazine should be both a pastime and a memento of the expedition.

When the Nimrod sailed from Lyttelton it carried a complete printing press. Wild and Joyce had been given some

instruction in the art of printing and type-setting.

Shackleton was editor-in-chief of "Aurora Australis" and George Marston, the expedition artist, was editor. Bernard Day, the motor engineer, was also associated in the production of the book.

Wild and Joyce, instead of serving an apprenticeship of seven years, had to learn the art of printing and type-setting in three weeks and Marston had to do the same with the process of lithography.

A candle had to be kept burning under the printing ink to keep it fluid.

Originally Shackleton intended that "Aurora Australis" be sold when the expedition returned to England. A facsimile edition of 250 copies of the "South Polar Times" was printed in 1907 and brought in some money for the funds of Scott's expedition.

Shackleton wanted to do the same, but with the expedition as publishers. However, although 100 copies were printed at Cape Royds they were not sold. Some were presented to benefactors of the expedition, and each member received a copy.

The title page of "Aurora Australis" says "Printed at the sign of 'The Penguins' by Joyce and Wild," and "Published at the winter quarters of the British Antarctic Expedition, 1907, during the winter months of April, May, June, July, 1908."

All the copies of "Aurora Australis" were bound in board covers made from plywood packing cases, many with the legend "British Antarctic Expedition" clearly to be read inside. The back cover of Mr Skellerup's copy still bears the legend "40 x 11b choc."

More Fossil Bones Found

A collection of fossil bones of great importance in the reconstruction of earth history has been discovered by scientists of the United States Antarctic Research programme working on the McGregor Glacier in the Queen Alexandra Range about 350 miles from the South Pole. The first fossil found on November 10 was the well-preserved skeleton of a 200-million-year-old cynodont reptile, a small creature closely related to the most primitive mammals.

Cynodonts, which lived in the Triassic Age, were four-legged carnivorous animals with dog-like teeth. They ranged in size from not much larger than a rat to about the size of a wolf.

The 10-inch cynodont skeleton was found by Mr James Collinson, of Ohio State University, a member of a team of geologists and paleontologists led by Dr David H. Elliot, of the university's Institute of Polar Studies. After Mr Collinson's find on the first day of field work, intensive search by two vertebrate paleontologists, Dr James Kitching, an exchange scientist from the University of Witwatersrand, South Africa, and Mr John Ruben, a graduate student at the University of California, Berkeley, yielded the important collection of fossil bones. More bone-bearing rocks were discovered by other members of the expedition.

In the first two weeks of field work the scientists also found parts of a dozen fossil skulls of *Lystrosaurus*, the reptilian equivalent of the hippopotamus discovered last year at Coalsack Bluff, 150 miles north-west of the present camp on the McGregor Glacier. A variety of small primitive reptiles was also found.

The fossil bones are the first faunal assemblage from Antarctica, and allow geologists to correlate rock strata within a 150-mile section of the Transantarctic Mountains. Some of the fossils are closely related to forms found in South Africa and India, and give much better inter-continental correlation between the rocks of Antarctica and other southern continents than has been possible before.

The Antarctic fossils are important paleontological evidence for the existence of Gondwanaland, the former

supercontinent composed of parts of South America, Africa, peninsular India, Australia and Antarctica. Accumulating evidence from many fields indicates that Gondwanaland split apart about 150 million years ago and that the parts drifted to their present locations. Recent evidence indicates that the continents are still drifting.

Last year Dr Elliot led the scientists from Ohio State University who made at Coalsack Bluff possibly one of the most important fossil finds in recent history. In addition to the bone definitely identifiable as *Lystrosaurus*, some 450 specimens were recovered, including possible fish remains, and bones of the thecodont, ancestor of the dinosaur.

An article on the Coalsack Bluff finds published earlier this year in "Science," the journal of the American Association for the Advancement of Science, says that until 1967 Antarctica was the one great land mass in which no significantly ancient fossils of land-living vertebrates had been discovered. In December of that year Dr Peter J. Barrett (a New Zealander) discovered part of the lower jaw of a labyrinthodont amphibian at Graphic Point in the central Transantarctic Mountains.

The discovery of Lower Triassic reptiles and amphibians in Antarctica is described in the article as crucial evidence in the reconstruction of earth history. These animals could have migrated from one land mass to another only by means of land connections.

Hence the present position of Antarctica, with its assemblage of Triassic land-living amphibians and reptiles can be explained only by continental drift from a former position contiguous to Africa.

ANARE IN 1971

Glaciological Traverse From Casey Planned

A 400-mile glaciological traverse from Casey inland to a point south of the station is one of the principle projects planned by the Australian National Antarctic Expedition for 1971. Eight to ten Australians, including a glaciologist, surveyor, geophysicist, and electronics engineer, will follow the route of the 1962 ANARE party which visited Vostok from Wilkes Station.

The party will spend five months (March-April, October-January) in the field. It will use six tractors, two of them equipped with marine radars to aid navigation.

Other projects announced by the Antarctic Division, Department of Supply, include a summer expedition to the Prince Charles Mountains, field testing of an unmanned geophysical observatory, and a visit to Heard Island by an Australian-French expedition.

The main task of the glaciological traverse party will be to establish a strain net from which the motion of the ice-cap in that region can be determined. The traverse is part of the Australian glaciological programme and is a contribution to the International Antarctic Project (IAGP). France, the U.S.A. the U.S.S.R. and Australia are co-ordinating their activities to investigate the flow, thickness, age and other characteristics of the ice cap in a large portion of Eastern Antarctica.

The strain net will consist of two rows of 27ft by 2in diameter steel markers about 10 kilometres apart, forming a continuous chain of quadrilaterals stretching inland from the rock on the coast near Casey. The distance between stakes will be measured by tellurometer radar.

Theodolites and continuously recording micro-barometers will give the surface shape, while profiles of ice thickness and bedrock will be measured by radio echo sounding. Snow accumulation and gravity also will be measured

along the route; ice cores will be collected for analysis and study.

Unmanned Observatory.— An unmanned geophysical observatory, which is being designed and developed by the Antarctic Division primarily for year-round recording of upper atmospheric phenomena in remote Antarctic locations, will be field tested south of Casey.

The prototype equipment will include an all-sky camera, magnetometers and a riometer recording at 90 second intervals on film or digital tape, and magnetic micropulsation sensors giving continuous analogue tape records. Wind speed, barometric pressure and air temperature will be recorded digitally each hour.

Special attention has been given to low power, low temperature operation, and the whole station runs on 1.5 watts. At this stage the power will be provided by storage batteries, with some assistance from solar cells and a wind-driven generator.

A quartz crystal chronometer with an accuracy of one-tenth second a week will programme the station. The chronometer and all-sky camera already have performed satisfactorily at Mawson during a two-year trial.

Summer Expedition.—A party of 25 Australians, supported by fixed-wing aircraft and helicopters, will continue the

systematic geological and topographic survey and mapping of the Prince Charles Mountains inland from Mawson.

Geologists of the Bureau of Mineral Resources, Geology and Geophysics, Department of National Development, plan to work in the northern Prince Charles Mountains, to at least 72deg S. latitude. Taylor Glacier will be visited to collect rocks for age determinations, and the Church Mountain-Mount Marsden-Mount Rivett area will be re-examined.

A tellurometer and topographic survey by the Division of National Mapping, Department of National Development, will be extended into the central Prince Charles Mountains. In the northern Prince Charles Mountains the intended traverse is Mount Wishart-Corry Massif-Mount Forecast (or Mount Brown-Cooper)-Mount Hicks; in the central Prince Charles Mountains it includes Fisher Massif, Clemence Massif, Mawson Escarpment, Mount Stinear, Mount Johns, Mount Willing and Mount Woinarski.

An astrofix and astronomical azimuth will be made at Mount Hicks and at other stations where it is possible. Horizontal and vertical theodolite angles and photographs by a theodolite-mounted camera will be recorded at each traverse station.

