

ANTARCTIC

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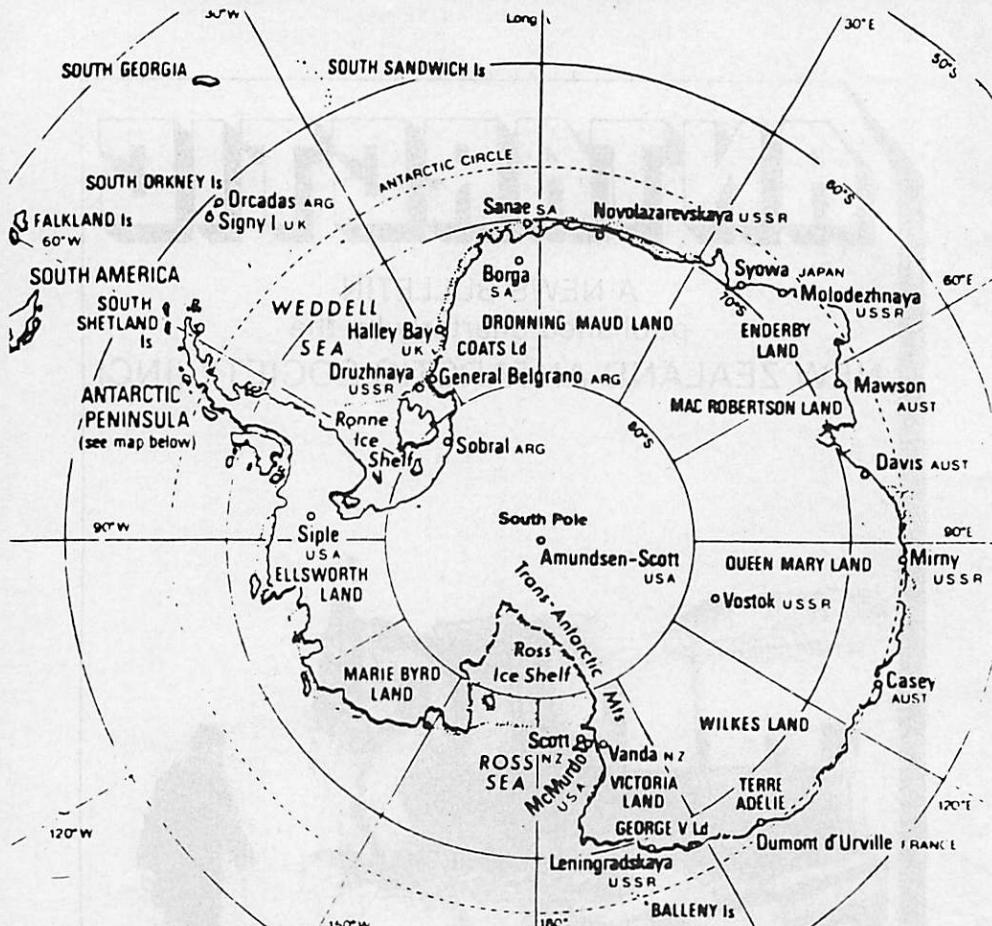
New Zealand's Governor-General (Sir David Beattie) jumps from a D4 bulldozer which he drove a short distance over the sea ice at McMurdo Sound during his visit to the Ross Dependency last month. The D4 flies the Governor-General's flag which he presented to the New Zealand cargo trainer driver, John Flintoft (right).

Antarctic Division photo

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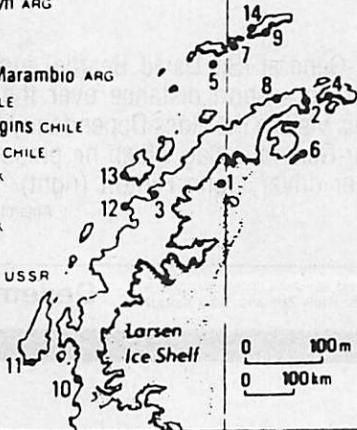
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ANTARCTIC PENINSULA

