

ANTARCTIC

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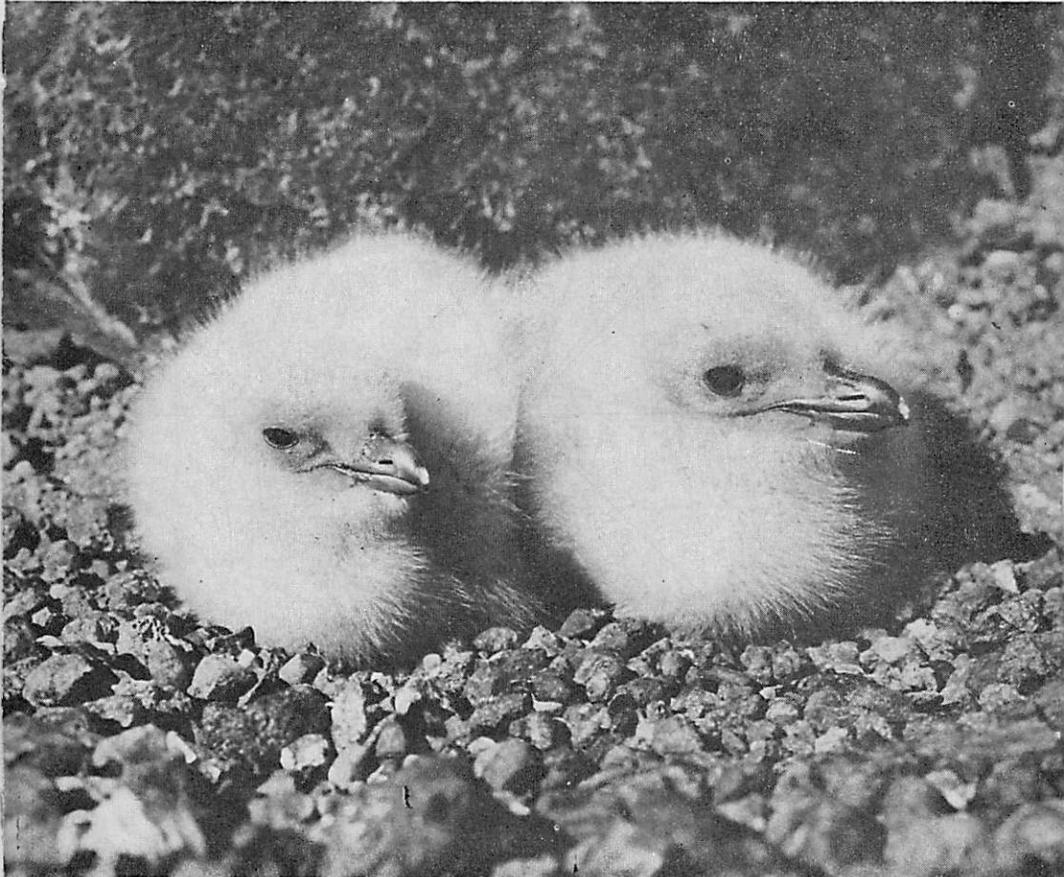


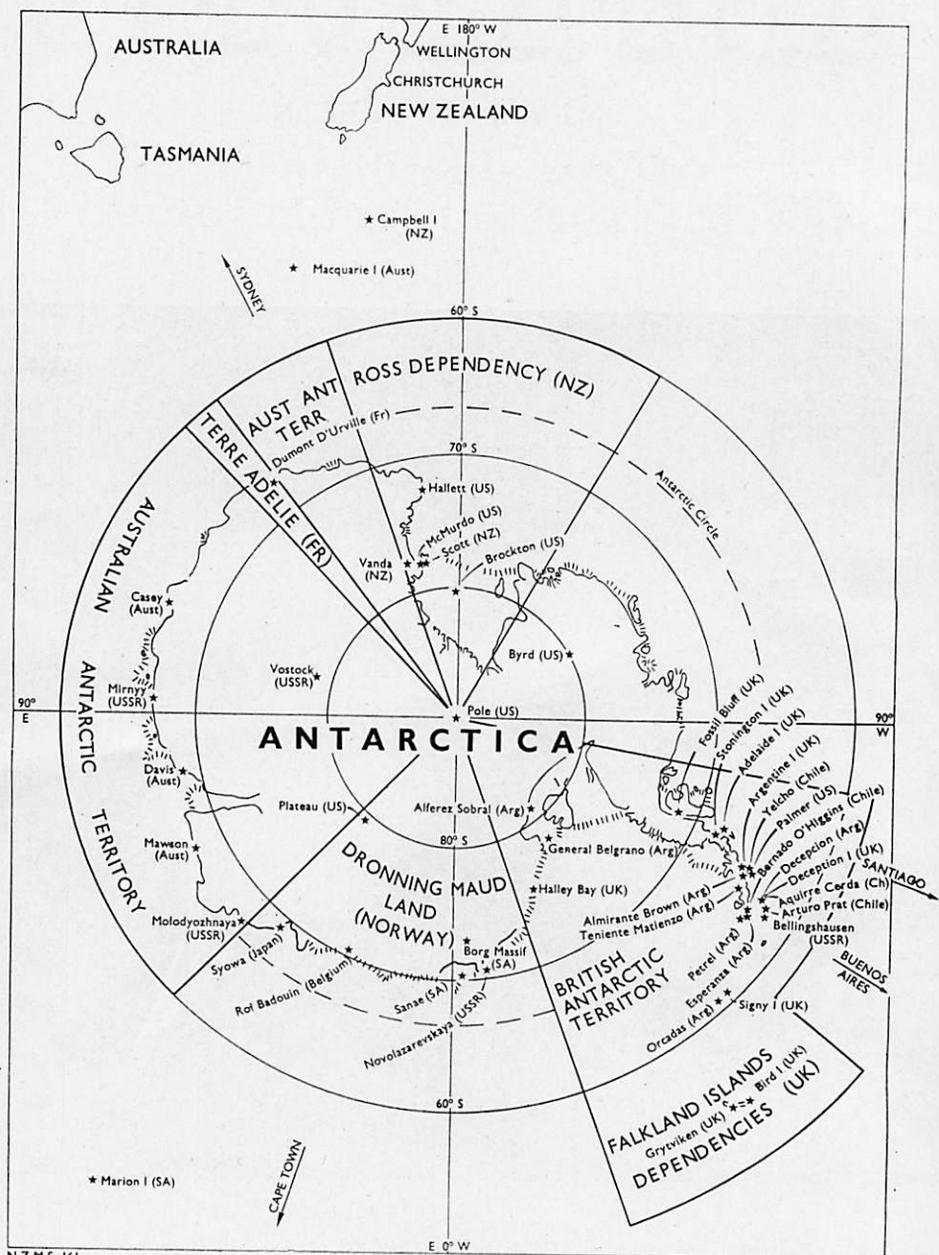
Photo: J. T. Darby.

TWIN SKUA CHICKS.

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55th ISSUE

SEPTEMBER, 1969



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"ANTARCTIC"

(Successor to "Antarctic News Bulletin")

Vol. 5, No. 7

55th ISSUE

SEPTEMBER, 1969

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VANDA BASE RESUPPLIED

HAZARDS FOR TRACTOR TRAIN

On September 7 a tractor train taking urgently required fuel and replacement parts for scientific instruments at Vanda Station reached the western side of McMurdo Sound after a hair-raising trip.

Towing seven tons on sledges, the Trans-Antarctic Snowcat, "Abel", left Scott Base at 9 a.m. on Sunday, September 7. On the resupply trip were the leader of Scott Base, Robin Foubister of Christchurch, base engineer Allan Guard, of Fairlie, and Noel Wilson, of Wanaka.

Also with these three New Zealanders was a U.S. Navy officer, Don Nachtsheim, covering the trip for the New Zealand Broadcasting Corporation and the U.S. Navy.

After 20 trouble-free miles, a sudden change in the surface texture of the ice ahead brought the caravan to a halt.

Noel Wilson found the surface was fresh ice and suggested a drill core be taken to determine the ice thickness.

After only a few turns the drill dropped through four inches of ice only several days old.

A warning was sounded to Guard and Wilson, who were cavorting about on the thin ice to keep themselves warm in the sub-zero temperatures.

Allan Guard, who swims like a stone, remarked: "I would not have been standing there if I had known that only four inches of ice separated me from two thousand feet of water."

Back on the thicker ice the New Zealanders found they were still in trouble. Another drilling showed that the entire caravan was sitting on 16 inches of ice. A rapid withdrawal was called for, and the tractor train retreated half a mile to where the ice was 54 inches thick.

Apart from crossing several minor cracks and one three feet wide, no

further excitement occurred before camping at a safe distance from the Bowers Piedmont Glacier.

The tractor party met up with a party from Vanda Station in the lower Wright Valley a few days later.

In a message to Scott Base, Bill Lucy, leader of Vanda Station, on September 14 expressed thanks for replacement machinery, "goodies", and mail after the winter. "It was all much appreciated, more than you probably imagine," he said.

Those wintering at Scott Base have been closer than any outsider to the problems encountered by the five men eating, sleeping, working and playing within sight of one another for seven months at the remote station, all with the barest minimum of comforts.

They have had a rugged time, but have come through very well.

The most important item to arrive at Vanda Station on the resupply, scientifically speaking, was a replacement galvanometer for the seismic recorder.

A signal passed to New Zealand via Scott Base advised that the equipment, which recorded the first known earthquakes in Antarctica, had recommenced operation on September 12 after having been idle since the galvanometer mirror was distorted by cold on April 28.

A diesel generating plant, built in the Scott Base workshop from components flown in by Hercules aircraft on September 1, has been put into operation at Vanda Station. It has replaced the unreliable petrol units, which have been a back-up to the wind-driven generator.

The wind-driven generator has been idle for most of the winter because of the unexpected long calm spells which prevail in the Wright Valley during that season.

The return of sunlight to the Dry Valley complex is expected to propagate wind.

Since the installation of the diesel-generating plant, there has been a cut in radio noise caused by the generation of electricity, thus assisting Vanda Station's aim to be a "quiet site".

Bill Lucy said the isolated party is still not entirely "out of the woods," as it is dangerously low on petrol. Five drums were dumped at the end of the Wright Valley 18 miles away from Vanda Station by a party from Scott Base.

However, he had elected to load his tractor trailer with heavier items, which required the combined efforts of the three men from Scott Base and the two from Vanda Station to lift, and then come back in a few days for the petrol.

Unfortunately, soon after his arrival at Vanda Station the Ferguson tractor developed an unidentified fault.

He advised he has only enough petrol to heat the engine to start it and get down the valley to the stocks of petrol.

The Scott Base tractor train arrived back at base on September 12 after crossing 70 miles of sea ice on McMurdo Sound in fog, their only navigational aids being the tracks they had left in the snow on the way out.

"WINFLY" FLIGHT

For the 11 men wintering-over at Scott Base, the mail on the "Winfly" flight by United States Hercules aircraft on September 1 was the first to be delivered since March.

The five men at Vanda Station however may have to wait some time before they receive their mail, delivery of which depends on suitable conditions for travel.

Two C-130 Hercules flew from Christchurch Airport to McMurdo Sound; one then flew on to Byrd Station to pick up a cook suffering from illness.

Mr D. A. Hodge, stores officer of the Antarctic Division of the D.S.I.R., was the only New Zealander on the "Winfly" flight. He will check on stores preparatory to the arrival of the 1969-70 programme personnel in mid-October.

As well as the mail, fresh vegetables were flown south in the aircraft. Urgently needed equipment for Vanda Station was transported also. However, it may not be possible to deliver this to Vanda immediately.