Heard Island.—ANARE scientists will join a French expedition to visit Heard Island from January 9 to March 16 next year. The ANARE scientists will travel in the French ship Gallieri and will undertake ionospheric, biological and glaciological studies.

The Australian party will consist of a physicist, glaciologist, biologist and a field assistant. Simultaneous measurement of magnetic variations and VLF emissions will be made at Heard Island and Davis to study the locations of the auroral electrojet and the source of the polar chorus.

The response of the temperate glaciers of Heard Island to climatic change will be investigated quantitatively for the first time. Censuses will be made of King penguins and fur seals which are recolonising on the island.

Urban living and Antarctic winter

Winter teams at Scott Base and Vanda Station face extreme forms of environmental pressure which cause casualties in over-populated areas of the world, particularly in the West. A clinical psychologist, Dr A. J. V. Taylor, of Wellington, who has studied the New Zealand teams at the beginning and end of their isolation, says the results of his research will lead to a better understanding of serious urban environmental problems.

Dr Taylor, who visited Scott Base and Vanda Station in October, began to study the problems of urban living in 1957 while working as a prison psychologist. He says he realised then that a study of men in isolation was a pathway to discovering more knowledge, establishing treatment practice, and helping people to preserve their essential humanity because they had to live in the concrete and economic jungles of cities.

Scott Base represents an excellent place to study some of the basic social factors in human behaviour, according to Dr Taylor. The isolation and insulation from the outside world of the men there for the long polar night is nearly absolute. The men must counteract boredom, live with each other peacefully, understand others' strengths and weaknesses, and come to terms with the lack of variety in the events of day to day activities.

Dr Taylor says that the men survive well because not only are they intelligent and stable, but they are hand picked for the rigours of Antarctic service. Their endurance is throwing light on such problems as loneliness, despair, isolation, boredom, and suicide in large cities.

ANARE OFFICERS FOR MAWSON, CASEY, DAVIS

A member of the first Australian National Antarctic Research Expedition to Heard Island in 1948, a former professional hunter and safari leader in East Africa, and a member of ANARE expeditions to Heard Island, Mawson, and Davis, have been selected as officers in charge at Antarctic stations in 1971. The officer in charge at Macquarie Island will be a former British Army officer.

Mr L. E. Macey, of North Sydney (N.S.W.) will go to Mawson. The officers at Casey and Davis will be Messrs J. A. Walter, of North Tumbulgum (N.S.W.) and L. G. Gardner, of Fairfield (N.S.W.). Mr G. C. Colback, of Harvey (W.A.) will go to Macquarie Island.

A veteran of Antarctic exploration, Mr Macey is a technical officer with the contracts branch of the Department of Supply in Sydney. After service with the Royal Australian Air Force and the United States Signal Corps in Manila, he joined the Heard Island expedition in 1948 as radio officer.

When he returned to Australia Mr Macey was appointed technical officer (radio and engineering) with the Antarctic Division in Melbourne, a position which he held until 1958. In this time he spent a year as technical supervisor and second-in-command of the 1954 pioneer Mawson party for which he was awarded the Polar Medal.

Mr Macey has accompanied a number of summer relief Antarctic expeditions to supervise unloading and building operations.

Mr Walter, who manages his own farm at North Tumbulgum, is a director of the Banana Growers' Federation. He attended the Longerenong Agricultural College before taking a position as livestock buyer in Melbourne.

From 1954 Mr Walter spent about five years in Kenya and Tanganyika as a professional hunter and safari leader. He returned to Australia to farm in the Tweed River area.

Mr Gardner has already had extensive Antarctic experience. He has been

a member of ANARE expeditions to Heard Island, Mawson and Davis, and was awarded a Polar Medal and clasp for his services.

For several years Mr Gardner was in charge of oversnow transport and construction plant with the Kosciusko Park Trust. More recently he has been employed as plant engineer by the Sydney Metropolitan Water Board.

Mr Colback, who is 40, was born at Jersey in the Channel Islands. After matriculation at Victoria College, Jersey, he graduated from the Royal Military College, Sandhurst, and served for several years in the British Army.

For the past five years he has worked as a hydrographer with the Public Works Department of Western Australia.



SUBSCRIBERS SHOT

Editors of polar publications have their problems. Helmer Hanssen, who went to the South Pole with Amundsen, tells in "Voyages of a Modern Viking" what happened when Otto Sverdrup started a newspaper, the "Taimyr Post" during Amundsen's North Pole expedition of 1918-1920 in the Maud.

"It did not run to many editions, as the ink froze on the type," says Hanssen. "Nor were there many advertisers, and such subscribers as came from time to time to have their curiosity satisfied, the bears, were shot before they could enter the office."

BRITISH ANTARCTIC SURVEY ACTIVITIES

Spring sledging journeys from British Antarctic Survey bases are now in full swing. The six main bases which have been occupied throughout 1970 will be resupplied this summer.

The advance base, Fossil Bluff, which is relieved by air from Adelaide Island, will also be kept open for glaciological purposes. At South Georgia the winter complement will be increased from 10 to 15.

With the introduction of new biological and geophysical programmes, the BAS winter party in 1971 will be 92. Of these 45 will be scientists, surveyors, and meteorologists.

Geologists and surveyors from Stonington Island are travelling southward and working near George VI Sound. Gravity and magnetometer stations are being established in the Wakefield Highlands, about 100 miles east of the northern end of the sound.

Sledge parties are also operating north-east of the sound near Mt Edgell, in the centre of Alexander Island and on the Bach Ice Shelf.

SNOW CHEMISTRY

A Muskeg party is travelling inland south-south-east from Halley Bay, collecting samples for snow chemistry studies. Some 200 samples will be brought frozen to the United Kingdom for precise micro-chemical work on the uncontaminated centres of each.

By the beginning of November the party had reached 78°35'S., 13°25'W. where it encountered a heavily crevassed area.

A second party from Halley Bay successfully pioneered a new route through the hinge zone between the Brunt Ice Shelf and the inland ice at 25°03'W. This will provide an alternative return route for the first party.

A boat party from Signy Island, South Orkneys, recently visited the Argentine base on Laurie Island. It also inspected

the unoccupied British base at Cape Geddes and found it to be in fairly good order. The Cape Geddes base was evacuated in March, 1947, when the Signy Island station was established.

SCIENTIFIC WORK

Full geophysical programmes will be continued at the Argentine Islands and Halley Bay. At South Georgia, the ionospheric programme is now under way and a magnetometer will be installed in the coming season. Regional geophysical surveys and a reconnaissance geological survey are being continued east and west of George VI Sound and in northern Marguerite Bay. The establishment of ground control for existing air photography will also be continued in these areas.

Geologists will be paying special attention to the Upper Jurassic-Lower Cretaceous boundary, and will resume the collection of specimens for isotope dating and palaeomagnetic studies.

A BAS geological party from Halley Bay will again be transported to and from the Shackleton Range by United States aircraft. It is hoped that the party will be able to complete the previous two seasons' work.

The survey's chief geophysicist, Mr J. C. Farman, will join the aircraft which returns the party to base, and after inspecting Halley Bay will sail for the Argentine Islands on the relief ship.

Geological and botanical collections will be made for the survey by the Joint Services Expedition on Elephant and Clarence Islands. The expedition left Britain in mid-November and will join H.M.S. *Endurance* in Punta Arenas.



This small building with vehicles at the front door and sledges on the roof is the British Antarctic Survey advance base at Fossil Bluff. It stands on Alexander Island above George VI Sound, Antarctic Peninsula.

ERUPTION STUDY

In conjunction with the Royal Society, arrangements have been made for two volcanologists to revisit Deception Island in the Argentine vessel *Zapiola*. They will continue their previous work by studying the results of an eruption known to have occurred on August 14 this year. At least one eruption has taken place since the island was visited last summer.

Glaciological work will be continued near Fossil Bluff, some of it as a contribution to the International Hydrological Decade. The cross-section of a local glacier will be measured by means of a radio echo sounder mounted on a sledge.