- 1 Teniente Matienzo ARG
- 2 Esperanza ARG
- 3 Almirante Brown ARG
- 4 Petrel ARG
- 5 Deception ARG
- 6 Vicecomodoro Marambio ARG
- 7 Arturo Prat CHILE
- 8 Bernardo O'Higgins CHILE
- 9 Presidente Frei CHILE
- 10 Stonington I. UK
- 11 Adelaide I. UK
- 12 Argentine Is. UK
- 13 Palmer USA
- 14 Bellingshausen USSR



ANTARCTICA

0 500 1000 Miles

0 500 1000 Kilometres

ABBREVIATIONS

ARG ARGENTINA
AUST AUSTRALIA

SA SOUTH AFRICA
UK UNITED KINGDOM
USA UNITED STATES OF AMERICA
USSR UNION OF SOVIET SOCIALIST
REPUBLICS

ANTARCTIC

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Editor: J. M. CAFFIN, 35 Chepstow Avenue, Christchurch, 5.
Address all contributions, inquiries etc. to the Editor.

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NEW ZEALAND FIELD WORK BEGINS

Construction of a base camp as large as the original Scott Base built in 1957 was one of the major projects in the first two months of New Zealand's Antarctic research programme for 1983-84 which began officially on October 3. The camp at Butter Point, New Harbour, will be used next summer for the first stage of the long-term offshore drilling project Cenozoic Investigations in the Ross Sea (CIROS). To establish the camp a logistics team transported nearly 175 tonnes of buildings and equipment across the sea ice of McMurdo Sound from Scott Base to Butter Point in 35 days.

Early this month 16 parties were in the field. Scientists were at work in the Ohio Range of the Horlick Mountains 550km from the South Pole, in the dry valleys of Victoria Land, on Ross Island, and around McMurdo Sound on sea ice or land. Construction of the fourth stage in the Scott Base rebuilding programme — a new command centre — was well under way, and work was in progress on the fifth stage — erection of the shell of the new geophysical laboratory.

Guest scientists and logistics experts from two countries — the Peoples Republic of China and Uruguay — participated in the programme this summer. A Brazilian, Professor Yoshime Ikeda, of the Institute of Oceanography, University of Sao Paulo, was unable to accept the Antarctic Division's invitation.

A women geologist, Li Huamei, was one of the two Chinese representatives. Originally another woman geologist, Xie Youyu, was named. The other representative was Xu Chang, an electrical engineer.

Uruguay plans to have an Antarctic scientific programme next season. Lieutenant-Colonel Omar Porciuncula y Lamela, who is attached to the Uruguayan Antarctic Institute, visited Scott Base early in November to study the logistics of the New Zealand programme.

14 FLIGHTS

Early this month the Royal New

Zealand Air Force completed 14 flights from Christchurch to provide logistic support for the New Zealand and United States programmes. This was the 19th the RNZAF had carried passengers and cargo between New Zealand and Antarctica. Because of weather in the south two flights had to return to Christchurch, but the programme was completed by December 4.

On December 2 one of the RNZAF flights back to Christchurch carried two scientists from the Ecology Division, Rowley Taylor and Dr Peter Wilson. They made an aerial photographic survey from 365m of Adelie and Emperor penguin colonies in the Ross Dependency between Ross Island and Cape Adare. This was the third survey since the 1980-81 season, and was made as part of New Zealand's contribution to the International Survey of Antarctic Seabirds (ISAS).

During their flight between November 4 and December 4 the RNZAF wheeled Hercules aircraft transported 168.26 tonnes of cargo and 478 passengers between Christchurch and McMurdo Station. On the flights southward they carried 137.16 tonnes of cargo and 302 passengers. The northward figures were 31.10 tonnes of cargo and 176 passengers.

LEADERS CHANGE

New Zealand's summer research programme began when 12 New Zealanders on the first flights of the season by

United States Air Force Starlifters reached Scott Base. The party was headed by Mr N. C. McPherson, executive officer, Antarctic Division, and included Mr Norman Hardie, officer-in-charge for the summer, and Professor A. J. P. Taylor, who flew south to conduct psychological tests of the 1983 winter party.