N.Z. FLIGHTS

Hercules transport aircraft of the Royal New Zealand Air Force will make three flights to the Antarctic this year.

As in previous years since 1965 the flights will be bunched together, rather than spread out through the summer season, and will take place between November 11 and 13.

The Hercules, which belong to No. 40 Squadron based at Auckland, will fly cargo from Christchurch.

In addition to the airlift of cargo the flights will give Air Force crews valuable training in the operation of the aircraft in polar regions.

In addition to their Antarctic flight the Hercules are also used in flights to Rarotonga in the Cook Islands, thus covering the tropics as well as the far south.

N.Z. SCOUTS SELECTED

Two Queen Scouts and a Boys' Brigade Queen's Man have been selected as nominees from young men's organisations to work with the Antarctic division of D.S.I.R. at Scott Base this summer.

The Queen Scouts are Lindsay Burton, of Hamilton, and Michael Ellis, of New Plymouth, who were selected from 150 applicants. Peter Oliver, of Rangiora, is the Boys' Brigade member.

The successful nominees were selected by Mr R. B. Thomson, director of Antarctic division, Mr R. B. Willis, leader of the 1969-70 research programme, and Scout and Boys' Brigade representatives.

Reserves have been chosen also, in the event of the first choices being unable to go. They are James Grierson, of Otautau, and Paul Gardner, of Taupo (Scouts), and Keith Turner of Auckland (Boys' Brigade).



Photo: A. J. Heine.

Lake Vanda before summer melting.

STORES FOR SCOTT AND VANDA BASES

Electrode rods, vitamin capsules, radio masts and dog pemmican are among a wide variety of stores accumulating in Christchurch to resupply the New Zealand Antarctic bases for the 1969-70 research programme.

About 35,000 lb. of stores and equipment will be sent south for base personnel and field parties of the Antarctic Division and the various universities' research groups.

About half the total is in the Division's Christchurch store at present, packed in 'cargons' for ease of handling in either aircraft or on H.M.N.Z.S. Endeavour. About 200

of these containers will be despatched to Antarctica.

Sixteen men will spend the winter at Scott Base or Vanda Station and 70 others will be in the Ross Dependency during the summer. This season, university research parties will go to Antarctica from Victoria, Auckland, Canterbury and Waikato Universities. Research will include biological studies of penguins and seals, geological and geochemical studies in the dry valleys, and acoustic measurements under the Ross Ice Shelf.

The first flight of the summer season is scheduled to leave Christchurch for McMurdo in October and the Superintendent of Antarctic Division (Mr R. B. Thomson) and the leader designate (Mr R. B. Willis) will be aboard.



Photo: C. Hughes.

From summit of Mt Odin. Looking west to upper Wright Valley.

AIRLINE INVESTIGATIONS

Air New Zealand and Ministry of Transport officers will spend four days at McMurdo Sound during November preparing for airline flights to Antarctica in the summer of 1970-71.

The Assistant Director of Civil Aviation, Mr I. F. B. Walters, said in Wellington that two Air New Zealand DC8 pilots and two Civil Aviation Division senior operations officers would fly to the United States base at McMurdo some time in November.

Paper studies have shown that commercial flights should be possible, and it was now necessary to go to Antarctica and see at first hand what difficulties might arise from the snow runway at Williams Field and the weather.

Mr Walters stressed that the whole project was still only at the planning stage.

An Air New Zealand spokesman said in Auckland that the company hoped to fly in American tourists in the summer of 1970-71. The tourists would be accommodated on a ship which would be provided by an American company, while the DC8's would run a shuttle service from McMurdo to New Zealand.

Superintendent L. D. Bridge will again train U.S. personnel in survival techniques and ice work in the Antarctic. His assistants are Drs P. J. Strang and B. Mowatt, and Messrs. W. McDonald and A. Cookson.

UNIVERSITY OF WAIKATO'S FIRST ANTARCTIC EXPEDITION

By A. T. WILSON

In 1970 the School of Science officially starts up at the University of Waikato. In fact the first work will start in the Antarctic with a four-man expedition which leaves Christchurch early in November 1969. The personnel of this expedition will be:

Professor Alex Wilson, Leader.

Michael Selby, a geomorphologist who will set up a long term project to study the detailed geomorphological and periglacial phenomena in the Wright, Taylor and Koettlitz areas.

Jim Johnston, a chemist who will be doing a Ph.D. on Antarctic geochemistry over the next three seasons.

Dr. Chris Hendy, who has just graduated from Victoria and who is on the staff of the Institute of Nuclear Sciences, D.S.I.R.

Professor Wilson and Chris Hendy will be studying the geochemistry of Ross Island, Taylor, Wright and Koettlitz in an attempt to work out

the past glacial history of the area. All the members of the expedition will be involved in setting up a long term programme to study the Canada Glacier with the aim of understanding how the very cold ($-23^{\circ}\text{C}.$) Antarctic glaciers move.

An interesting point about this work is that this expedition is taking an X-ray Diffraction machine into the field. This instrument will be the first instrument of its kind on the Antarctic Continent and reflects the changing pattern of Antarctic research from one of reconnaissance and mapping to one of detailed scientific investigation with sophisticated (and expensive) equipment.

ANTARCTIC POLLING BOOTHS

New Zealand's Vanda Station, about 90 miles west of Scott Base, will probably be the most isolated and least accessible polling booth for the general elections during November.

Almost 70 persons from New Zealand will travel south as part of the Antarctic Research programme before the election on November 29, and will be there during the polling period.

Most will be at Scott Base, where a polling booth has been set up for other elections during the 13 years since the base has been in existence.

As New Zealand citizens overseas, these persons may vote as special voters during the last three weeks from the close of nominations until the day before the election.

Mr J. L. Wright, chief electoral officer, said that Mr R. B. Willis,

leader of the research programme, had been appointed overseas returning officer at Scott Base, and Mr D. R. C. Lowe to a similar position at Vanda Station.

NEW ZEALAND PRODUCTS ON SALE

New Zealand-made goods—including greenstone, lambskin rugs, jewellery, and sweets—will be sold for the first time at McMurdo Station.

The initial order of \$3500 will be flown to the base in October and will be sold at the American store there.

The store has been selling sweets and other items made in the United States.

Visitors to the base can buy duty free radios, watches, cameras and jewellery.

A spokesman for Operation Deep Freeze said that Maori dolls would also be sold at the store.

DEEP FREEZE 70

The U.S. Navy will officially begin its 16th consecutive year of logistic support for U.S. scientific operations in Antarctica on October 15. Aircraft from Antarctic Development Squadron SIX (VXE-6), one of the units making up Task Force 43, are scheduled to land at Williams Field near McMurdo Station on that date, signalling the start of Operation DEEP FREEZE 70.

As Deep Freeze 70 gets under way, the U.S. scientists and military support personnel spending the winter on the ice will be relieved by their replacements. The first plane into the South Pole Station for this season will probably arrive in November.

Major scientific projects this season will include experiments with an automated geophysical observation station to be set up near Byrd Station. If successful, automated stations could eliminate the need for a number of people to stay on the continent for long periods, cut costs and ease supply/resupply efforts. More than 50 other scientific projects in the fields of biology, geology, paleontology (fossils) and other disciplines will be carried out.

Men of Construction Battalion Unit 201 plan to complete work on a 250-man personnel building at McMurdo, the largest structure on the continent. The building will provide berthing and messing facilities, a laundry, barber shop and recreational accommodations for McMurdo's entire wintering over population. Also on the construction programme is a 2,000,000-gallon and a 500,000-gallon tank for the fuel storage facility at McMurdo.

Scientific efforts on the icy southern continent are conducted by the National Science Foundation's U.S. Antarctic Research Programme (USARP). The Navy's job is to support these operations and maintain facilities for the scientists and technicians conducting research there. To accomplish this task, Rear Admiral David F. Welch will head the U.S. Naval Support Force, Antarctica (Task Force 43), a task force consisting of more than 2,000

men from the Navy, Coast Guard, Army, Air Force and Marine Corps. These men, using a half-dozen ships, five Hercules and two Super Constellation aircraft, and a number of helicopters will maintain the 12,000-mile lifeline of supplies and equipment from the U.S. to Antarctica.

Task Force 43 has its headquarters in Washington, D.C., with advance headquarters at Christchurch, New Zealand. Units under Rear Admiral Welch's command include Antarctic Support Activities, headquartered in Davisville, R.I., which is responsible for maintaining U.S. stations in Antarctica; VXE-6, the air arm of the task force; a Naval Nuclear Power Unit from Ft. Belvoir, Va., operating the nuclear reactor which provides McMurdo with light, heat and fresh water, an Antarctic construction group (CBU-201), and a number of other specialized units.

Although all supplies for inland stations are flown in by aircraft, about 95 percent of all cargo is brought to the continent by Military Sea Transportation Service ships. This season two cargo ships (Pvt. John V. Towle and Wyandot) and, for the first time, a T5 tanker (Maumee) will be used. The craft will reach McMurdo through a channel carved in the Antarctic ice pack by Coast Guard icebreakers (Glacier, Burton Island and Edisto). The U.S.N.S. Maumee will deliver more than 7 million gallons of fuel, a task that required a total of six round trips by two smaller tankers last year. Ship operations for Deep Freeze 70 will involve moving more than 14,000 measurement tons of supplies to McMurdo.

EMERGENCY AIRLIFT

A U.S. Navy enlisted man suffering from diabetes was airlifted to Christchurch from Byrd Station, Antarctica, September 1 by a ski-configured Navy LC-130 Hercules.

Commissaryman Second Class Cecil M. McDaniel of Nitro, West Virginia, was the cook for the 23 scientists and Navy men maintaining Byrd Station during the Antarctic winter.

McDaniel, who had been under the medical care of the Navy doctor at Byrd Station, Lieutenant Herbert Thomas of Wayne, Pennsylvania, was in a satisfactory condition. He returned on one of the Hercules to the East Coast of the United States on September 3 for hospitalization and further evaluation.

The evacuation of McDaniel was the third such mission from Byrd Station since the introduction of the ski-configured Hercules in 1960 made winter flights possible to Antarctica.

After flying 9,400 miles from their home port at Quonset Point, Rhode Island, the two Hercules of Antarctic Development Squadron SIX (VXE-6) arrived in Christchurch on August 29.

Two days later, as part of the scheduled end-of-winter flight to McMurdo Station, the aircraft transported seven scientists for early season research, 1700 pounds of fresh provisions, and 5100 pounds of mail.

The flight ended six months of isolation for 163 scientists and Navy men at McMurdo, centre for U.S. Antarctic operations on the Ross Sea coast.

In temperatures of minus 30 degrees below zero Fahrenheit, the Hercules landed on a specially prepared snow skyway, which was lighted by wind-proof gas lanterns.

After refuelling, the first Hercules, piloted by the VXE-6 Commanding Officer, Commander Jerome R. Pilon of Waterville, Maine, flew 910 miles inland to evacuate McDaniel.

Rear-Admiral David F. Welch, Commander, U.S. Naval Support Force, Antarctica, was on board.

Arriving during the current three-hour period of daylight at Byrd, the aircraft landed in relatively good weather—minus 45 degrees F. temperature and 15 knot winds.

The temperature at Byrd Station was minus 45 deg., the cloud ceiling was 1,000 feet, visibility was down to a mile, and lightly blown snow was falling when the ski-equipped plane landed with a replacement cook.

The cook C. M. McDaniel, of Nitro, Virginia, was working when the Hercules touched down at Byrd, 999 miles from McMurdo Station. He was suffering from diabetes, suspected pancreatitis and gall-bladder infection. He was the only cook for the 15 other sailors and seven scientists wintering at the station.