Biological studies will be concentrated at Signy Island and South Georgia, together with ancillary projects such as the recording of micro-climate data. At Signy zoological work will predominate, and at South Georgia studies of inshore fish and krill will begin. Also at South Georgia, the Antarctic aspect of the existing bi-polar project on plant productivity will continue.

Medical research will be carried out at two bases. At Halley Bay, the medical officer will study cyclical variations during sleep, and sleep deprivation; at Adelaide Island gastric juices will be investigated with special reference to food intake.

The only major constructional work this summer will be the repair of the jetty at King Edward Point, South Georgia. This will entail pile-driving and concrete infilling of the existing structure. Several buildings near Shackleton House, the BAS base, will be refurbished and brought into use.

SHIP MOVEMENTS

The R.R.S. *John Biscoe* sailed from Southampton on October 13 with 23 new recruits on board. Six days out the vessel developed a fault in her electric propulsion motor, but repairs were carried out in Rio de Janeiro and only eight days were lost. A longer delay would have caused serious disruption of the relief programme, as the survey's new ship *Bransfield* will not be handed over before mid-December.

The fitting out of the *Bransfield* is

progressing satisfactorily. She is expected to depart on her maiden voyage to the Antarctic early in the New Year. (See "Antarctic", Sept., 1970.)

The Biscoe arrived at Montevideo on November 20 and embarked five men who had flown out from England. These included Dr R. M. Laws, the survey's chief biologist, and Mr B. Peters, a member of the headquarters logistics staff. Another logistics officer, Mr D. Rampton, had sailed in the Biscoe from Southampton.

Difficulties encountered in the construction and fitting out of the coastal vessel Jane have delayed her departure. Now she will not be shipped to South Georgia this season.

RELIEF OF BASES

Details of the relief operations cannot be decided upon until the sailing date of the Bransfield is known. The Biscoe will relieve South Georgia and Signy Island, and will then re-open the Anvers Island base (which was closed in 1958) as a summer air facility.

Halley Bay will be relieved in the New Year by the Bransfield if she is ready in time, but otherwise by the Biscoe, and the two ships will then relieve the Antarctic Peninsula bases.

The survey's director, Sir Vivian Fuchs, and the chief logistics officer, Mr D. R. Gipps, hope to join the Bransfield at Montevideo and visit as many stations as possible.

H.M.S. Endurance is providing support for the Joint Services Expedition to Elephant and Clarence Islands, and will later resume hydrographic survey in the Argentine Island's area. It is hoped that her helicopters will also be able to assist in extending the Marguerite Bay survey control northwards.

AIRCRAFT SUPPORT

The survey's twin-engined Otter and turbo-Beaver aircraft, which returned to de Havilland's in Canada at the end of last season, are being flown south again and are due at Punta Arenas at the end of November.

As soon as the weather allows they will fly direct to Adelaide Island over

the Drake Passage, and will perform their normal role of re-supplying Fossil Bluff and supporting field parties.

OFFICERS HONOURED

Mr W. O. Sloman, the survey's chief personnel officer, was recently awarded the M.B.E. for public service, first in the Colonial Office and for the last 15 years as a member of the survey.

Dr R. J. Adie, the survey's deputy director and chief geologist, and Dr O. G. Edholm, the survey's adviser on human physiology, were presented with the Russian Bellingshausen Medal at the recent S.C.A.R. conference in Oslo.

UNDERWATER SOUNDS

Submarine sound waves have been received by the University of Auckland underwater acoustic survey up to a distance of 110 miles in the McMurdo Sound area. The survey team, under the direction of Professor A. C. Kibblewhite, professor of geophysics at the university, is investigating the submarine characteristics of McMurdo Sound and the Ross Sea.

When the programme is finished towards the end of this month, more than three miles of sounds recorded on tape will be taken back to the university for analysis. The sounds recorded will also be used to track and pinpoint undersea volcanic sources.

In the latest work 36 charges containing 1.8lb of explosive were dropped from a United States Navy helicopter, and were exploded at depths of 60ft for the distance signal survey. The sound waves generated were picked up by special hydrophones.

One of the survey team, Mr D. Jones, says that the tests have proved a theory thought to be true of cold water areas, that sound waves travel better because of denser water. These signals could have been received from 500 miles away. Tests by the Americans in the Arctic have shown that noise signals can be received over distances of 700 miles.

First British Comet Flight to Antarctic

An Antarctic flight which seems to have received little publicity except in technical publications was made from Punta Arenas, Chile, the most southerly city in the world, towards the end of last year. A Comet trials aircraft operated by the Ministry of Technology, with a Royal Air Force crew, made the first British jet flight over Antarctica.

The Comet from Boscombe Down is a navigation testbed which evaluates new navigation and radio equipment being considered for use in next-generation aircraft. Much of the Comet's work in the last two or three years has involved flights from overseas bases. It flew round the world eastabout in August, 1968; round the world westabout in August, 1969; and also made two flights across the geographic North Pole.

In a recent issue of the aviation magazine, "Flight" the story of the overflight of Antarctica is told by Squadron Leader G. Dyer under the title, "Southern Sortie." The November, 1969, detachment, on which the flight across Antarctica took place, involved a route of 38,000 nautical miles.

The Comet's route was Boscombe Down - Azores - Bermuda - Barbados - Lima - Santiago - Punta Arenas - (Antarctica flight) - Punta Arenas - Santiago - Guayaquil - Mexico City - San Francisco - Honolulu - Pago Pago - Fiji - Sydney - Port Moresby - Guam - Tokyo - Adak - Vancouver - Toronto - Argentina - Boscombe Down.

On the flight over Antarctica the Comet crew did survey photography for the British Antarctic Survey and made detailed meteorological observations for the Meteorological Service. It left Punta Arenas on November 25 and flew over Drake Passage and the South Shetland Islands to Graham Land and back.

At 57deg 38min S the navigator reported a large "show" at 100 nautical miles on the radar screen. There was no land in the area and the return on the

screen was too solid and rectangular to be cloud. The maximum northerly extent of the Antarctic pack ice as shown on the chart was still 200 nautical miles away.

As the aircraft went abeam the "return," the question was answered. The "show" was a massive ice floe about 30 by 50 nautical miles. It had broken from the main pack and was drifting uncharted.

As the Comet crossed 62deg S there were at last signs of the 100-knot upper wind easing off. From the turning point the cloud down the Antarctic Peninsula was seen to be extensive. But there was a gap ahead—James Ross Island was visible, a breathtaking spectacle of mountains, snow and ice.

The aircraft continued southwards over the Bruce Ice Plateau. The friendly voices of radio operators at British bases on Argentine Island and Adelaide Island seemed to relieve the desolation of the area.

The Comet crossed the Antarctic Circle in position 66deg 32min S 65deg 57min W. Another small break in the cloud occurred over the Arrowsmith Peninsula, and the view was even more spectacular than over James Ross Island.

The most southerly point reached was 67deg 51min S. 69 deg W. when turning for home. An excited Adelaide Island HF operator reported, "I can see you at the end of your trail." The 900 nautical miles back to Punta Arenas were routine. The aircraft crossed the Antarctic Circle at longitude 66deg 7min W. It had spent some 36 minutes below the "magic" line.

ANTARCTIC VETERANS VISIT NEW ENDURANCE

Three Antarctic veterans visited Portsmouth in October to go aboard an ice patrol ship with a name they have never forgotten. They were Commander L. Greenstreet, and Messrs W. E. How and C. J. Green, the surviving members of the crew of Shackleton's *Endurance*, which was trapped and crushed in the ice of the Weddell Sea more than 50 years ago.

The Royal Navy's *Endurance*, bought from the J. Lauritzen Lines, of Copenhagen, was formerly the *Anita Dan*. She is unlike most of Her Majesty's ships. Her upperworks and funnel are the traditional white and buff of the naval surveying fleet; her hull is painted a vivid red for easy identification in the ice, particularly from the air.