On the afternoon of October 6 in a temperature of minus 25deg Celsius the 11 men who spent last winter at Scott Base completed their Antarctic service. The leader during the winter, Graham Woodhead, hauled down his New Zealand flag which had been hoisted outside the base when the sun returned, and handed over to Norman Hardie.

Before the summer season began Scott Base was a hive of activity with preparations for the influx of summer field parties and the new support staff. A construction team from the Ministry of Works and Development and the New Zealand Army which flew south towards the end of August was engaged on building work at the base before the main construction party arrived, and two members of the logistic tram for the CIROS base camp project, John Sandys, the Antarctic Division construction overseer, and GERALD Taylor, an assistant maintenance officer, were preparing for the transport of materials and equipment to the site.

Early in September two ice reconnaissance journeys were made by members of the winter team to test the sea ice thickness in McMurdo Sound for summer research operations, and particularly the transport of heavy loads from Scott Base to Marble Point and Butter Point. The first trip was made to Butter Point by motor toboggan, and was led by Graham Woodhead.

Later a dog team played its part in the monitoring of the growth and movement of the sea ice. Bill Eaton, the winter dog handler, and a technician, Douglas Martin, took the team to Cape Evans, and on the return journey followed a route from Hutton Cliffs over the spine of Hut Point Peninsula.

By the beginning of the second week of October the summer support staff

had settled in and was busily engaged in base duties and preparations for the dispatch of field parties. First events of the new season were the tractor train transport of fuel and cargo to Marble Point and Granite Harbour, and the transfer of the 15 huskies at Scott Base to their new dog handler.

In the early hours of October 10 Garth Varcoe, the Antarctic Division's buildings and services officer, began his journey across the sea ice from Scott Base. He drove the base D4 bulldozer and towed 21.8 tonnes of cargo on four sledges. The load included one small tractor, supplies and equipment for Vanda Station, fuel for the Butter Point camp, and a wannigan and fuel for the Victoria University of Wellington team led by Alex Pyne which was to make sediment studies in the Granite Harbour area.

With the assistance of the escort vehicle's team the cargo for Vanda was unloaded and prepared for transport to the station by United States Navy helicopter. Garth Varcoe carried on to Granite Harbour and Butter Point and returned to Scott Base in the early hours of October 15, having covered nearly 250km on the round trip.

Meanwhile Alex Pyne and Tony McPherson, using a motor toboggan, were busy laying depots and installing survey beacons for the Granite Harbour studies. Later they were joined by John Watson, an Antarctic Division field assistant, and two Lands and Survey Department surveyors, Tony Hawke and David Manson. More fuel depots were installed in the Granite Harbour area.

HUSKY TRANSFER

Transfer of the 15 huskies began when the two dog handlers, Bill Eaton (1982-83) and Alasdair Roy (1983-84) left Scott Base on October 11 for Cape Spirit and Black Island. They were accompanied by Colin Monteath, the Antarctic Division's field operations officer, and the team of 11 dogs pulled a load of .5 of a tonne. Because of a southerly storm the party failed to reach Minna Bluff and returned to base.

On October 17 the men and dogs travelled to Cape Evans. They found that a southerly storm had broken out the sea ice north of Cape Barne, and Backdoor Bay was empty. After two days at Cape Evans the party returned to Scott Base on October 19 by way of Hutton Cliffs over the spine of Hut Point Peninsula to Windless Bight. Now Alasdair Roy has 17 working huskies to look after. Two youngsters, Kris and Vega, who were seven months old in December, were able to join their elders in the traces.

New Zealand's main base on the continent, Vanda Station on the shores of Lake Vanda in the Wright Valley, 130km from Scott Base, began operations on October 22. A team of four was flown in by a United States Navy helicopter from Scott Base, and the leader for the summer, Malcolm Macfarlane, hoisted a New Zealand flag on the station flagpole. The temperature was warmer than at Scott Base earlier in the month — minus 13.3deg C.