In twenty minutes the crew embarked McDaniel and unloaded 400 pounds of fresh provisions and 200 pounds of mail for the remaining members of the winter-over party.

A Navy cook from McMurdo Station, Commissaryman Third Class James E. Wells, Jr., arrived to take McDaniel's place.

The Hercules crew made the 6,550-mile round trip from Christchurch to Byrd in a little less than 24 hours.

In addition to McDaniel, six Navy men and four scientists returned to Christchurch from McMurdo. The others will have to wait to be relieved until mid-October when the 1969-70 Operation Deep Freeze season begins.

The United States is the only country to have landed aircraft in Antarctica during the winter, and is the only nation to maintain regular flights to Antarctica during the austral summer.

McDaniel walked from the Hercules when it landed at Christchurch Airport. He was placed in the dispensary at Harewood where he will be given tests by Captain J. Young of the American Naval Support Force.

Two planes flew to McMurdo, the other to "back-up" the mercy flight. They carried 1700 lb. of fresh food, 5,100 packages of mail and seven scientists to do early research. Six men from McMurdo Station made the return flight.

Early in October about 600 men, mainly sailors, will arrive in Christchurch aboard Hercules, Starlifters and Constellations from the United States.

Hallett and Brockton Stations will be opened on October 16 and Byrd Station on October 20, while the

Pole Station will have its new inhabitants on November 1.

FIRST SUNRISE

The sun rose at the South Pole at 5.26 a.m. on 21 September—after an absence of 189 days.

The 14 United States Navy men and six scientists at the Pole base last saw the sun just over six months ago.

To mark the special event the traditional flag-raising ceremony was held at Pole Station, 3205 miles from Christchurch.

NEW DIRECTOR APPOINTED INSTITUTE OF POLAR STUDIES

The new Director, Dr Emanuel D. Rudolph, is Professor of Botany in the Academic Faculty of Botany. Dr Rudolph joined the Institute as a Research Associate in July 1961; at the same time he became Assistant Professor at The Ohio State University. In 1950 he received his undergraduate degree *cum laude* in biology from New York University where he held an undergraduate scholarship. In the same year he was elected to Phi Beta Kapa and Beta Lambda Sigma, the New York University Biology Honorary Society. After receiving his Ph.D. from Washington University, St. Louis (1955), he taught in the Botany Department at Wellesley College, Massachusetts. In 1959 he was a Postdoctoral Fellow at the University of Wisconsin.

The major research interests of Dr Rudolph include ecology and systematics of Antarctic lichens, biosystematics of the lichen family Teloschistaceae, and Antarctic vegetation. Principal Investigator on six projects funded by the Office of Antarctic Programs at the National Science Foundation, he has spent five summer field seasons in Antarctica. He has also been a National Aeronautics and Space Administration grantee.

The study of the history of

science, particularly biology, is another field of interest of Dr Rudolph. This summer, for the second time, he is Director of an NSF Summer Institute in the History of Biology at The Ohio State University. He has also been a participant in several other NSF summer institutes. A true scholar and collector of books, he has a personal library of over 6,000 volumes, many of which are collectors items. He is also an active member of the OSU Library Council, and is book review editor of the *Ohio Journal of Science*.

Among his honours he includes membership in the Society of the Sigma Xi and Fellowship in the American Association for the Advancement of Science and the Ohio Academy of Science.

Dr Rudolph is Vice-President, Plant Sciences Section of the Ohio Academy of Science and Vice-Chairman of the History Section of the Botanical Society of America. Other societies to which he belongs are: American Bryological Society, American Society of Plant Taxonomy, Arctic Institute of North America, Ecological Society of America, International Association for Plant Taxonomy, British Lichen Society, Mycological Society of

America, New England Botanical Club and Torrey Botanical Club.

Among Dr Rudolph's many publications are: "The role of lichens in soil formation and plant succession" (with R. Cooper), *Ecology* 34: 805-807, 1953; "The effect of some physiological and environmental factors on sclerotial *Aspergilli*", *Amer. J. Bot.* 49: 71-78, 1962; "Vegetation of Hallett Station area, Victoria Land, Antarctica", *Ecology* 44: 585-586, 1963; "Antarctic lichens and vascular plants: their significance", *Bio-Science* 15: 285-287, 1965; "Lichen ecology and microclimate studies at Cape Hallett, Antarctica", *Proc. Third Intern. Biometeorological Congress*, 1963. London, Pergamon Press, pp. 900-910, 1966; "Terrestrial vegetation of Antarctica: past and present studies", *Amer. Geophysical Union, Antarctic Research Series*, 8: 109-124, 1966; Main introduction and lichen section of Terrestrial Biology, *Antarctic Map Folio Ser.*, *Amer. Geogr. Soc.*, 1967, Folio No. 5.

FURTHER APPOINTMENTS AT OHIO STATE UNIVERSITY POLAR STUDIES INSTITUTE

Promoted to Associate Director of the Institute of Polar Studies has been John F. Spletstoesser, a geologist and formerly Assistant Director of the Institute of Polar Studies, Ohio State University.

Geoffrey L. Leister, who received a masters degree in botany from Ohio State this year, has assumed the position of Assistant to the Director of the Institute of Polar Studies.

Dr. Colin B. Bull, former director of the Institute, has become Chairman of the Department of Geology, The Ohio State University. Former Assistant to the Director of the Institute of Polar Studies, Dr Garry D. McKenzie, has been named Executive Officer of the Department of Geology. Dr. Richard P. Goldthwait, former Chairman of the Department of Geology, will continue as Professor of Geology.

INNOVATION IN ANTARCTIC

Apart from the introduction of women scientists into Antarctica, TV dinners (without television) are a new feature.

A spokesman for Operation Deep-Freeze said in Christchurch that TV dinners, served in regular military flights in America, would be tested by servicemen and scientists being flown between McMurdo, the main American base, and several inland stations.

Crest Food Ltd., have been asked to supply 500 dinners for use between October 15 and 20 and another 500 between October 25 and November 1. The 1000 meals cost \$435 and dinners range from 38 to 58 cents. The meat dish will be chicken and beef and there will be two vegetables. Bread will be available, but there is no dessert.

"We want to know if men want these in-flight meals, heated on the aircraft, while in Antarctica."

NO SPECIAL TREATMENT FOR WOMEN

No special accommodation has been arranged in Antarctica for the first five female scientists from the United States who go there in October. In the field they will sleep in tents just like their male counterparts.

Four of the women will have to do everything for themselves, and they will take turns at cooking.

This was stated by Mr W. Austin, the United States Antarctic research project representative in New Zealand, who arrived in Christchurch with Rear-Admiral David F. Welch.

Before going to their field camp where they will stay for three months with a break at base every ten days or so, four of the women scientists will undergo a three-day snowcraft training course near McMurdo.

The National Science Foundation had received many other requests from women scientists to work in Antarctica, Mr Austin said.

STUDIES OF OCEAN CURRENT

The American survey ship *Eltanin*, well-known visitor to New Zealand ports, left Auckland on 15 September after a lengthy stay in port and following the investigation of a deep ocean current which flows from the Antarctic towards the Equator east of the New Zealand coastline.

The chief scientist in the *Eltanin*, Mr B. A. Warren, of Woods Hole Oceanographic Institute in the United States, said the ship would be at sea from 65 to 70 days without a break and would be sailing as far north as latitude 20 south.

The ocean current had been recorded at various stations in the South Pacific, said Mr Warren, and the present voyage would enable a more detailed study of it to be made.

The cold current was believed to flow at depths between 8,000 and 16,000 feet and would be of little interest to fishermen, he said.

One of the 28 scientists making the voyage is a New Zealander, Mr A. E. Gilmour, of the Oceanographic Institute, Wellington. He will take temperature readings of the sea at great depths with special instruments.

When the *Eltanin* arrived at Auckland she was dry-docked and underwent a major refit. Much of her main machinery was stripped down and some new parts fitted. Included in the new equipment placed in the ship was a general-purpose computer designed to assist the scientists in their calculations.

CHEERS !

Antarctic men in many countries will learn with pleasure that **Mr J. H. (Bob) Miller** has recently been elected president of the New Zealand Institute of Surveyors.

A surveyor in private practice in Wellington, Bob was deputy leader of the New Zealand component of the Trans-Antarctic Expedition, when he dog-sledged more than 3,000 miles, including his great journey of 1,670 miles with Dr G. Marsh to the Queen Alexandra

AMERICANS FLY IN

An Operation DEEP FREEZE LC-130 ski-equipped Hercules landed at Williams Field, Antarctica, on October 15 with the first of 202 passengers arriving that day on four flights. The flights marked the beginning of "Operation DEEP FREEZE 70".

Dr. and Mrs. Muller-Schwarze of Utah State University were aboard one of the later flights; thus, Mrs. Muller-Schwarze became the first of the six women scientists of this season to arrive in Antarctica. The husband and wife team will study various aspects of penguin life at the rookery at Cape Crozier.

The first plane departed from Christchurch eight minutes after midnight and touched down on the skiway near McMurdo seven hours and 39 minutes later.

Rear Admiral D. F. Welch, Commander of the U.S. Naval Support Force, Antarctica, stepped from the aircraft and was greeted by a crowd of scientists and Navymen of McMurdo Station's wintering over party. The men gathered in clear 27 degree below zero weather to welcome the season's first flight. Other than the one winter flight to the station in September (see page 304), the 28 passengers and 15 crew members on the plane were the first "outsiders" to arrive since last February.

The LC-130, piloted by Commander J. R. Pilon, Commanding Officer, Antarctic Development Squadron Six (VXE-6) was followed by another "Herc" a short time later. Two C-121 Super Constellations also landed safely. All the flights were made by VXE-6, the air arm of Operation DEEP FREEZE.

Besides sailors and scientists, the four-plane airlift carried fresh provisions and mail for the men at McMurdo.

Passengers on these flights will help the wintering over parties complete the job of preparing station facilities for summer operations.

Mountains. He again led a far-travelling field survey team in Victoria Land in 1963-64.

Only a few of the personnel at McMurdo were slated to depart on return flights to Christchurch the same day, although most will be returning to the States within the next month.

MORE NEWS ABOUT THE WOMEN

The National Science Foundation, after many years of resistance, has finally agreed to let six women work out of American bases in the Antarctic during the season of exploration about to begin there.

Four of the women make up a team of scientists formed at the Institute of Polar Studies of Ohio State University. They will study one of the snow-free "dry valleys" across McMurdo Sound from the main American base.

Another of the women is the wife of Dr Dietland Muller-Schwartz, a biologist at Utah State University. She will go as his assistant. They plan to live and work at the emperor penguin rookery at Cape Crozier near McMurdo Sound.

The sixth female visitor will be Jean Pearson, a reporter for the "Detroit News", who is president of the National Association of Science Writers.

Although female researchers in past years have sought through the National Science Foundation, to work in the Antarctic, they have been turned away on the ground that the all-male base camps had no facilities for women.

The female team from Ohio is led by Dr Lois M. Jones, who will study weathering and salt accumulation in Lake Vanda.

Mrs Eileen R. McSaveny will study the glacial history of the area in the lake's beaches.

Mrs Kay L. Lindsay, an entomologist, will study the interaction between the barren environment and the meagre life forms. Terry Lee Tickhill will record daily and seasonal changes in the chemistry of the lake's water.

American women were particularly irked because women from the Soviet Union had been allowed to work at their country's Antarctic

bases. Women have never been allowed to work at the stations set up for American scientists by the United States Navy during the last 13 years.

New Secretary to the New Zealand Trans-Antarctic Association

With the posting overseas of Mr Arthur Helm who has served since the inception of the Trans-Antarctic Association as its New Zealand Honorary Secretary, the secretarial post became vacant.