Charles Green went south twice with Shackleton, the second time on the last expedition in the *Quest*. Because Shackleton was unable to carry out his Arctic plan to explore the Beaufort Sea, Green did not achieve his ambition of being the only cook who had been across both the Arctic and Antarctic Circles.

On Shackleton's 1914-16 expedition the cook aboard the *Endurance* was discharged when the ship reached Buenos Aires. Green, a baker and pastrycook, was on a ship in port and learned from the butcher that a cook was wanted for the *Endurance*. He got leave and went on board.

When he was interviewed Green explained that his experience in cable ships had been hard. But before he was rescued from Elephant Island he cooked under the most appalling conditions. It has been said of him that of all the men who learned endurance with Shackleton none learned the lesson better or under harder circumstances than Charles Green.

In spite of hardship Green never lost his ambition to go south again. On the ice in 1915 he was cooking on an improvised stove, snow and ice melting all round him, and a high wind bringing tears to his eyes. Shackleton asked him what he was going to do with all his money when he got home. "I'm coming

on another expedition with you if I can," was his reply to the Boss.

Commander Greenstreet, a retired Royal Naval Reserve officer, served in both World Wars. He had experience in sail with the New Zealand Shipping Company, and joined the *Endurance* as first officer because D. G. Jeffrey, who was selected originally, was called up for active service in 1914.

Walter How was an able seaman aboard the *Endurance*. He had had much experience in sail off the coast of Labrador before he joined the expedition. He was serving in the Merchant Navy in 1921 and was ready to go south again in the *Quest* with Shackleton. The death of his father, however, prevented him.

Readers of the biography of Shackleton by Margery and James Fisher may recall Walter How's drawings in the book. There are 26 from his sketch book, among them the hut on Elephant Island, and Harry McNeish, the carpenter, at work on the *Endurance*, watched gravely by his cat, Mrs Chippy.

FLIGHT CANCELLED

A flight over the South Pole from New Zealand to Chile by a chartered Convair 990 with 52 passengers on a 52-day flight round the world was cancelled early this month. The United States Government refused to allow the aircraft to land at Williams Field in McMurdo Sound.

Originally the tour operators, Hemphill World Tours, planned that the Convair would fly from Christchurch to Williams Field and then across the Antarctic to Chile.

RUSSIANS TO HAVE NEW STATION AT CAPE DART

A seventh scientific station will be established in the Antarctic by the U.S.S.R., according to a recent report in "Moscow News". Earlier this year the establishment of Leningradskaya on the Oates Coast, about 200 miles from the joint New Zealand-United States Hallett Station, was reported.

No indication of the location of the new station was given in the newspaper report. But it is known that the station will be established at Cape Dart on the coast of Marie Byrd Land. Its location is 73deg 6min S 126deg 20min W.

Cape Dart lies at the foot of Mount Siple (10,200ft) and forms a prominent angle in the coastline of Marie Byrd Land at the east side of the entrance to Wrigley Gulf. It was discovered by the United States Antarctic Service expedition in December, 1940, on a flight from West Base, and named after Justin W. Dart, an executive of a Chicago drug company, who supported the expedition.

With the establishment of a station at Cape Dart, and Leningradskaya (see "Antarctic," March, 1970) the Russians will have stations right round the continent, and one inland station—Vostok. The others are Molodezhnaya, now the chief Soviet Antarctic base, Mirny, Novolazarevskaya, and Bellingshausen, on King George Island in the South Shetlands archipelago.

At Leningradskaya the Russians plan to conduct research into geology, geomorphology, gravity, geomagnetism, and astrogeology. They have not said yet what the nature of their scientific programme will be at Cape Dart. But the "Moscow News" report says that specialists insist that the mainland offers extremely promising prospects for research.

Geologists are convinced that the mainland is rich in fuel and ores, says

the report. Therefore, it has been decided to increase the geological section in future expeditions.

In 1970-72 the 16th Soviet Antarctic Expedition will have 590 men at its stations on the continent. There will be 112 in the winter parties, including 50 at Mirny, 23 at Vostok, 15 at Novolazarevskaya, 13 at Bellingshausen, and six at Leningradskaya. In the summer 478 men will work at the stations. Provision has been made for one foreign scientist to work with the SAE, and a Soviet scientist will work at a foreign base.

Molodezhnaya will also become the Soviet Antarctic meteorological centre. Atmospheric soundings will be made there with rockets, and meteorological data will be received from satellites. Geological research will be continued in the region of the station.

Meteorological and geomagnetic observations will be continued at all stations. Auroral studies will be made at all stations except Bellingshausen, and glaciological observations also, except at Mirny. Scientists at Mirny and Novolazarevskaya will continue their seismic studies, and cosmic ray research will be continued at Vostok and Mirny.

The SAE scientific programme also includes deep drilling of the continental ice at Vostok, radiophysical studies of glaciers from aircraft, and medical observations. Geophysical, oceanographic, and other work, will be done in the Southern Ocean.

The veteran ice-strengthened freighter

Seven rockets to be launched from Syowa

Seven flights of sounding rockets to measure the structure of the aurora, and a deep core drilling of the continental ice on the Enderby Plateau, are included in the scientific programme of the 12th Japanese Antarctic Research Expedition, 1970-71. Forty members of the expedition left Tokyo aboard the icebreaker Fuji on November 25 for Syowa Station.

JARE 12 is expected to arrive at Syowa Station early in January. Before the expedition sailed news was received of a glaciological traverse by a JARE 11 field party led by Dr Hiromu Shimizu. It left Syowa early in November and planned to cover about 930 miles in the course of its glaciological studies.

An Antarctic veteran, Dr Takasi Oguchi, of the University of Tokyo, will lead the JARE 12 winter party of

30 men. Mr Nozomi Murakoshi, of the Polar Research Centre, National Science Museum, will lead the summer party of 10 men.

Between December 10 and 16 the Fuji will call at Fremantle. The changeover period will last until the beginning of February. Then between March 9 and 15 the ship will call at Cape Town, from where the winter party of JARE 11 will fly back to Japan. After calling at Colombo between March 31 and April 4, the Fuji will return to Tokyo on April 20.

Most of the scientific activities of JARE 11 will be continued by JARE 12. In February this year two test flights of an S-160 sounding rocket were carried out to measure the density distributions of electrons and ozone up to an altitude of about 52 miles.

This season one S-160 rocket, which has a maximum altitude of about 55 miles, will be used. The other six S-210 rockets are a little larger, and have a maximum altitude of about 75 miles.

These rockets will measure auroral particles, aurora light, electron and ion densities, electric and magnetic fields, and radio emissions. At the same time six high-altitude balloons will be released to observe auroral X-rays and cosmic ray heavy nuclei.

The observations of aurorae, using rockets, balloons, and ground equipment, may indicate why aurorae glow and dance so mysteriously in the cold, dark Antarctic sky. Auroral observa-

CAPE DART continued

Ob once again will transport men and supplies to the Soviet stations. It was scheduled to sail from Leningrad in October and arrive at Molodezhnaya towards the end of November. At the end of January it will visit Wellington.

Two scientific research ships, a tanker, and a freighter will also support the Soviet expedition. The Professor Zubov was expected to sail from Leningrad in November and reach Mirny in December. The Professor Vize was scheduled to leave the same port in January for Bellingshausen, arriving there in February.

In January the tanker Elbrus is scheduled to sail from Batum with a fuel cargo, arriving at Mirny in March. The cargo ship Vytegrales will leave Leningrad in February, and is due at Molodezhnaya in March.

tions by sounding rockets will be continued until 1973, and meteorological rocket observations will be started in the same year.

Deep core drilling of the continental ice to a depth of about one and a quarter miles will be done on the Enderby Plateau about 155 miles from Syowa Station. The ice cores are expected to provide information about snow accumulation, and air pollution in the Antarctic.