Until the end of January the station will serve as a logistic centre for scientific field parties, which include guest scientists from the United States, Japan, and the Peoples Republic of China. In addition to logistic support Malcolm Macfarlane and his team will continue a programme of meteorological observations, and make measurements of wind, temperature, and pressure variations above the valley floor.

DRY VALLEYS

One of the first field parties to take advantage of the support provided by Vanda was a Ministry of Works and Development scientist, Jeff Robertson and Bruce Mason, an Antarctic Division field assistant. They began the hydrology and glaciology programme in the Taylor, Wright, and Victoria Valleys on October 29.

Later in the season Vanda was host once again to a Japanese field party which carried out geological and geochemical studies in the dry valleys — a project now in its 17th season. First to arrive were Dr Genki Matsumoto, Dr Tsurahide Cho, Mr Tamio Kawano, and

Mr Yoshiharo Kobata. They were joined later in December by the leader of the team, Dr Tetsuya Torii.

For the support staff at Scott Base November was a particularly busy month with the flow of materials across the sea ice, summer scientists arriving regularly from Christchurch, and the steady pace of construction of new base buildings. But by the end of the month most of the field parties for the first half of the season were fully engaged in their research.

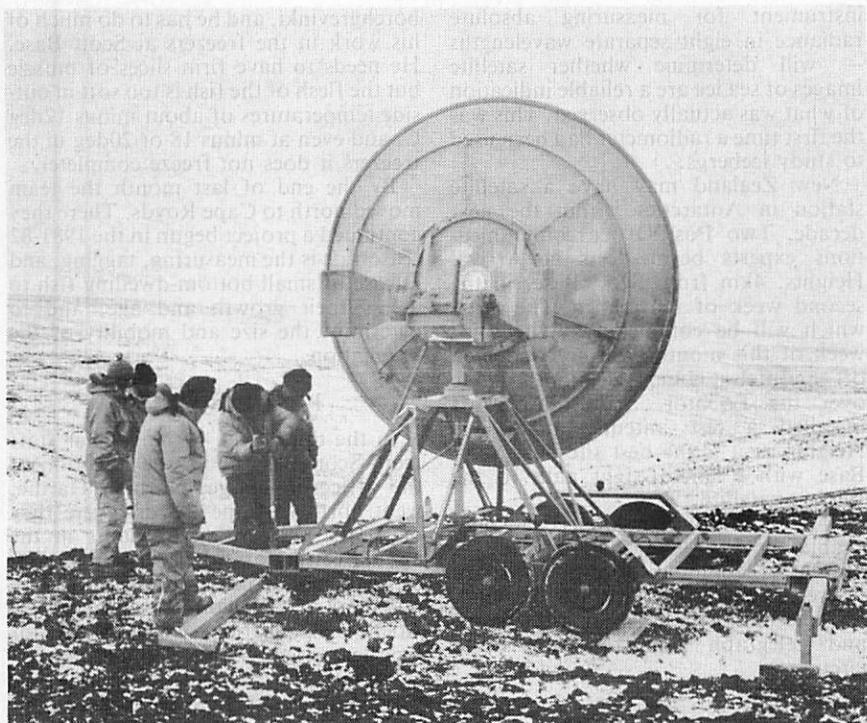
Sea ice in McMurdo Sound is of interest to New Zealand scientists of several disciplines. Early last month a Royal New Zealand Air Force physiologist spent 28 minutes floating in a sea ice melt pool. Flight Lieutenant H. Duncan, of the Defence Environmental Medicine Unit in Auckland, took the chilly dip to test a dry immersion suit made of 5mm neoprene rubber.

Flight Lieutenant Duncan and the medical officer in charge of the unit, Wint Commander D. Stewart, spent a week at Scott Base to assess the joint New Zealand-United States survival training programme. They also tested cold weather clothing which is being considered for use by the Air Force.