It has been filled by the appointment of Mr Arnold Heine who has a record of long association with the Ross Dependency particularly in glaciological work. Mr Heine has also represented the New Zealand Federated Mountain Clubs as its representative on the New Zealand T.A.A. for the past two years.

His address is: Mr A. J. Heine, P.O. Box 2901, Wellington.

Sale of Leigh Hunt's Book at Reduced Price

The trustees of the estate of Mr A. Leigh Hunt have advised the Antarctic Society that they may release unsold copies of "My Second Home" at the reduced cost of \$1.

Mr A. Leigh Hunt, a close friend of Rear-Admiral Richard E. Byrd for 30 years, at the age of 90 wrote this book of 91 pages with 13 illustrations, recalling his close association with the famous American explorer. It throws a most interesting light on the Admiral and his New Zealand friends and helpers, and reveals a Byrd little known to most men. Outlined are the principal events of Byrd's five expeditions, and in addition there are tributes to Byrd by writers connected with New Zealand, and some personal letters.

The book was privately printed and all proceeds from the sale are being placed in a trust for the perpetuation of Byrd's memory. A few copies of "My Second Home" are available from the Antarctic Society at \$1 a copy.

BRITISH ANTARCTIC SURVEY

The Survey will maintain seven bases during the 1970 winter. These include the advance base, Fossil Bluff, in George VI Sound but not Deception Island which will remain closed. In November 1969 the Survey will take over control of South Georgia from the existing administration, continue the present meteorological observations, initiate an ionospherics programme and continue the Survey's botanical research for the Bi-Polar Project of the International Biological Programme.

The bases' radio modernisation programme is proceeding, and Racial communication equipment and associated Creed Teleprinters will be installed at a fourth base, Signy Island, during the coming summer. The "John Biscoe" is also being equipped with Marconi SSB radio transmitters and receivers.

A de Havilland Turbo Beaver has been purchased to act as a support aircraft for the Survey's Twin Otter. The two aircraft are at present being prepared for the Antarctic season at de Havilland's factory in Toronto, and will be flown south in November.

It has been agreed with U.S.A.R.P. that joint British/U.S. work carried out in the Shackleton Range last summer will be continued this coming season.

Personnel

Captain Tom Woodfield, Master of R.R.S. "John Biscoe" has been appointed Master of the new B.A.S. vessel now under construction (see Dec. 1968 issue). Captain David Turnbull will not be going south in 1969-70, so Captain John Cole will be in command of the "John Biscoe".

On 1 October Dr. R. M. Laws will return to the Survey as Head of its Life Sciences Section. Dr. Laws wintered at Signy Island in 1948 and 1949, and at South Georgia in 1951, as a member of the Falklands Islands Dependencies Survey, and carried out a detailed study of the elephant seal. In recent years he has been working in Africa.

The Survey's annual symposium for new recruits is being held as

usual at the Scott Polar Research Institute, Cambridge, at the beginning of September. Visiting lecturers and guests will include Sir Herbert Andrew, who is Permanent Under-Secretary of the Department of Education and Science, Sir Raymond Priestley and Sir Vivian Fuchs, Director of the Survey.

DONATION TO TRANS-ANTARCTIC FUNDS

A few years ago the South Indian Ocean Expedition to Heard Island with its headquarters in Australia, made a successful expedition to the lonely Australian sub-Antarctic island.

Their Patron was Sir Edmund Hillary, and they were supported by the New Zealand Alpine Club. Part of their financial assistance was granted by the Trans-Antarctic Association on the recommendation of the New Zealand Advisory Committee.

When the expedition was being wound up they found that there was a surplus from the publication of a book on their trip, and they expressed the wish to donate this surplus to the funds of the Trans-Antarctic expedition in order that further expeditions would benefit. Accordingly, the sum of £Stg.89/14/2 has been remitted to the funds of the T.A.A. in London. This gesture has been warmly appreciated both by the New Zealand and London Committees.

SOUTH GEORGIA:**SITE OF THE NEW BRITISH BASE**

By MISS ANNE TODD.

South Georgia is a mountainous, ice-covered island lying between latitudes 54° and 55°S. It extends about 100 miles N.W.-S.E. and varies in width from 3 to 22 miles. It has a cool, wet and windy climate which has been described as "uniformly dismal and often terrible", but there are rare fine days on which the magnificence of the peaks and glacier-filled valleys can be fully appreciated. King Edward Point in Cumberland East Bay, where the British base is situated, is a comparatively favoured locality, as it is sheltered by mountains to the west and frequently warmed by fohn winds.

About 60 per cent of the island is covered by permanent snow and ice, but during the summer small coastal plains and valleys are intersected by melt-streams and covered by lush vegetation in which tussac grass predominates. These lowlands and the lower hills are the home of innumerable sea birds and animals, some of which remains throughout the year.

HISTORY

The island was discovered in 1675 by an English merchant, Antonio de la Roché, and this was the first recorded sighting of any of the sub-Antarctic islands. It was sighted again in 1756 but was first surveyed by Captain James Cook who took possession of it for Great Britain on 17 January, 1775.

Following Cook's account of his discoveries, sealers began to visit the island in 1778, at first in search of fur seals but later taking elephant seals and even king penguins for their oil. British and American vessels took part and the men frequently lived on shore for several months at a time. Their activities reached a climax between 1800 and 1803 and were on such a scale that the fur seal stocks were devastated. The sealers then turned to newly discovered breeding grounds in the South Orkneys and South Shetlands, but even as late as 1812 there were still 3,000 men employed at South Georgia.

Whaling in the Antarctic was pioneered by a Norwegian expedition under Carl Anton Larsen in 1892-93. Larsen returned in November 1904 to establish Antarctica's first land-based whaling station at Grytviken, South Georgia, for the Compania Argentina de Pesca, and the island has been occupied continuously since that date. The size of the whaling industry increased rapidly, seven stations being in operation by 1912-13. Most companies operated from land stations, but some fished from factory ships anchored in-shore, often with additional facilities on land as at Godthul. The introduction in 1925 of stern slipways on the factory ships sealed the doom of the industry by making it impossible for any authority to control the annual catch and so conserve the whale stocks. Consequently, the industry declined steadily, although there was a slight recovery in 1945, and for the first time since 1904 there was no whaling from South Georgia in the 1962-63 season. However, a Japanese consortium producing frozen whale meat, leased the facilities at Grytviken and Leith Harbour in 1963-64 and operated there for several years.

Although few records are available, the growth of the whaling stations and the activities of their personnel must have greatly changed the island's fauna and flora. Horses, sheep, rabbits, rats and two herds

of reindeer were introduced, although only the rats and the reindeer have survived. A total of 21 reindeer were introduced and by 1957 these had increased to over 4000.

The growth of the whaling industry also led to the establishment of administrative and ancillary services. Compania Argentina de Pesca maintained a meteorological station at King Edward Point, near Grytviken, from January 1905 until it was taken over first by the Falkland Islands Dependencies Survey in January 1950 and then by the Falkland Islands Dependencies Government Administration in January 1952. The Administration, which includes a British Stipendiary Magistrate, had been established at King Edward Point since 1909. This will be replaced later this year by the British Antarctic Survey which will take over part of the existing station (one large two-storey building, the power house, meteorological office and various stores). The programme of work during the first year will consist of meteorology, ionospherics and botany, and will be extended later to include zoology, geology and geophysics.

EXPEDITIONS

In addition to the Government Administration and the whaling stations, a number of refuge huts have been established and occupied by expeditions at various points around the coast. Several expeditions have also used the otherwise unoccupied jail at the Point as temporary headquarters!

Scientific investigation of the island started when the German International Polar Year Expedition occupied a station at Royal Bay from August 1882 to September 1883. Nordenskjöld's ship, the "Antarctic", under the command of Captain Larsen, wintered there in 1902. Among those on board was Dr. Gunnar Andersson, and he and his companions spent the time exploring and carrying out scientific work in a number of areas including Royal Bay.

The first recorded journey inland to the mountains was the epic crossing of the island by Sir Ernest Shackleton, Frank Worsley and Thomas Crean in May 1916, after sailing 800 miles from Elephant Island where they and their companions had been stranded after the **Endurance** had been crushed in the pack ice of the Weddell Sea. A Combined Services Expedition, led by Malcolm Burley, in 1964-65 retraced Shackleton's route from King Hakon Bay to the whaling station at Stromness. The route was easily identified from the accurate descriptions given in Shackleton's and Worsley's accounts, and was found to be the only practicable route between the two points. Nevertheless, it was so difficult that it seemed incredible that, after all their privations and so ill-equipped, the three men should have succeeded in reaching Stromness in 36 hours, especially as they were travelling over completely unknown land.

Shackleton was subsequently able to organise the rescue of his companions from Elephant Island. After the end of the 1914-18 War, he again sailed south, this time in the *Quest*, but suffered a heart attack on the way, and died suddenly on 5 January, 1922, while the ship was anchored at Grytviken. His body, which was taken to Montevideo, was returned to South Georgia at the request of Lady Shackleton and is buried at Grytviken. A memorial cross stands on a hill above King Edward Point.

The British Discovery Committee, which was set up on the recommendation of the Falkland Islands Government but has since been incorporated into the National Institute of Oceanography, operated a Marine Biological Laboratory at Grytviken from 1925-31. Another laboratory was occupied by a Government Biologist/Sealing Inspector, intermittently from the 1956-57 season to 1961-62.

Much of South Georgia has now been traversed and surveyed. A 1:200,000 map was produced as a result of Duncan Carse's South Georgia Survey which spent three

summers in the area (1951-52, 1953-54 and 1955-56) carrying out topographical and geological survey. Carse completed the work by himself in 1956-57.

A climbing party, The British South Georgia Expedition, led by George Sutton, made an unsuccessful attempt to climb Mt Paget in 1954-55, but achieved several other first ascents. Another climbing party, this time from H.M.S. **Protector**, also made an attempt on Mt Paget in December 1960, earlier expeditions having failed to get within 10 miles of the base of the mountain because of heavy crevassing. This party succeeded in scaling the 9,565-ft. west peak, but it was not until 1964-65 that the main peak (9,625 ft.) was climbed by the Combined Services Expedition. This latter expedition also climbed the precipitous Sugartop (7,623 ft.), made the first crossing of the Allardyce Range, and also carried out local surveys.

Glaciers south of Grytviken were studied by two men in 1957-58, as part of the British contribution to the International Geophysical Year.

A South Georgia Biological Expedition, led by Lance Tickell, worked at the western end of South Georgia and on Bird Island in the 1958-59 summer, primarily studying albatrosses and other birds but also assisting the Government Biologist in a census of fur seals. This work was continued under the aegis of the U.S. Antarctic Research Programme in 1960-61 and 1967-68, as part of a bi-polar project. Fifty-one species of vascular plants of which 24 are native were found.

ELEPHANT ISLAND EXPEDITION

A British expedition next year to explore the Elephant Island group in the Antarctic—described as “one

of the dwindling number of ‘unknown’ areas in the world”—will probably be the most ambitious to be mounted on a joint service basis for a quarter of a century.

Led by Commander M. Burley, of the Royal Navy, 10 men of the services and a small party of civilian scientists will spend five months on the island, which is about the size of the Isle of Wight and forms part of the South Shetland group.

No British joint service expedition has ventured so far south before. The expedition plans to leave Britain in October, 1970, and be picked up from the island by the Royal Navy's ice patrol ship *Endurance*, namesake of Shackleton's vessel, returning to Britain by air in April of the next year.

The scientific activities undertaken will include surveying, geological, glaciological, zoological and botanical work, while a search will also be made for traces remaining of the occupation by Shackleton's expedition more than 50 years ago.