A Lockheed Lasa-60 will be used for aerophotogrammetry during the summer. The aerophoto survey will cover the western part of Lutzow Holm Bay, the Yamato Mountains about 185 miles south of Syowa Station, and the western part of the Riiser-Larsen Peninsula. A rocket launching dome and a new living hut will be constructed at the station during the season.

Members of the winter and summer parties of JARE 12 and their jobs or scientific disciplines are:

Winter Party—Dr Takashi Oguchi (leader), Masami Ose (deputy leader), Hideji Nakanishi (meteorology), Tetsuro Fukui (meteorology), Teruo Muramatsu (meteorology), Takashi Adachi (meteorology), Takanobu Ogata (Ionosphere), Masanori Ito (upper atmosphere physics), Masami Matsumura (upper atmosphere physics), Hiroshi Kobayashi (geophysics), Tomomi Yamada (glaciology), Masayoshi Nakao (glaciology), Masao Mishima (geochemistry), Tomohiko Watanuki (biology), Kazuo Sugawara (human physiology), Masaaki Taga (electrical engineer), Katsuryo Yamazaki (mechanical engineer), Yoshiyuki Shimazaki (mechanical engineer), Yoshiichi Nobuta (mechanical engineer), Sadao Kawabata (radio operator), Shizuo Kawazi (radio operator), Norio Takeuchi (rocket engineer), Takahiro Furuta (electronic engineer), Masayuki Kenjo (electronic engineer), Dr Hiroshi Yasuda (medical doctor), Tsuneyoshi Kimura (civil engineer), Akihisa Omuro (architectural engineer), Kousaku Iino (cook), Morio Shimizu (cook), Hiroshige Shibano (logistician).

Summer Party.—Nozomi Murakoshi (deputy leader), Shuji Nakabayashi (physical oceanography), Yoshio Seto (chemical oceanography), Saburo Nishiwaki (marine biology), Hidenao Takahashi (aerophotogrammetry), Kazuo Matsuoka (aviation pilot), Takanobu Kurisaki (aviation engineer), Kei Terai (material engineer), Kazuo Katagiri (construction), Yuji Kosugi (logistician).

FATHER FOLLOWS SON

In 1961 Murray Smith, a graduate student from the University of Canterbury, went south to work at Cape Royds with the university's Antarctic research unit. He spent a winter and three summers in the Antarctic.

Last month Mr Stanley Smith followed in the footsteps of his son. As one of the two men chosen to go to the Antarctic under the New Zealand Antarctic Society's caretaker scheme, he left Christchurch to spend about three weeks at Cape Royds.

A Rangiora contractor, Mr Smith is a committee member and vice-president of the Canterbury branch of the society. The other member selected as a caretaker is Mr Charles Satterthwaite, a lecturer in mechanical engineering at the University of Canterbury.

Messrs Smith and Satterthwaite, who were selected from a large number of applicants, supervised the activities of visitors to Cape Royds, and looked after Shackleton's hut, and the adjacent D.S.I.R. hut. They also made a count of Adelie penguins, and did some primary meteorological studies.

Two members of the New Zealand Antarctic Society, Messrs P. J. Skellerup and M. Orchard were stationed at Cape Royds last year. If 200 tourists are likely to visit the McMurdo Sound area in January and February next year, the caretaker scheme may be continued at Cape Royds.

Canterbury Museum Acquires Antarctic Relics

The highest peak on Beaufort Island at the entrance to McMurdo Sound bears the name Paton's Peak. It was named after James Paton, bo'sun of the *Aurora* during the Ross Sea Relief Expedition to rescue Shackleton's men.

Paton probably made more Antarctic voyages than any other sailor in the Scott and Shackleton era. Between 1902 and 1917 he served in the *Morning*, the *Nimrod*, the *Terra Nova*, and the *Aurora*. He was one of the 21 men who died in the *Aurora* in 1917 when she mysteriously disappeared on a voyage from Newcastle, New South Wales, with a cargo of coal for Iquique.

After more than 50 years Paton's Polar Medal in bronze has come to light in Christchurch. Recently it was presented to the Canterbury Museum by Mrs R. R. Folley on behalf of her father, the late Mr E. Smith.

The medal is without its pure white ribbon, but has the clasp, "Antarctic 1907-1909. Paton received the medal for his service in the *Nimrod*. A clasp was awarded to any of the *Nimrod* men who had served in the relief ships *Morning* and *Terra Nova* in Scott's first expedition.

Paton, according to Taffrail's book, "Ribbons and Medals," should have received another bronze clasp, "Antarctic 1910-13" for his service in the *Terra Nova* on Scott's last expedition. Polar Medals were awarded to all members of the landing party and the officers and men of the *Terra Nova*. About 60 silver medals and clasps were bestowed, and a few men who made only one summer voyage received the medal in bronze.

The regulations for the award of the Polar Medal state that the silver and bronze medals are different decorations and thus can be worn simultaneously. But when a silver or bronze medal has been given, and a man earns another of the same sort, he receives a silver or bronze clasp only.

After Shackleton's Imperial Trans-Antarctic Expedition of 1914-1916 30 medals in silver with clasp, "Antarctic

1914-1916" were given to officers and men of the *Endurance* and the *Aurora*, and eleven medals in bronze were awarded to men who did not land. Some men in the *Endurance* were not recommended by Shackleton for the award.

Presumably Paton also qualified for the award of the bronze bar "Antarctic 1914-1916." In his book, "High Latitudes," Captain John King Davis, who commanded the *Aurora* on the Ross Sea Relief Expedition, says that all the crew were awarded the Polar Medal. Paton's name appears in the list.

MESSAGES BY PIGEON POST

Photographs of three pigeons and messages received from the *Nimrod* on her second voyage south have also been presented to the museum on behalf of Mr Smith by Mrs Folley. The messages are signed by Captain F. P. Evans, master of the Union Steam Ship Company's steamer *Koonya*, which towed the *Nimrod* from Lyttelton to the Antarctic Circle. He commanded the *Nimrod* on her second trip south.

Mr Smith's association with Antarctic ships and seamen began when the *Nimrod* arrived in Lyttelton. He was a pigeon fancier and the pigeons taken aboard the *Nimrod* on her voyages came from his loft. Later he entertained men from the *Terra Nova* during their stay in Lyttelton.

A large iron bar is another Antarctic relic presented to the museum recently.

It is believed to have been used on one of Scott's expeditions for prising out blocks of ice to be melted for water. The donor, Mr C. E. Allen, bought it at an auction sale at the home of Sir Joseph Kinsey, who acted as Scott's business representative in Christchurch for both expeditions.

PATON'S TWO MEDALS

Since Paton's bronze medal was presented to the museum the honorary curator of Antarctic relics, Mr B. N. Norris, has received more authoritative information about Polar Medals than that contained in Taffrail's book, "Ribbons and Medals." Lieutenant-Colonel N. W. Poulson, author of "The White Ribbon: A Medallie Record of British Polar Exploration," says that Paton received both the silver and bronze medals.

Paton was awarded the silver medal as a member of the crew of the Terra Nova who made more than one voyage on Scott's last expedition. This medal had the clasps "Antarctic 1910-13," "Antarctic 1914-16," and "Antarctic 1917." The second clasp is for his voyage in the Aurora to McMurdo Sound with the Ross Sea party of Shackleton's Imperial Trans-Antarctic Expedition; the third is for his service as a member of the relief expedition.

The crews of the relief ships Morning and Terra Nova received the bronze Polar Medal after Scott's first expedition, but it did not have the clasp "Antarctic 1902-04." Paton received this medal, and for his service on the Nimrod was awarded the clasp "Antarctic 1907-09."

There is still one question about Paton's medals unanswered. Where is his silver medal?



This Polar Medal in silver, which was awarded to the late Mr Mortimer McCarthy, of Lyttelton, is now in the Canterbury Museum. Mr McCarthy was a member of the crew of the Terra Nova on Scott's last expedition.