REMOTE PROJECT

New Zealand's most remote project this season — the Canterbury Museum's geological expedition to the Ohio Range of the Horlick Mountains 1422km from Scott Base — was not put into the area until November 11 because of bad weather and aircraft problems. Finally the leader, Margaret Bradshaw, two other geologists, Jane Newman (University of Canterbury) and Jonathan Aitchison (Antarctic Division) and Bill Atkinson, an Antarctic Division field leader and toboggan mechanic, made it after two attempts had been called off. On the round trip with the party was Eric Saxby, deputy officer-in-charge at Scott Base.

A few days later Steve Currie, a Ministry of Works and Development surveyor, and Brad Scott, of the New Zealand Geological Survey, were at work round the summit caldera of Mt



A test antenna installed at Arrival Heights, 4km from Scott Base, for a possible satellite station.

Antarctic Division photo

Erebus. They continued the study of the nature and rate of deformation in the summit area which was started by the Geological Survey three seasons earlier.

This project was completed by December 9. Rob Hall, an Antarctic Division field assistant from the survival team, who was responsible for safety aspects, had to be lifted off the mountain by helicopter a day earlier than his colleagues because of an attack of food poisoning which was accentuated by having to work at a high altitude.

A joint pilot study of icebergs in the McMurdo Sound-Ross Sea area by Dr J. R. Keys, of the Commission for the Environment, and Dr M. McDonnell, of the Physics and Engineering Laboratory, DSIR, was completed by the middle of November. With Ken West, a field assistant from the survival training team, they worked in the Cape Roberts

area on the western side of the Ross Sea about 100km north-west of Scott Base, and in the Bay of Sails. The Commissioner for the Environment (Mr K. Piddington) also took part in the project.

ICEBERG COUNT

During their two weeks in the field the group counted 200 icebergs along a 170km stretch of the South Victoria Land coast. About 50 were measured and the largest was 3km in length. Samples were also taken from the icebergs to obtain sedimentological information on any rock material they carried.

Dr McDowell used one of the DSIR's six radiometers to take measurements of the sea ice and correlate them with readings from satellite data. Readings from the radiometer — an eight-channel

instrument for measuring absolute radiance in eight separate wavelengths — will determine whether satellite images of sea ice are a reliable indication of what was actually observed. This was the first time a radiometer had been used to study icebergs.

New Zealand may have a satellite station in Antarctica within the next decade. Two Post Office communications experts began tests at Arrival Heights, 4km from Scott Base, in the second week of November. The tests, which will be completed by the third week of this month, will be conducted off the Intelsat communications satellite over the Equator. Scott Base staff installed a test antenna at Arrival Heights as it is the best site near Scott Base with a line-of-sight path to the Intelsat satellite.

A satellite station in Antarctica would enable the Post Office to upgrade its present communications systems between Scott Base and New Zealand. At present this consists of a telephone and telegraph high-frequency radio circuit.

FISH CATCHERS

While the satellite tests were being conducted at Arrival Heights four scientists were busy catching fish through holes in the sea ice of McMurdo Sound at locations off Pram Point and Cape Armitage. They were Drs John MacDonald and John Montgomery, and Mr Michael Paulin, of Auckland University, and Dr William Davison (zoology department) University of Auckland.

Starting in late October the scientists concentrated mainly on catching *Pathogenia borchgrevinki*, a small silvery fish about 200mm long, which lives within three to four metres of the surface layer of ice. They are studying eye movement reflexes which are related to the movement of the head in all vertebrates, and hope to find out more about the function of the brain and nervous system, especially at low temperatures.

Dr Davison's interest is in the composition of muscle in *Pathogenia*

borchgrevinki, and he has to do much of his work in the freezers at Scott Base. He needs to have firm slices of muscle but the flesh of the fish is too soft in outside temperatures of about minus 12deg C, and even at minus 18 or 20deg in the freezers it does not freeze completely.

By the end of last month the team moved north to Cape Royds. There they continued a project begun in the 1981-82 season. It is the measuring, tagging, and release of small bottom-dwelling fish to assess their growth and age, and to determine the size and mobility of the population.