The first of the only three recorded landings on the beach of the island, mountainous and covered with a permanent ice-cap with the highest peak about the same height as Mt Snowdon, was in April 1916, by Sir Ernest Shackleton and survivors of his Imperial Trans-Antarctic Expedition.

They reached sanctuary on Elephant Island—so called because of its dense population of elephant seals—in three boats after their expedition ship *Endurance* had been crushed and sunk in the pack ice in the Weddell Sea.

The expedition remained marooned on a small spit while Shackleton and five companions made their 600-mile sea passage for help to South Georgia.

Commander Burley, the expedition's leader, is already familiar with the South Shetland Islands, having dived from Deception Island, spent some time living ashore on Livingstone Island and having taken part in a helicopter rescue on Greenwich Island.

RUSSIAN NEWS

PEACEFUL ROCKETS OF THE ANTARCTIC

On May 25, an unusual orange flare illuminated the grey peaks of the Antarctic rocks. Mighty thunder shattered the silence of the icy wilderness. Here, at the southern station of "Molokyozhnaya", Soviet scientists launched their first meteorological rocket.

It was communicated to the Tass correspondents in the Arctic and to the Antarctic Institute, that such launchings would be carried out regularly in future on the continent. These meteorological rockets rise to a height of 100 kilometres, compared with the ordinary weather balloon's 30 to 40 kilometres. This will allow the study of the structural and physical properties of the higher regions of the atmosphere.

This great event marked the completion of the colossal task of erecting the base for the rocket research.

Construction of the meteorological research rocket base began in the winter of 1968. The base is built of aluminium polymeric materials and fibreglass, on a foundation supported by steel piles. In the confines of this "building" it is possible to carry out research work, assemble rockets and to launch them, regardless of the weather. The rockets are delivered to the launching position by a transporter rail, travelling above the ground at a height of 1 to 3 metres. This new Soviet rocket complex makes possible the most complicated experiments connected with Antarctic conditions.

ANTARCTIC NEWSPAPER

The radio newspaper of the U.S.S.R.'s Fleets of the Ministry of Marine communicates fresh news from our most distant polar bases. The paper's staff consists of 10 men and it reaches its readers more quickly than any other paper. This paper is published by teleprinter. This most southern of all papers first appeared more than 30 years

ago. At the moment, it has four editions. Its output is 9,500 words per week, with telegraphic co-ordination with Moscow.

TELEGRAPHIC COMMUNICATION IN THE ANTARCTIC

The first experimental teleprinter communications system was established between the southern polar observatory, Mirny, and the Bellinghousen Station on the island of Waterloo.

From the Western Antarctic to the Eastern Antarctic, a distance of almost 6,000 kilometres, operative meteorological facts have begun to be teleprinted.

ANTARCTIC ICE MYSTERY SOLVED

The question "Why are there no ice formations in the Antarctic?" has puzzled polar explorers. In spite of the North and South Poles having similar climatic conditions, ice hummocks or huge ice formations exist only in the Arctic.

Recently, this question has been answered. During the last Russian expedition, a Leningrad scientist, V. Buinitsky, found that microscopic diatoms often settle in the pores of Antarctic ice. The thawed salty water is a wonderful biological stimulator for their propagation and as a result dense colonies form. The ice is then weakened and eaten away.

Special research carried out by Buinitsky proves that 'contaminated' ice is 40% weaker than 'pure' ice. Since hummocks are formed as a result of tremendous pressures which cause enormous bulges in the ice, it would seem that Antarctic ice, weakened by the microscopic diatoms is unable to withstand these pressures, and crumbles.

THE FIRST ATLAS OF THE CONTINENT HAS BEEN COMPLETED

Nowhere have there been as many discoveries in the last few years as in Antarctica. To begin with, everything was unknown,

everything seemed to be surrounded by insurmountable difficulties. But after exhausting periods under penetrating winds and snow storms, after unbelievably hard winters when regardless of the weather, scientific observations were made, geological samples taken, ice masses blown up, etc. the facts have finally been discovered, collected and published.

Just recently, the second volume of the U.S.S.R. "Atlas of the Antarctic" has been released. The first volume is a collection of about one thousand varied maps, graphs, diagrams, outlines and sketches.

The second volume is a description of the nature of Antarctica, the history of its discovery and exploration. The names of famous explorers of the Southern polar regions, the first discoverers of the Antarctic, Bellingshausen and Lazarev, Amundsen and Scott, and other heroic and tragic names are preserved in this Antarctic epic.

The atlas describes the Soviet Antarctic expeditions and the complicated research carried out in the icy region. There are also the first ever diagrams of the geological data of the Antarctic, and new facts about the climate. A separate section of the map is dedicated to the waters and ice of the Southern ocean. A section on "Biology" contains a description of the animal and plant life of the Antarctic.

TO THE POLES OF THE EARTH

"Water Transport" of Moscow, contains the following account:

"One hundred and fifty years ago, four ships left the port of Kronstadt and sailed together to the shores of Brazil. After a stop at Rio de Janeiro, the expedition divided into two parts. The South-bound expedition comprised the two sloops 'Vostok' and 'Mirny', under the command of Bellingshausen and Lazarev, and with a crew of 181 men between them, they headed for the far South in search of land masses. At the beginning of the 19th century, it was generally believed that there was no land as far South as that.

Only a few months had passed, when on 28 January, 1820, the sailors of the 'Vostok' and the 'Mirny' sighted the icy shores of that new world. Because of the icy conditions, the two sloops were unable to approach the shore. During February and March, the 'Vostok' and 'Mirny' approached the shores of the Antarctic continent on two further occasions, in the hope of being able to make a landing, but instead had to be satisfied with observing the waters. When further sailing became impossible because of the approach of the Antarctic autumn, the sloops set course for Port Jackson (Sydney) in Australia.

The expedition of 22 January, 1821, discovered an island now named after Peter. I. After a week, the Russians in their sloops discovered a narrow strip of land which they called Alexander's Land. Bellingshausen's and Lazarev's expedition not only discovered the Antarctic, but laid the foundations for its scientific study.

The journey to the Poles of the earth was the result of the interest in the polar regions shown by Russian scientists, seamen and progressive elements in the Government in the 19th century.

It is not known who actually discovered Antarctica. It may have been Captain Cook, who claimed to have seen a 'great white continent', or it may have been whalers. An American, Wilkes, made known his discovery in 1815, as did the Russians in 1816.

It was not until January 1956 that Soviet explorers stepped on to the icy Antarctic continent. Over 13 years have elapsed since then, which have been filled with intense study and research, and man's constant struggle with Nature.

Apology

The New Zealand Antarctic Society regrets that the disorganisation resulting from the departure of Mr A. S. Helm to Rarotonga at rather short notice has considerably delayed the production of this issue of "Antarctic."

WHALING ENDS

The whaling flotilla "Sovetskaya Rossia" returned at the end of June to Vladivostok from its cruise to the Antarctic.

In January the tanker "Elbrus" left Batumi in the Black Sea for Antarctica with a cargo of 10,000 tons of fuel and nine men of the relief party for the XIV SAE. In February the ship "Vytegrales" left Leningrad with eight men of the wintering party on board, and construction materials for the Expedition.

The Soviet geochemists at Vostok Station are conducting measurements on the matter content and intensity of precipitation of cosmic matter. In the region of Molodezhnaya Station studies are being undertaken to measure the thickness of the ice cover with radar sounding and barometric levelling from aeroplanes. At Queen Maud Land the geological-geophysical researches are continuing. Deep crustal and upper mantle studies with the method of seismic sounding are conducted near Novolazarevskaya.

OBITUARY

The death occurred suddenly in Wellington on August 19 of Mr Campbell Garner, aged 58, who had served with Rear-Admiral Richard E. Byrd in his 1933 Expedition. Mr Garner was a crew member of the "Jacob Ruppert". He has also served on Norwegian whalers and had visited Campbell Island as well.

A long-time member of the Wellington Branch of the New Zealand Antarctic Society, Mr Garner is survived by his widow, and by two sons both of whom are overseas.

APPLICATION CALLED FOR GRANTS TO EXPEDITIONS

Applications are again being called for assistance to those who require financial help for Antarctic work.

When the Trans-Antarctic Expedition came to be finally wound up, there was a considerable cash surplus left, due to the payment of some royalties for books and film rights accruing after all accounts had been met.

By agreement between the London and New Zealand Expedition Committees, this sum was placed into a Capital Account and invested, and from the income received by way of interest, grants are made available each year for Antarctic exploration or for projects associated with the Antarctic.

One-third of the proceeds is available for applications lodged with the New Zealand Advisory Committee, and two-thirds for applications dealt with in the United Kingdom. There is a three-year accumulative period, and any money left unexpended at the end of that period is added to the Capital Account. The amount in the Capital Account is at present approx. £Stg.25,000.

Applications for the 1970-71 season from the New Zealand sector will close with Mr A. J. Heine, Secretary, New Zealand Advisory Committee, Trans-Antarctic Association, P.O. Box 2901, Wellington, New Zealand, on February 1, 1970.

Enquiries should contain as full information as possible of the purpose for which assistance is sought, the aims and objects of exploration, the personnel and qualifications of expedition members, the amount of financial assistance sought, the total cost of the expedition, etc. There is no special application form.

Enquiries for grants from the United Kingdom should be made to: Mrs E. Honnywill, Secretary, Trans-Antarctic Association, 30 Gillingham Street, London, S.W.1, England.

The final decision on awards is made by the Committee of Management in London, consisting of representatives from both the United Kingdom and New Zealand.

NEWS FROM THE SUB-ANTARCTIC

CAMPBELL ISLAND (N.Z.) NEWS

Mr Brian Smith, the Officer in Charge at Campbell Island, has forwarded the following article by radio-telephone.

"My last rambling ended with us looking forward to the promised air drop on mid-winter's day celebrations. We were not disappointed.

After being delayed some 48 hours due to weather, mid-day of June 21 brought up a Bristol Freighter trundling down harbour. A magnificent sight to us, and even bettered when a total of 17 parachuted loads drifted to earth in perfect safety, landing in a radius of some 50 feet.

As soon as all gear was cleared to the hostel the entire expedition braved the briny for a mid-winter swim, having earlier arranged through 4ZA that we be sponsored at \$1 per head, proceeds to I.H.C. An all time record I should think.

Mid-winter's day dinner in the evening was a resounding success, enhanced of course by fresh fruit and vegetables.

The end of June was paused for the ceremony of "cutting the calendar"—two straight months to go, and morale was on the rise along with lengthening days.

July brought us back to the possibility of outdoor work. The major process being a complete overall of the station boat "Aurora". And to accomplish this the motor was removed and the whole boat lifted from the water using the wharf crane. From the wharf into the wharf store (with about two inches to spare), and there we left it until September 19 when it was relaunched. A tremendous amount of work has been done on her, but she

has paid us back by looking really smart and operating the same way.

August, and eight weeks to go. All attacked work with renewed vigour, and again the paint brush came into prominence both inside and out. The hostel lounge is a changed room with its bright new paint. The wharf buildings wear their new mantle well, and the whole wharf area has been spruced up.

This last few weeks have plagued us with underground power cable faults requiring a good deal of work not anticipated. Nor has the medical department lacked custom. There has always been someone requiring attention, and a couple of more involved cases where they were happily successfully overcome.

At the time of writing our servicing ship, the "Holmdale", has for the umpteenth time just had her schedule changed. However, no doubt she will arrive, and we will return home, and of course we are all rather excited at the prospect.

It has been a good year with a good team, and we would wish the incoming OIC Peter Julius, and his 1969/70 Expedition all the very best for their year in the Sub-Antarctic.

The 1969/70 Expedition personnel at Campbell Island will be:

Officer in Charge: Peter Julius.