Photo: M. M. Trotter

TOURISTS TO ANTARCTIC POSE ECOLOGICAL THREAT

Restrictions on tourists visiting Antarctica are included in a 15-point recommendation for protection of the environment of the continent, which was adopted at the sixth biennial consultative meeting of the Antarctic Treaty nations in Tokyo. A scientific research committee will be urged to investigate any possible ecological changes that might be brought about by visits of large numbers of people to Antarctica.

The recommendation which will be made to the governments of the 12 treaty nations suggests that tourists visiting Antarctic bases should notify the bases of their schedule between 24 and 72 hours before their arrival there. The visitors should follow instructions of base authorities and respect regulations prohibiting entry into preserves.

Nearly 600 tourists now visit Antarctica in a year, and indications are that the number will increase rapidly. According to the recommendation, these tourists were found on occasions to have entered preserves, destroyed rare mosses, and disturbed research activities.

The meeting also called for the conservation of Antarctic fauna and flora, and advance notice of the launching of scientific research rockets on the continent to eliminate accidents. Member countries were asked to exchange information on Antarctic meteorology and telecommunications.

Represented at the meeting were

Argentina, Australia, Belgium, Chile, France, Japan, New Zealand, Norway, South Africa the Soviet Union, the United Kingdom, and the United States. The chairman was Mr Akira Matsui, a former Japanese Ambassador to Paris.

The next consultative meeting will be held in Wellington in 1972.



NEW SCOTT BASE PROGRAMME

Micro-pulsation studies have been included in the New Zealand Antarctic research programme at Scott Base. The programme will start this month, and data will be collected all the year round.

Seven continuous scientific programmes are now being conducted through the year by the scientific staff at the base. The micro-pulsation programme is a study of the composition of the upper atmosphere.

Data obtained from the study is correlated with several other programmes. This data determines alterations in the earth's magnetic field, and enables navigation and surveying to be done with greater accuracy. The material is collected on tape, and the tapes are sent to New Zealand and the United States for analysis.

Much of the equipment for the work has been provided by the National Science Foundation after the completion of similar studies by the United States Antarctic Research Programme.

BASE COMMANDER'S DEATH

A former base commander at the United States Antarctic support force headquarters in Christchurch, Commander L. M. Johnson, died in Denver, Colorado, last month. Commander Johnson, who retired from the Navy in July this year, was in charge of the base from July, 1966, to December, 1968. He had begun a course of study in business management at the University of Colorado soon after his retirement.

No Antarctic Air Service Before 1972-73 Summer

New Zealand's international airline, Air New Zealand, has decided that a commercial air service from New Zealand to the Antarctic is at least two summers away. An airline spokesman said last month that adequate transit accommodation for passengers at Williams Field in McMurdo Sound would not be available before the summer of 1972-73.

Many of the problems associated with running an Antarctic air service to standards acceptable to Air New Zealand have been solved, according to the spokesman, but some planning is still necessary. Practical and economic difficulties have to be overcome before a service can start.

Because of the unpredictable Antarctic weather a building which will have to be built at Williams Field will need all the basic facilities of a hotel. In addition the building will have to be completely weatherproof and transportable because the airstrip is on the sea ice.

Such a building would have to provide sleeping and catering facilities for passengers in transit to or from a ship in McMurdo Sound.

In any commercial Antarctic flight an aircraft will need to carry sufficient fuel to return to New Zealand without landing if the weather in the Antarctic makes this necessary.

Last summer Air New Zealand sent a team to the Antarctic to study the feasibility of flying its DC8s to Williams Field. No difficulties were found on the technical and flying side.

But the question still unanswered is who will provide accommodation for passengers arriving in the Antarctic? Suggestions that Air New Zealand should make flights to the Antarctic have been linked with the activities of Lindblad Travel, New York.

Lindblad Travel has been taking tourists to the Antarctic since 1966. In 1968 it took two parties of tourists from New Zealand to the McMurdo Sound area. This summer it has planned two

more expeditions from Bluff and Hobart to the same area.

The managing director, Mr L. E. Lindblad will visit New Zealand early next month. It is expected that he will have discussions with Air New Zealand on the question of tourist flights to Antarctica.

A Christchurch newspaper, "The Press," probably the best informed New Zealand newspaper on Antarctic affairs, is more realistic about a commercial air service to the Antarctic than many who have advocated it. In a leading article last month it said bluntly that Air New Zealand should set back its plans even further than the summer of 1972-73.

"Would-be operators of tourist ventures in the Antarctic have been slower than the scientists and servicemen, who have spent some time there, to recognise the formidable hostility of the continent towards all but the most carefully prepared expeditions," said "The Press". "Tours by ship are more feasible than those by air, but private ventures of any kind must depend on the good will of the United States Navy Antarctic support force at least in the immediate future; it alone can provide the resources to meet the "emergencies" which in the Antarctic environment can be an almost daily occurrence. A tourist ship and a private flier have been helped in recent years; situations in which undue demands might have to be made on the Navy should not be contemplated. . . .

"A building with the basic facilities of a hotel—and a hotel which can be moved as the ice breaks up—will be needed at the runway."

"The Press" quoted an estimate by Mr

Two rookeries colonised more than 500 years ago

Two old penguin rookeries found near Cape Royds on the west coast of Ross Island were probably colonised more than 500 years ago, and then totally abandoned 300 to 400 years ago. The abandoned rookeries in the Clear Lake and Cape Barne areas now show signs of recolonisation.

Radiocarbon dating of the remnants of an Adelie chick from Clear Lake showed that it was about 16 days old when it died, and was alive about 1250-1450 A.D. Three birds from Cape Barne were determined to be 23 days old, 16 days old, and 28 days old when they died. They were alive about 1676-1834 A.D.

Reasons for the abandonment of the Clear Lake and Cape Barne rookeries, and possibly the Cape Royds rookery, which may have been recolonised over the last 200 years, are given in a paper published in the "New Zealand Journal of Science" by Mr Ian F. Spellerberg, a former member of the University of Canterbury Antarctic biology unit. Mr Spellerberg is now on the staff of the zoology department at La Trobe University.

Mr Spellerberg says that in his reports

on the British Antarctic Expedition of 1910-1913 Professor F. Debenham referred to two old penguin rookeries. One was located west of Clear Lake, nearly a mile north of the present Adelie rookery at Cape Royds; the other was near Sunk Lake at Cape Barne, nearly two miles south-east of Cape Royds.

In the summers of 1963-64 and 1965-66 Mr Spellerberg recorded Adelies nest scratching and pairing at both localities. He examined these sites to confirm that the localities mentioned by Debenham were in fact abandoned rookeries and not moulting sites, to determine when they were abandoned; and to consider aspects that may have been connected with the event.

Mr Spellerberg examined two guano deposits. Surface features and chemical analysis of the organic material, and carbon dating of penguin remains indicated that the two areas were abandoned Adelie rookeries.

There were comparatively few indications of penguin colonisation at the Clear Lake locality. A deposit of bones, feathers and dried flesh was collected from an area under a thin layer of sand and detritus.

Considerable evidence of penguin colonisation was found at the Cape Barne locality. Several dried penguin chick bodies were found, and also numerous egg chips and feathers in the hard dry layer of guano. Some of the penguin bodies were completely buried in the guano layers; others were partially exposed amongst kenyite boulders.

Mr Spellerberg suggests that heavy predation on eggs and chicks by McCormick skuas, lack of summer ice breakout in McMurdo Sound, and a slight climatic fluctuation contributed to the abandonment of the rookeries.

AIR SERVICE continued

R. B. Thomson, superintendent of the Antarctic Division of the D.S.I.R., that tourist flights would require the provision of navigational aids, terminal housing, protective clothing, first-aid facilities, surface transport, food and fuel costing "some millions of dollars".

"This alone should be sufficient to deter the airline from what must be a most dubious financial venture for many years to come," said "The Press".

OUR SIXTIETH NUMBER!

With this issue of "Antarctic" we take quiet pride in the fact that it is our sixtieth number, completing an unbroken run over the past fifteen years. In the following article L. B. Quarterman, founder and long-time editor, takes a look back to our beginnings.

The history of "Antarctic" is so closely linked with that of the New Zealand Antarctic Society that it would be impossible to describe the conception of the journal without saying something about the beginnings of the society which was its "onlie begetter."

After the interest aroused by Rear-Admiral Byrd's second expedition to the Antarctic in 1933-34, a Wellington businessman, Mr Arthur Leigh Hunt, arranged a meeting in that city on November 2, 1933, at which it was decided to form the New Zealand Antarctic Society.

The society got away to a good start, and branches were soon formed in Dunedin, Auckland and Christchurch.

It was early envisaged that there was a need for a modest publication which would not only keep the society informed about what New Zealand was doing but would also let members know about the plans and activities of other nations engaged in Antarctic exploration and research.

As early as 1936 the secretary was authorised "to make inquiries regarding the cost and the means of obtaining material for the publication of a journal of the society." Because of the society's limited finances, the matter was shelved, and with the intervention of the Second World War the society went into recess, and was not revived until 1949.

NEWS BULLETIN COMMENCED

With the society once more active, a campaign for new members was started, and in this connection council members Mr C. R. H. Taylor and Dr R. A. Falla suggested the value of a newsletter. At a council meeting on June 12, 1950, the writer suggested the publication of a typescript newsletter, and this was

approved, the editorship to be in the writer's hands.

The first number of the "Antarctic News Bulletin" bore the date August, 1950, and consisted of two foolscap pages, typed and cyclostyled.

The issue described in no great detail the relief of the British F.I.D.S. bases in 1949-50, the establishment "without permission" of an Argentine base on Deception Island, the establishment of a French base by the Commandant Charcot under Liotard "50 k.m. east of Dumont d'Urville's landfall of 1840," and the proposal for a United States expedition under Byrd to work due south of New Zealand "for training in polar warfare." After some reference to whaling activities, chiefly Russian, the issue concluded with a 250-word story about the proposed Norwegian-British-Swedish expedition which had gone south in the Norsel in February and had established a base in Queen Maud Land.

Over the next five years 20 numbers were published, the last, that of December, 1955, containing fifteen pages, still foolscap, cyclostyled.

Issue No. 11 marked a publishing scoop with the commencement in serial form of the published diary of Harry McNeish, one of five men who accompanied Sir Ernest Shackleton on his great voyage in the little James Caird from Elephant Island to South Georgia in 1916, after the loss of the *Endurance*. McNeish's diary is now one of the treasured Antarctic relics of the Alexander Turnbull Library, Wellington.

Number 19 (September, 1955) carried a tag stating that "in response to a steady demand, Nos. 1, 2, 3 and 4 of the 'Bulletin' have been reprinted

and may be obtained on application to the secretary . . . Price, 2s 6d per copy."

INCEPTION OF "ANTARCTIC"

This demand, and frequent approving comments from overseas Antarctic enthusiasts, made it clear that the time had come to print the bulletin.

The council of the society approved the printing of 500 copies and it was decided that from the first printed issue the name be changed to "Antarctic" following the precedent set by the much more pretentious Northern Hemisphere "Arctic".

The first issue appeared in March, 1956, and consisted of 24 pages. During the next three years issues fluctuated between 24 and 40 pages, and some later numbers were of even greater size. At first only a cover illustration was used. The first "inside" pictures appeared in the issue of June, 1959, and since December of that year have been a regular feature.

In conclusion, this writer would like to record his thanks to all those people and organisations who have contributed news and information of the Antarctic activities of their respective countries over the years. Without the help of these busy men and women, "Antarctic" would never have attained the high place in polar news media that it occupies today.

OLD FRIENDS MET AT 77 DEG SOUTH

Old school friends often meet again after many years. But few of them have meetings like Messrs R. McKerrow and B. Jackson. They met for the first time in about 15 years at Latitude 77deg South in Antarctica.

Mr McKerrow, a technician at Vanda Station, had spent the winter there, and seen no new faces for eight months. Mr Jackson, who knew Mr McKerrow when they were at a primary school in Dunedin, is the information officer at Scott Base this season. He was aboard one of the first helicopters to fly to Vanda late in October.

HALLEY BAY VISIT

A United States admiral visited the British Antarctic Survey station at Halley Bay, on the Caird Coast, for the first time last month. Rear-Admiral D. F. Welch, commander of the United States Navy Antarctic support force, was on board one of two Hercules aircraft which flew from McMurdo Station to Halley Bay by way of the Amundsen-Scott South Pole Station on November 30.

After two weeks' delay because of unfavourable weather the two Hercules aircraft of the Navy's VXE6 Squadron made a 1590-mile flight across the continent to take a BAS field party to the foot of the Shackleton Range. Six men with their dogs and 10,000lb of cargo were taken into the field. The aircraft returned to McMurdo Station after refuelling stops at the South Pole on December 1.

Giant Petrel Flies 9000 Miles

A giant petrel which was banded by a British Antarctic Survey party on Signy Island in the South Orkney Islands on March 3 this year was caught 12 miles south-east of the New Zealand port of Oamaru about five months later. It had travelled 9000 miles across Antarctica.

Mr John Graham, a local fisherman, caught the bird while fishing. He noted the number on the band and released the bird. Later he notified the British Ornithological Trust and was advised where the Giant Petrel had been banded.

Well known as scavengers in Antarctic waters, the Giant Petrels are great wanderers during their first year. Nestlings banded at Wilkes Station (now Casey) have been recovered from as far away as Easter Island, in the Pacific, South Africa, and South America.

ANTARCTIC BOOKSHELF



Christmas Day is in Antarctica's mid-summer but snow and ice make it like an old-fashioned winter Christmas on the other side of the world. All the men who have sailed into Antarctic waters or explored the continent have not forgotten Christmas Day in their books or diaries.

In these extracts from the well-known books on our Antarctic bookshelf men of several nations tell us about their Christmases far from civilisation.

December 25, 1842: Being Christmas Day, our people, as usual, had an additional allowance issued to them, and it was passed by us all cheerfully and happily, although the gale still whistled through the rigging, and we were surrounded by a great multitude of icebergs. We were indebted to the kindness of Lieutenant-Governor Moody, of the Falkland Islands, for the good old English fare of roast-beef.

—*A Voyage of Discovery and Research in the Southern and Antarctic Regions during the years 1839-63.* By Captain Sir James Clark Ross.

* * *

December 25, 1902: When we awoke to wish each other "a merry Christmas" the sun was shining warmly through our green canvas roof. We were outside in a twinkling, to find the sky gloriously clear and bright, with not a single cloud in its vast arch. . . We have been wondering what Christmas is like in England—possibly very damp, gloomy, and unpleasant, we think; we have been wondering, too, how our friends picture us. They will guess that we are away on our sledge journey, and will perhaps think of us on plains of snow; but few, I think, will imagine the truth, that for us this has been the reddest of all red-letter days.

—*The Voyage of the Discovery.* By Captain Robert F. Scott.

* * *

December 24-25, 1904: A gramophone recital for the penguins was the chief amusement this Christmas Eve. The

gramophone was installed in the snow, and a popular record played. The penguins, greatly intrigued, stood listening with their heads on one side; the most courageous tried to get into the horn. A surprise hamper prepared by the captain's sister was unpacked and revealed a cardboard Christmas tree all decorated with tinsel and toys. The crew's quarters were gay with flags and lanterns, and at midnight the candles were lit and the plum puddings set ablaze. The fun lasted until four o'clock in the morning, round the only tree the Antarctic had ever seen.

—*Charcot of the Antarctic.* By Marthe Oulie.

* * *

December 25, 1908: Christmas Day. There has been from 45deg to 48deg of frost, drifting snow and a strong biting south wind. . . Now, as I write, we are 9500ft above sea-level, and our latitude at 6 p.m. was 85deg 55min South. . . We had a splendid dinner. First came hoosh, consisting of pony ration boiled up with pemmican and some of our emergency Oxo and biscuit. Then in the cocoa water I boiled our little plum pudding which a friend of Wild's had given him. This, with a drop of medical brandy, was a luxury which Lucullus himself might have envied; then came cocoa, and lastly cigars and a spoonful of creme de menthe sent to us by a friend in Scotland. We are full tonight, and this is the last time we will be for many a long day.