Mechanic: A. H. Dazeley.

Telecommunications Technician:
C. M. Brunton.

Cook: B. D. George.

Electronics Technician: To be appointed.

Ionosphere Observer: P. J. Owens.

Senior Met. Observer: David Paull.

Met. Observer: M. O'Donohue.

Met. Observer: M. B. Crompton.

*Met. Observer: R. J. Taylor.

*Met. Observer: J. M. Carr.

*For the summer season only.

GIANT CRABS FROM AUCKLAND ISLANDS

From time to time surveys have been carried out by vessels interested in probing the potential of crabs around the shores of the stormy Auckland Islands.

Now a Wellington company is hoping to develop a big export market by fishing for and processing giant crabs which abound at the Aucklands, 190 miles south of Stewart Island.

The company, Capricorn Fisheries Ltd., which already operated six crayfish boats in the Chatham Islands is applying for a lease of 60,000 acres for five years.

The species of crab to be farmed is the "Jacquinota Edwardsii".

The general manager of the company (Mr A. K. Begg) said in Wellington that last year Eastern Capricorn Fisheries chartered the former Northern Company's coaster Hoto-nui and spent a week around the Auckland Islands making a major survey.

"It is not a King Crab but a very large kind and a species peculiar to New Zealand," he said. It is believed that the crab is not found anywhere else around the main or outer islands, but there are similar species in other parts of the world.

Mr Begg said that the crab must be processed on the spot, and it was a highly technical process.

Three years ago Mr Begg won a Winston Churchill Scholarship while working for the Timaru Fishing Company. He spent some time in Alaska, studying new techniques in fish processing.

The crabs at the Auckland Islands were "very tasty and prolific," he said.

Following the sending of samples overseas, and a good deal of research, an overseas market had been obtained.

The new industry would entail stationing a ship at the Aucklands, and the company already had one in mind. It would not be a converted coaster, but a proper factory vessel.

The reason for the application to lease the area was because he considered that the whole operation had to be done in an orderly fashion otherwise it would fail.

There was keen competition in the crab market from Russia, Japan and the United States, and high quality must be maintained. The project would entail a huge capital investment.

The 60,000 acres that Capricorn Fisheries required to lease was bounded by the shore from low water and extended from Signboard Point, about two-thirds up the eastern coast and around to the south-west cape on the other side of the main island. It also embraced the whole of Adams or Smith Island, the smaller of the Aucklands, and Carnley Harbour—a large stretch of water between the two islands.

The main, or Auckland Island, measures 25 to 30 miles in length and is 15 miles across at its widest part, is wooded and covered abundantly with vegetation. Peaks rise to a height of 2,000 feet.

TO MEASURE ANTARCTIC ICE

A British scientific team will leave for Antarctica next month to carry out the first extensive and systematic measurement of the depth of the ice cap. The team, from the Scott Polar Research Institute, Cambridge, will be led by Dr G. Robin, the institute's director.

The team will use three specially-designed radio echo-sounders mounted in a U.S. Navy Hercules aircraft. The plane is being converted for this project at the Lockheed factory in Georgia.

The team will travel via Washington to Harewood Airport, Christchurch, New Zealand, where they will install their equipment in the plane.

THE READER WRITES

Sidelights of Antarctic Research

Letters, preferably not longer than 500–600 words, are invited from readers who have observed some little known facet of Antarctic life or who have reached conclusions of interest on some Antarctic problem.—Ed.

18 Coopers Lane,
Lee, London, S.E. 12.
U.K.
8 September, 1969.

Dear Sir,

MUSEUM OF THE ARCTIC AND ANTARCTIC, LENINGRAD.

Having just returned from the U.S.S.R. I thought readers might like to hear about the Museum of the Arctic and Antarctic.

The Museum, established as an Arctic Museum in 1937, is, like many other Russian museums, established in an old church. The Arctic, of course, dominates the display and much attention is given to the North East Passage, Floating Ice Stations and the Russian Arctic.

The Antarctic Section is situated in the high dome of the church. (There is of course no lift.) On entering you are immediately confronted with the flags of the Antarctic Treaty Nations and a glass case full of stuffed penguins. The layout of the exhibits is not well done. In whichever direction you set out, you have Soviet achievement thrust upon you. Once past this you come to a Natural History Section which contains several jars of preserved whalemeat and penguin organs. Further round is the section on Antarctic History.

As opposed to the Arctic display some coverage is given to foreign explorers. There are several brightly coloured maps. One interesting one illustrates the routes of Scott and Amundsen to the Pole. Alongside each route there are vignettes showing Scott's party manhauling and Amundsen's dogs. Surprisingly, very little space is given over to Bellingshausen. In this context there are models of the ships 'Vostok' and

'Mirny' and copies of several maps. Placed inconspicuously in one corner is a metal chair with the words, "Presented to Mirny by South Pole Station", painted in red on the back. The final part of the display is taken up with Russian equipment and there are several cases full of scientific instruments. In another corner stands an insulation suit. It looked rather menacing for the exhibits here are not very well lit.

I found it very difficult through my lack of knowledge of Russian and I have not mentioned several things that I saw for fear of misleading others by my actual interpretation of the Russian notices. In my opinion the subject is thoroughly covered and is definitely instructive for the Russian layman.

J. M. WILKINSON.

POLAR QUAKES

Recordings of earthquakes which might have originated in the Antarctic continent have been made at Vanda Station, says Mr D. R. C. Lowe of Auckland, the leader of the station's staff for the 1969-70 research programme. It has been thought that earthquakes do not happen in Antarctica and none has been diagnosed previously. But small earthquakes, believed to have originated in the Terra Nova Bay region north of Scott Base have been recorded on seismological equipment at Vanda Station recently. To confirm the incidence of earthquakes and assist in defining their location, seismological equipment will be installed at the station at Cape Hallett.

ANTARCTIC BOOKSHELF



THE ANTARCTIC by H. G. R. King. Published by Blandford Press, London, 1969. 276 pp, colour and black and white illustrations, maps and figures. U.K. Price: £2/15/-.

A great deal of research has gone into the basic material from which this splendid book has been compiled. This would be expected of an author who is also the Librarian and Information Officer of the South Polar Research Institute, and thus has unrivalled resources close to hand. He has certainly made the best use of them.

With more and more scientific work being carried out in the Antarctic and larger numbers of people showing an interest in the region, such a book, telling of the scientific work being carried out there, is more than timely.

One-fifth of the book covers the unveiling of the Antarctic and the International Geophysical Year, giving a short but well written account of all the major expeditions since Captain Cook's visit on his second voyage.

For the layman, in particular, this is a most rewarding book indeed, for it sets out, in language easy for all to understand, an extremely wide range of topics from the upper atmosphere to the bird life on the continent.

One appendix contains a list of further reading, while another sets out the text of the Antarctic Treaty. A good index enables easy checking of any required information. Profusely illustrated, the photographs have been selected with care from a very wide range, and many of those, particularly in colour, are truly magnificent.

This is a book which can be recommended as a "must" on the shelves of every Antarctic library.

—A.S.H.

MACQUARIE ISLAND by J. S. Cumpston. Publications Branch, Government Printing Office, Canberra, Australia. 380 pp, ill., maps. Price in Australia \$5.00.

This substantial volume is a carefully documented and very comprehensive account of the history of sub-Antarctic Macquarie Island, a thousand miles south of Hobart, from its discovery by the sealing vessel "Perseverance" (Capt. Frederick Hasselburgh) on July 11, 1810, till it was declared a wild-life sanctuary by the Tasmanian Government in 1933. Few historians have the patience, persistence and determination which have enabled Dr Cumpston (well-known in New Zealand during his years of service here in the Australian High Commissioner's Office) to ferret out the minutest details of Macquarie Island's tempestuous and often tragic history over those 120 years. Libraries in Australia and New Zealand, newspaper files, archives and privately-owned manuscripts have been examined with diligent care and the gaps, often, filled by correspondence and interviews with the survivors of those slenderly documented years.

The result is a volume full of interest. Not everyone will want to read it in full: Dr Cumpston's own insatiable curiosity and wide knowledge have led him to include much detail of relatively little interest to the ordinary reader: lists of ship's companies, details of oil production and prices, happenings on other sub-Antarctic islands like Campbell Island and the Aucklands. Such extraneous matter sometimes makes it difficult to follow the essential Macquarie Island story. On the other hand, the author has quoted verbatim, often to the extent of several pages, from diaries and newspaper articles, eye-witness accounts of perilous and often tragic exploits which are nothing short of enthralling. In a rollicking vein, for

instance, is the story of how an ex-convict extracted the latitude and longitude of the 'new' island, information which sent the "Lively" to "McQuarry Island" to share in the profits of the seal-slaughter which ensued. And there are gripping first-hand tales of the hardships suffered by sealing gangs left, for reasons good or bad, for long periods without relief:

"As to the island, it is the most wretched place of involuntary and slavish exile that can possibly be conceived"; "The wretched stone and turf-walled and grass-roofed hovels they inhabit are rendered as dismal and dingy thereby as the interior of an Esquimaux palace, and send forth an odour to which that of the nightman's museum of foul abominations is myrrh and frankincense."

Sometimes near-starvation ensued. "About the middle of July all we had left was a few pounds of dry tea, a small cask of flour, a few packets of hops and a cask of hard sea biscuit, so for the next four months we had sea-elephants' tongues and hearts, penguins' hearts and livers when we could get them . . . The end of November would have just about seen us starved out." But a ship arrived a few weeks before that time. Others were not so lucky. No fewer than ten ships were wrecked either on the island or at sea en route to or from it, between the years 1812 and 1914. In six of these there was loss of life.

The climate is generally described in superlatives; "The weather was usually misty to foggy with light rain, almost invariably accompanied by strong winds to gales . . . Snow fell in every month."

The first half of the book deals almost exclusively with the seal and sea-elephant hunting till 1894, while a good part of the second half deals with the slaughter of the King and Royal penguins for their oil, chiefly during the period 1890-1919, and with the ultimately successful efforts of Sir Douglas Mawson, backed up by nature-conservationists the world

over, to have the island declared a sanctuary and the slaughter stopped. Slaughter is not too strong a word. During the early period when the sea-elephant was the main target, one ship, the 'Elizabeth and Mary', reached Sydney in 1811 with 17,037 skins. Later in the same year 'Perseverance' arrived with 35,740 skins. In 1824 twelve vessels were engaged in the trade. But 1894 the slaughter had "practically ceased", for fairly obvious reasons. Attention was now directed to the penguin population. A skilled observer reported in 1900 that during the short season (January to March) "as many as 2,000 birds" (Royal penguins) "can be put through the digesters in a day".

New Zealanders will be particularly interested in the activities of Joseph Hatch of Southland. For some years a not very enthusiastic chemist in Invercargill, in 1878 he fitted out the 'Nancy' and soon became deeply involved in the Macquarie Island oiling industry. He was a controversial figure throughout his colourful career, Mayor of Invercargill 1877-78, a Member of Parliament 1884-87, and was always much in the public eye until the cancellation of his licence in 1920, when he was 82. He several times visited Macquarie Island, and was frequently involved in litigation over his oil trade activities. He was a tough man, but Dr Cumpston seems to have disposed of the allegations that the penguins were herded into the digesters at Hatch's works on the island and boiled alive.

Of considerable interest also are the first-hand reports of such keen and qualified observers of the natural life on the island as Professor A. Hamilton of Otago University in 1894, and taxidermist J. R. Burton of the Colonial Museum, Wellington. Their reports are quoted at considerable length.

One of several shipwrecks described is that of the 'Benclough', which left Port Chalmers for Macquarie Island and was driven on to the rocks off one of the usual anchorages on August 6, 1877, with the loss of one life. One of the

owners, John Thomson, was on board and Dr Cumpston draws on his description of the disaster. Fourteen days after the wreck another vessel arrived, but left without the castaways, who "set to work to make themselves as comfortable as possible." A stove was made for the Captain's cabin from a five gallon oil drum, and a lamp to burn elephant oil from a meat tin. The wick was a fragment of moleskin trousers. Quite neat and serviceable clothing was made from Benleugh's sails. As the men were short of footwear, moccasins were eventually fashioned from sea-leopards' skins. Dried grass proved to be a useful substitute for socks.

"The party lived on scones, fried on an old broken shovel, damper cooked overnight in the ashes, and pancakes. They found three large bottles of lime juice, and a quantity of liquid sugar in the bottom of a barrel, left in the hut by the previous occupants. For vegetable they used Macquarie 'cabbage', which was a combination of parsnip and cabbage, and not particularly palatable. When the penguin eggs began to arrive, and the men commenced to work among oil they fattened visibly." They were finally relieved on November 27.

Personal stories include that of William McKibbin, who landed from the 'Jessie Niccol' in late 1908. McKibbin was then 51. The party was relieved in March, 1909, but McKibbin elected to stay on alone with his two dogs, in spite of the warnings suggested by such inscriptions as "The Lord help us, We are starving" and "Flour and tea finished. Living on biscuits". When Shackleton's 'Nimrod' called on her way home to England on May 25, Captain J. K. Davis went ashore and was escorted by "our Crusoe-like friend" to his "very warm and comfortable and scrupulously clean" hut. He put in front of Davis a "large brown juicy pie, and a crisp loaf both fresh from the oven", apologising because the bread was not as good as usual because he was

out of sugar. The pie was made of sea-elephants' hearts and tongues and was "excellent". McKibbin declined to leave the island, "Why should I?" he asked. "I'm happy enough here, and have all I want. I'm glad to have seen you though, and hope you get safe home." The new oiling party arrived on August 9, McKibbin stayed on with them. Supplies ran short: butter was exhausted on March 18, sugar on the 28th, flour on April 1, oatmeal and haricot beans on the 10th, tea on the 15th and biscuits on May 4. "From that time onwards they lived on penguin and elephant hearts, tongues and steak, and Maori hens (wekas) and Maori cabbage." The whole party was relieved by the Government steamer 'Hinemoa' on July 25, 1910.

Dr Cumpston's muted narrative leaves the reader in no doubt that life on Macquarie Island in the 1800's meant normally hardship, frequently privation and sometimes death, either by shipwreck or by some misadventure coupled with the bleak, inhospitable environment. (In 1915 the highest temperature was 49.3° F. and the lowest 24.3° F. The sun shone for only 377.5 hours during the year.)

There were sporadic revivals of sealing and penguin oiling, but the end of commercial exploitation came with the closing down of the Southern Isles Exploitation Company Limited in 1919.

A minor annoyance for the reader of this notable book is the arbitrary division into chapters with little unity of subject and sometimes misleading chapter headings. There are 70 fine illustrations, but these are nearly all unobtrusively bunched at the end of the book, where much of their potential value to illustrate the text is liable to be lost. But one must end with a round of hearty applause for a splendid piece of historical research which is at the same time a veritable treasure house of thrilling stories.

POLAR OPERATIONS by Captain Edwin A. Macdonald, U.S.N. (Retd.). Published by the U.S. Naval Institute, Annapolis, Maryland, U.S.A. Contains 239 pp, and freely illustrated.

Captain MacDonald has journeyed to both the Antarctic and the Arctic regions many times, both during his naval career and since his retirement from the Navy.

During his naval career, Captain MacDonald gained extensive experience and knowledge of the polar regions. He served as Deputy Commander of Antarctic Operation Deep Freeze, Task Group Commander of the Weddell Sea Group, Commanding Officer of the Hydrographic and Oceanographic Vessel U.S.S. Tanner, Cold Weather (Polar) Planning Officer for the Office of Naval Operations and Commanding Officer of the icebreaker U.S.S. Burton Island (A.G.B.—1).

It will thus be appreciated that his extensive Polar background fits him admirably to write with such authority on the subject of ship operations in polar regions. He was responsible for the ship re-supply of U.S. Antarctic Stations and for coordinating U.S. operations in the Antarctic.

The chapters cover: The Environment, Polar Icebreakers and Boats, Icebreaking, The Ice Convoy, Voyage Procedures, Iceworking Vessels and Polar Boats, Polar Navigation, Ice Seamanship, Wintering over, Safety and Survival.

Appendices cover the following: Wind Class Plans, Cargo and Traffic on Sea Ice, Ice Prognostication and Reporting Aids, Icebreakers by Countries, Finland's Board of Navigating Rules, Institutions Co-ordinating Polar Research Programmes, Tables, and finally Glossary.

The book is not a fiction story but a thesis on Polar exploration, particularly Sea Operations and is written with such an extensive knowledge that no ship can afford to sail to Polar regions without it in the Ship's Library. It is a must on any Antarctic bookshelf.

The foreword is by Rear Admiral George Dufek (Retd.), the first Commander of Operation Deep Freeze. The book is dedicated to those early captains who dared to pit their small, weak vessels against the dangers and unknowns of the polar ice fields.

The book is most attractively bound and printed on a heavy white gloss paper. The price is not yet known, and only two complimentary copies have reached New Zealand.

Polar Operations provides the first thorough, practical explanation of the technology and techniques of sailing and surviving in polar waters.

Captain MacDonald covers a broad range of topics vital to success and survival in Arctic and Antarctic operations, such as the polar environment, design criteria for icebreakers, icebreaking techniques and the special problems of navigation and piloting near the earth's poles.

LEN DONNELLEY,

THE ICE ADMIRAL by Jack McClenaghan. Published by Whitcombe and Tombs Ltd., New Zealand, 1969. 238 pp. N.Z. price: \$3.60.

This novel, by a New Zealand writer, deals with the problems, the tensions and the heart-breaks that eventuate when disaster strikes in the Antarctic. The setting is in Christchurch and in the Ross Dependency.

It is obvious that the author has not only done considerable research but has a knowledge of the Antarctic and of the Deep Freeze operations around which he has built his story.

Not all the novel is set in modern times down south, for there is a long flash-back to pre-Deep Freeze days in the Bay of Whales which helps to portray the type of man the Ice Admiral, Peter Canaris, is, and sets the pattern for his later behaviour.

The book moves at a good pace and interest heightens to a fitting climax to the story.

—A.S.H.

THE SEVENTH CONTINENT by Daphne Machin Goodall. Published by The Priory Press Ltd., Royston, England, 1969. 74 pp., U.K. price 42s. Colour and black and white illustrations.

This beautifully produced book has some splendid illustrations, and a foreword by Lord Mountevans, the son of Scott's companion. However, the text is not comparable to the illustrations, and there are far too many errors of spelling.

The author, who is a keen horse-woman has an impressive array of books on horses to her credit, had the opportunity of joining the first tourist party to travel by sea to the Antarctic regions. Judging by her own account she is not very adept at making friends in a new group, and thus seems to have lost some of the enjoyment of the trip, which, in any case was largely limited to a visit to the sub-Antarctic Islands.

This is her first travel book, and it is a pity that she did not check her title before publication and thus avoid duplication of a name already used.

—A.S.H.

ICE FOR THE DESERTS

A U.S. expert has said Antarctic icebergs could be towed around the world to irrigate the Australian desert.

Dr Wilford Weeks, of the U.S. Army Cold Regions Research and Engineering laboratory at Hanover, made the suggestion at Cambridge during a hydrology symposium of experts from 18 nations.

Antarctic icebergs as tall as a skyscraper and with the area of a large airport could be towed by giant tugs to the north-western Australian desert and the Atacama desert in South America, beached, and the melted fresh water pumped inland, he said.

[This is by no means the first time that this suggestion has been made—or something very like it.]

CARETAKERS FOR HISTORIC HUTS

Caretakers are essential on the Antarctic continent now that tourism has reached those icy shores. As a result of the New Zealand Antarctic Division of D.S.I.R. concern, the Canterbury Branch of the N.Z. Antarctic Society will provide caretakers or curators for historic places on the ice.

In a letter to the Canterbury Branch the Superintendent of the Division (Mr R. B. Thomson) said: "We are now approaching a new stage in Antarctica with the advent of tourists and other additional people visiting McMurdo Sound."

Because of this change the D.S.I.R. are concerned for the preservation of the historic huts and their contents at Cape Royds and Cape Evans.

A proposal to set up a museum and zoo at Cape Royds and to seek assistance from Society members for caretaking and guidance of organised tourist tours would involve two men spending a few weeks at Cape Royds during the peak season.

Between the arrival of visitors they would be required to clean the area, undertake some basic scientific studies such as meteorology and repair and maintain Shackleton's hut and the summer hut in which they would live.

The Canterbury Branch has welcomed this great opportunity for many members to visit Scott Base and Cape Royds and at the same time take an active part in preserving Shackleton's hut and safeguarding the nearby penguin rookery.

The Branch has circulated all members for men interested in at least three weeks on the ice between November 12 and December 30.

Because it is expected that this will be a continuing activity each year the Branch will encourage a pool of interested members to apply not only for this season, but for future years.

A CLOSER LOOK AT ANTARCTIC EARTHQUAKES

By R. D. ADAMS.

Antarctica is by far the least active of the continents as far as earthquakes are concerned. Maps of world seismicity leave a blank over Antarctica, except for some shocks associated with volcanic eruptions on the Graham Land Peninsula, to the south of South America.

Up to the time of the International Geophysical Year, it was thought that earthquakes of moderate magnitude, say up to 5 or even 6, could periodically have occurred in Antarctica without being detected in other parts of the world. The recordings at many first-order seismograph stations in Antarctica since 1956 have failed to detect any such earthquakes, and the comparative aseismicity of Antarctica still remains one of the puzzles of geophysics. Small shocks have been detected close to individual stations, however, but the spacing of stations in the Antarctic is still too great for any of these earthquakes to have been recorded at several stations, and thus located.

Scott Base has always picked up small disturbances of local origin—in fact, several hundred were detected during the I.G.Y. Some of the very close events appear to come from the nearby volcano, Mt Erebus, and others have been thought to have originated from the calving of icebergs from the Ross Ice Shelf. But as these events were recorded at only one station, their location could only be guessed at. With the installation of a seismograph at Vanda Station last summer, about 80 miles to the west of Scott Base in the Wright Dry Valley of Victoria Land, it became possible for the first time to record these small Antarctic earthquakes at two stations, and gain a much better idea of their location. In about five weeks of operation between the installation of the seismograph and

the close of access for the winter, 27 local events were recorded at Vanda, of which nine were big enough to be recorded at Scott Base also. To our surprise, these nine events did not come from near Mt Erebus, or from the edge of the Ross Ice Shelf to the east of Scott Base, but from about 160 miles to the north of both stations, near Terra Nova Bay on the Victoria Land Coast. The magnitudes of the earthquakes as measured at Scott Base are between about $2\frac{1}{2}$ and 3, but the earthquake energy seems to propagate exceptionally well to Vanda, giving a magnitude there that is sometimes up to one unit higher than at Scott Base. It is felt, though, that the smaller magnitudes computed from Scott Base give a truer indication of the earthquakes' size.