—*The Heart of the Antarctic.* By Sir Ernest Shackleton.

December 24-25, 1911: We had not far to go before reaching our depot. At 12 midnight we arrived there in the most glorious weather, calm and warm. Now we had the whole of Christmas Eve before us, and could enjoy it at our ease. . . All crumbs of biscuit were carefully collected by Wisting, the cook for the day, and put into a bag. This was taken into the tent and vigorously beaten and kneaded; the result was pulverised biscuit. With this product and a sausage of dried milk, Wisting succeeded in making a capital dish of Christmas porridge. I doubt whether anyone at home enjoyed his Christmas dinner so much as we did that morning in the tent. One of Bjaaland's cigars to follow brought a festival spirit over the whole camp.

—*The South Pole.* By Roald Amundsen.

* * *

December 25, 1911: We had a great feed which I had kept hidden and out of the official weights since our departure from Winter Quarters. It consisted of a good fat hoosh with pony meat and ground biscuit; a chocolate hoosh made with water, cocoa, sugar, biscuit, raisins, and thickened with a spoonful of arrowroot. (This is the most satisfying stuff imaginable.) Then came 2½ square inches of plum-duff each, and a good mug of cocoa washed down the whole. In addition to this we had four caramels each and four squares of crystallised ginger.

—*The Worst Journey in the World.* By Apsley Cherry-Garrard.

* * *

December 25, 1912: We were up at 11 p.m., but so much time was absorbed in making a special stew for Christmas from some bones that it was not until 2.30 a.m. that we got under way. To make the spread more exceptional I produced two scraps of biscuit which I had saved up, stowed away in my spare kit-bag, as relic of the good days before the accident. It was certainly a cheerless Christmas; I remember that we wished

each other happier anniversaries in the future, drinking the toast in dog soup.

—*The Home of the Blizzard.* By Sir Douglas Mawson.

* * *

December 25, 1915: Christmas Day. "On the Barrier." All days are the same in these regions. Up at 5.30. Wished all hands the very best. Dug out camp. Under way at eight o'clock. Going similar to that of yesterday—sinking in up to the knees in places. Lunched at noon. Under way at 1. A peculiar feature, everyone has been talking of good things, especially tobacco. I notice that no one has mentioned a bath or clean clothes, things of the past. There is no conversation on the trek, everyone's time is occupied in pulling.

—*The South Polar Trail.* By Ernest Joyce.

* * *

December 25, 1929: A white Christmas and a warm one. The temperature today was 31deg above zero, and Tennant even had trouble bringing the ice cream to the freezing point. The day was celebrated appropriately. There was a Christmas tree wrapped in cotton, and festooned with cigarette papers, chewing gum, cough drops and other knick-knacks. There were even cigars and cigarettes, and George Black produced a pound of candy for every man. This is luxury.

—*Little America.* By Richard Evelyn Byrd.

* * *

December 25, 1936: We celebrated our Christmas dinner with an extra chocolate ration and some boiled sweets which were a present from Bertram, then Bingham went off collecting rock specimens, while I dug out the two boxes of dog pemmican which we had depoted while on the outward journey.

—*Southern Lights.* By John Rymill.

* * *

December 24-25, 1955: It was here at Hut Point that I spent my seventh Christmas Eve in the Antarctic. Huddled about a small stove in our draughty tent, we took time out while a few of the men opened packages they had

lugged the thousands of miles from home for the occasion. . . With all the parcels open, Captain Dick Black, my companion on former expeditions and now camp master, and I contributed some carefully hoarded cheeses and crackers to the festivities, which concluded on a high note as a group of enlisted men serenaded us from outside with a selection of Christmas carols.

—90° South. By Paul Siple.

* * *

December 25, 1957: Our third Christmas dinner in the Antarctic was eaten under distinctly bizarre conditions at South Ice depot a few hours before we set off on the journey to the Pole. The hut we had erected the year before was now buried by the winter snow up to the last extension of its chimneys, and sixteen feet underground there were ten of us congregated for dinner and the Queen's broadcast.

—Because it is There. By George Lowe.

* * *

December 25, 1957: At 7 a.m. on Christmas Day we had Christmas dinner. We sat around in the caboose—snug and warm with the heater going—and started off the celebrations with a tot of brandy carefully brought for the occasion by Murray Ellis. Then we had a sumptuous Christmas dinner—salmon fishcakes cooked with loving care by Peter Mulgrew; some tinned peaches thawed out over the hot-air blower; and a cup of cocoa and a piece of fruit cake—not an outstanding menu by ordinary standards perhaps, but greatly appreciated by us. It was a thoroughly rollicking occasion and we were soon in a slight haze of bonhomie and good cheer.

—No Latitude for Error. By Sir Edmund Hillary.

* * *

December 25, 1957: On the southern journey Bob Miller and George Marsh were in the approaches to the Victoria Land Mountains. Christmas Day was a day of normal travel of a further 18 miles, putting them in position 83deg

49min South, where they built an enormous cairn, placed a small red flag on top, leaving beside it four tins of dog pemmican and four gallons of kerosene, and solemnly named it Christmas Depot. . . . Their Christmas dinner that evening was one of tinned frankfurters and mashed potato, preceded by a Marsh cocktail of medicinal brandy, lemon crystals, sugar, and hot water.

—Antarctica. By A. S. Helm and J. H. Miller.

NEW PRESIDENT OF SCAR

The new president of the Scientific Committee on Antarctic Research until 1974 will be Dr G. de Q. Robin, director of the Scott Polar Research Institute, Cambridge. An Australian, Dr Robin has been secretary of SCAR for the last 12 years. He succeeds Dr Laurence M. Gould, chairman of the Committee on Polar Research of the United States National Academy of Sciences.

A New Zealand geologist, Dr R. W. Willett, has succeeded Dr Robin as secretary. He is a former director of the Geological Survey, and Assistant Director-General of the Department of Scientific and Industrial Research.

The vice-president of SCAR is Professor G. Avsiuk (U.S.S.R.). He will continue in office until 1972.

Dr Robin, who is a physicist, began his Antarctic career more than 20 years ago. He was a member of the joint Norwegian-British-Swedish expedition to Queen Maud Land in 1949-52, and led a seismic party for 750 miles across the Polar Plateau from the base at Maudheim, near Cape Norvegia, and back.

When the Scott Polar Research Institute developed airborne radio echo-sounding equipment to determine ice thickness Dr Robin returned to the field again. Last season he and other scientists from the institute made a series of flights in a United States Navy Hercules, operating from McMurdo Station, to record the thickness of the ice sheet.

“ANTARCTIC”

is published quarterly in March, June, September, and December. It is the only periodical in the world which gives regular up-to-date news of the Antarctic activities of all the nations at work in the far South. It has a world-wide circulation.

Subscription for non-members of the Antarctic Society, NZ\$2.50, Overseas NZ\$3.00, includes postage. Details of back issues available may be obtained from the Secretary, New Zealand Antarctic Society, P.O. Box 404, Christchurch, New Zealand.

The New Zealand Antarctic Society

The New Zealand Antarctic Society was formed in 1933. It 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 two branches of the society and functions are arranged throughout the year.

You are invited to become a member, South Island residents should write to the Canterbury secretary, North Islanders should write to the Wellington secretary, and overseas residents to the secretary of the New Zealand Society. For addresses see below. The membership fee is NZ\$2.00 (or equivalent local currency). Subscription to “Antarctic” is a further \$2.00.

New Zealand Secretary

Miss J. Garraway, P.O. Box 404, Christchurch.

Branch Secretaries

Canterbury: Miss J. Garraway, P.O. Box 404, Christchurch.

Wellington: Mr P. Wilson, P.O. Box 2110, Wellington.



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