We still do not know what sort of earthquakes we are dealing with. Those already located fall into two groups, one of which is near the David Glacier and Drygalski Ice Tongue, where they protrude into the Ross Sea. These earthquakes could be due to the breaking-off of icebergs, particularly as they were observed during the summer. A second group of earthquakes, however, is well to the south, where there does not seem to be any convenient ice field to provide earthquakes of this type. If the earthquakes were ordinary shocks of the tectonic type, such as we have in New Zealand, from the observed frequency of small magnitude events we would periodically expect

larger ones, which we know have not occurred. It thus seems most likely that the earthquakes observed early this year were in the form of an earthquake swarm, such as occurred near Lake Taupo in the summer of 1964-65. Although these swarms occur in volcanic regions, they are not usually associated with active volcanic manifestations. It is known that much of the Victoria Land coast has been subjected to recent volcanism, and present-day geothermal activity has been found near Mt Melbourne, about 80 miles to the north-east of the present earthquakes.

There are still two and a half months of records taken at Vanda at the end of last summer to be analysed, once they can be shipped out after the winter, and these should provide information about many more earthquakes. The seismograph at Vanda stopped recording at the end of April because of too severe temperatures, not in the seismograph vault, but in the recording compartment of the science hut, and plans are in hand to start recording again as soon as a replacement part can be taken to Vanda in the coming season. To add further to the precision with which earthquakes in Victoria Land can be located, the Seismological Observatory will also set up a temporary station at Hallett for the coming season, about 400 miles to the north of Scott Base. Our recording network will be in operation, but it remains to be seen if this local "hot-spot" of earthquakes is still active. If the shocks have been caused by ice movement, we can expect a seasonal repetition of last year's activity, but if they were an earthquake swarm their activity might have migrated elsewhere, or completely stopped. Whatever we find on the records already obtained but not analysed, or from this summer's recording, will add to our understanding of Antarctic seismicity. The important step made by this aspect of New Zealand's Antarctic Programme has not been to show that there are small earthquakes in the Antarctic, but for the

first time to be able to locate them with some certainty, and thus to be able to learn something of their likely origin.

RESIGNATION OF EDITOR

It is with extreme regret that I have to announce my resignation as Editor of "Antarctic" after only five issues.

However, I am about to leave New Zealand to take up a three-year appointment in Rarotonga, in the Cook Islands, as General Manager of the Cook Islands Tourist Authority, thus exchanging my keen interest in the southern continent for an equally great interest in a tropical island.

Because there are at present poor communications between the Cook Islands and New Zealand and there are no facilities on the island for gathering material on Antarctic matters I have had to sever my editorial connections. My interest will continue in all matters affecting Antarctica.

Elsewhere in this issue I write about an offer to hold the 1972 Midwinter Celebrations in Rarotonga, and look forward to seeing as many as possible present on that occasion.

My thanks go to all correspondents in the various countries who have supplied valuable information and also to Mrs Wheeler the Assistant Editor.

NOTE THIS DATE !

IT IS 40 YEARS SINCE—

On Sunday, November 30, at 3 p.m., a ceremony will be held at the Byrd Memorial on Mt Victoria, Wellington, to mark two notable occasions in Antarctic history.

These are (1) the fortieth anniversary of Rear-Admiral Byrd's flight over the South Pole and (2) the tenth anniversary of the signing of the Antarctic Treaty.

CANTERBURY BRANCH NEWS

TRANSFER OF PRESIDENT

Mr Randal Heke, the President of the Canterbury Branch, is being transferred from Christchurch to Wellington in the near future, necessitating his resignation from the position as President. He will be succeeded by Mr Colin Gray, who is at present Vice-President.

FUTURE MEETINGS OF THE BRANCH

The following meetings are scheduled for the remainder of the year:

On Tuesday, September 9 at "Aldersgate" in Durham Street, Mr Eric Porter from Lake Coleridge will be the guest speaker. Eric has visited McMurdo and other Antarctic bases with most of the Commanding Officers of Operation

Deep Freeze and as a result has seen parts of Antarctica seldom visited by others.

Other planned activities are a Cocktail Party early in October to welcome Vice-Admiral Welch, new Commanding Officer of Operation Deep Freeze.

A dedication Church Service in the Christchurch Cathedral on November 9.

A visit to an Icebreaker at Lyttelton. Talk by Rob Stanley on his visit to the Antipodes Islands.

TWENTY APPLICANTS

Twenty applicants have been received by the Canterbury Branch for the two vacancies to work at Cape Royds this summer.

WELLINGTON NEWS

MEETING OF BRANCH AND OPPORTUNITY TO SERVE AS CUSTODIAN

A meeting of the Wellington Branch in October will hear Bob Thompson, Superintendent of the Antarctic Division, D.S.I.R., tell of the programme for the 1969/70 season and outline the proposal to invite Society members to carry out Curator duties at Cape Royds. As described elsewhere in this issue, the intention is to provide some protection both to the penguin colony and to the restored hut of the Shackleton Expedition. So many visitors now visit Cape Royds in the summer months that apart from disturbing the penguin rookery there and the inevitable losses from the historic hut and the surrounds of articles retained for display purposes, the use of helpful guides will serve a dual purpose. With the possibility of Air New Zealand running regular tourist flights from 1971 onwards the need to provide security to the historic huts and natural life takes on a new significance.

Previous tourist groups that went south on the Magga Dan suggested guides as a desirable adjunct.

It is proposed that this season the Canterbury and Wellington Branches each send members to carry out custodian duties. It is some years since the Society carried out renovations and repairs to the huts at Cape Royds and Cape Evans and also at Hut Point, so the opportunity may be taken to survey current requirements insofar as maintenance is concerned. There is some support for the return to the huts of items held at the Dominion Museum, but never on display because of lack of space.

Transfer of the Antarctic Division

News of the impending transfer of the Antarctic Division of D.S.I.R. from Wellington to Christchurch has aroused much speculation. Over the years the presence of the Division has maintained an interest in Antarctic affairs in Wellington and has greatly helped in maintaining a link

SPECIAL ANTARCTIC REUNION FOR 1972

A most warm welcome is extended to all old (and young) Antarctic and sub-Antarctic hands to gather at Rarotonga, capital of the Cook Islands, at Midwinter in 1972 to celebrate in appropriate fashion the passing of the shortest days.

This will be a most unusual gathering for those New Zealanders who traditionally foregather in Christchurch and Wellington, and more latterly also at Auckland, for it will be spent in warm sunny conditions, and it is planned to feature a swimming contest as part of the celebrations. In addition there will be a "Umukai", or typical Cook Islands feast, and a concert party will entertain the guests. There will be a ball.

The Cook Islands Tourist Authority will do all in its power to make the reunion as successful and enjoyable as possible. Sightseeing trips around the island, and picnics will be arranged. It is hoped that the Antarctic men, their wives, families and friends, will be able to stay at least a week on Rarotonga, and also perhaps visit the island of Aitutaki, 140 miles distant.

It is too early yet to talk about fares, but you can be assured that the lowest possible fare will be arranged with Air New Zealand for a large group travelling together. It is hoped that not only New Zealanders, but also veterans and their relatives and friends from Australia, the United States, the United Kingdom and all other countries which have Antarctic expeditions will be able to send representatives.

with "Antarctic". There is a chance that editorial activity may move to Christchurch. As well as Mr A. S. Helm, the former Assistant Editor, Mrs R. H. Wheeler has also relinquished her association with the Bulletin. Her work on the preparation of the Index has been of tremendous benefit.

A special invitation is extended to those who have served on sub-Antarctic Islands, so that they will be able to compare at first hand midwinter climates and celebrations on, say, Macquarie, Campbell, Auckland, Heard or Kerguelen with the tropic warmth of Rarotonga.

Some might ask what is the connection between Rarotonga and the Antarctic. A good question. Well, it so happens that on tropic Rarotonga, the crossroads of Polynesia, that the tradition of the first recorded visit of anyone to the far south was preserved. Approximately three hundred years before the Battle of Hastings, in about A.D. 750, Polynesia was in a ferment. The discovery of various groups not previously known took place, and the art of navigation by the stars was brought to a high degree of accuracy. Large canoes were built and highly trained crews served under skilful and daring captains.

One of the noted explorers came from the island of Rapa, now one of the Austral Group in French Polynesia. His name, preserved with honour down the long centuries, was Ui-te-Rangiora, nor was the name of his canoe, Te Ivi-o-Atea, forgotten.

Blessed with a magnificent harbour, Rapa was then, as now, the home of fine seamen, for many whaling captains later recruited crewmen from this island, and the French today still look on them as the most expert sailors of French Polynesia. Rapa lies well to the south in Polynesia, and was thus a natural starting point for the expedition.

There was much competition to join the expedition when it was announced that the south was to be

explored. The big canoe was well stocked with tropical foods before leaving Rapa and for a month the voyagers continued southwards, despite severe storms. Finally the cold was such that the men, bred to the tropics, suffered severely. They had sighted no land, not was there any indication that they were approaching it. However, to their amazement, great banners of colour caused by the Aurora Australis streaked across the sky. Many centuries later, the Maoris of the southern part of New Zealand, who also saw this phenomenon of the southern lights called it "Tahu-Nui-a-Rangi"—"the great burning of the sky".

Then, to their further amazement, their way was barred by towering icebergs and the pack-ice. Afterwards, when they told their friends and relatives at Rapa and Rarotonga their wonderful stories, they were at a loss for words to describe what they had seen. Searching for a simile, someone likened it to a sea of arrowroot, a crop still grown on the island, and this phrase crept into the traditional description.

Finally, daunted by the bitter cold and the sunless conditions, they turned the prow of Te Ivi-o-Atea northwards once more, and at last made their way back to their homeland with an almost unbelievable tale to tell.

From generation to generation the story of their epic journeying was handed down to become one strand in the rich history of Rarotonga.

There will be plenty of Rarotongans to help the Antarctic party celebrate midwinter in 1972, and an effort will be made to ensure, if possible, that a representative from Rapa will also be present.

By the end of 1971 the new jet international airport at Rarotonga will be in operation, and Air New Zealand which hopes also to be taking tourists to Antarctica by then, will transport the group at the appropriate time to celebrate midwinter in tropical sunshine.

From time to time announcements will be made through the pages of "Antarctic" as to progress of reunion plans.

PENGUINS AND D.D.T.

Adelie penguins on Ross Island close to the United States and New Zealand bases in McMurdo Sound were found to have six times more D.D.T. in their fat in 1967 than penguins sampled at Cape Hallett, 400 miles away, according to Mr H. V. Brewerton of the Chemistry Division of the Department of Scientific and Industrial Research, in an article in the "New Zealand Journal of Science".

Mr Brewerton says that this difference is highly significant. "The main source of the much greater quantity of D.D.T. residues in the Ross Island penguins could be the presence of the substantial human population at the United States and New Zealand research stations in McMurdo Sound".

Mr Brewerton does not say how humans at McMurdo Station and Scott Base could have affected the D.D.T. level in Ross Island penguins, but Mr J. Warham, a lecturer in the Zoology Department at Canterbury University suggests that D.D.T. from human wastes and food scraps discharged into the sea could be taken up in the "food chain" of the area and so affect the local penguin population.

Mr Brewerton's sampling of fat from penguins and seals began in 1965 after reports of the finding of D.D.T. and related compounds in Antarctica animals the year before.

"This was of interest to New Zealand," he says, "in its position as the nearest major agricultural user of D.D.T. to the Antarctic."

Mr Brewerton states that his analysis revealed no significant difference in the D.D.T. residue contents of the fats of Weddell seals taken at McMurdo Sound in 1965 and 1967. They indicated no increase in D.D.T. deposition in seals in the McMurdo Sound region over two years.

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Volume 1 numbers 1, 2, 9	number 8
Volume 2, numbers 1, 2, 3, 4, 7, 9	number 8
Volume 3, number 7	number 5

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 50c per copy meanwhile. Indexes for volumes 1, 2 and 3 are also available, 30c each.

Copies of our predecessor, the Antarctic News Bulletin, are available at 50c 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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