PENGUIN COUNT

In the third week of November staff from Scott Base under the direction of the officer-in-charge, Norman Hardie, went north to Cape Royds where they made the first of three counts in the annual census of Adelie penguins. The census is made to determine the breeding potential of the world's southernmost Adelie penguin rookery and to monitor long-term trends in its population.

About 2300 pairs of nesting Adelies were counted by three people in about three hours. The first count is of the number of occupied nests, but the second count this month, which will be done by Dr Laurence Greenfield, of the botany department, University of Canterbury, and Lynda Logan, is considered to be the most important because it will take place when the number of occupied nests closely equals the total of breeding pairs. Next month's count of the number of chicks will allow the success of the season's breeding to be assessed.

By the middle of this month the CIROS logistics team expects to complete the establishment of a camp at Butter Point 80km west of Scott Base which is as big as the original base built in 1957. It is the base camp for the first stage of the long-term offshore drilling project Cenozoic Investigations in the Ross Sea (CIROS) which will start next summer.

CARGO FERRY

For 35 days from the middle of

October two members of the logistics team have ferried almost 175 tonnes of cargo across the sea ice of McMurdo Sound to the camp site. Driving a D4 bulldozer towing two or three sledges, John Flintoft began hauling 12-tonne loads of equipment and buildings from Scott Base to Butter Point. Supporting him in the 12 to 19-hour outward journey was Chris Mitchell, in another tracked vehicle. They covered about 67.5km on each round trip, and took their last load across the sea ice on November 20.

Construction of buildings for the camp began at Scott Base when the two carpenters, John Sandys and Gerald Taylor flew south at the end of August. In October they were joined by the other four members of the logistics team, John Flintoft, a New Zealand Army plant operator, Chris Mitchell, mechanic, and two additional carpenters, Keith Whitehead and Murray Wilson.

As the cargo train kept rolling over the sea ice, and the rest of the team unloaded the sledges, the camp grew and grew. When it is finished it will have buildings to house the galley and mess, food, equipment and drilling equipment

stores, generator sheds, drying room, science laboratory, drill hut, and sleeping huts for 28 people.

Another stage of the Scott Base rebuilding programme, which began in the 1976-77 season, will be completed by the middle of next month. It is the fourth in the programme — a new command centre which houses general administration offices, the telecommunications system, and postal services. Ministry of Works and Development and New Zealand Army tradesmen made an early start on the internal finishing of the building which was completed last season, and the telecommunications equipment was installed this month.

In October the construction team began work on the fifth stage — erection of the shell of the new geophysical laboratory. The building, its link with the neighbouring biological laboratory and accommodation facilities, and an observation tower, are expected to be completed by the middle of next month. Installation of mechanical and electrical equipment and interior finishing will begin late in August next year when an advance party will fly south after the winter.

Changes at Scott Base

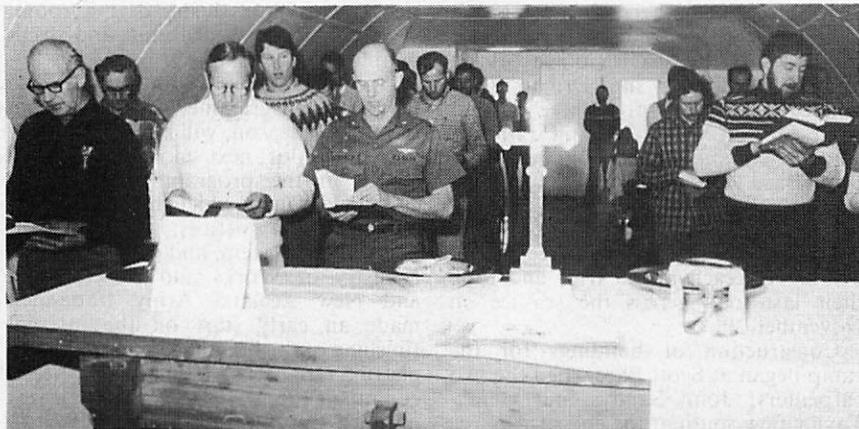
A 29-year-old mechanical overseer with the Forest Service, John Hoffman, of Hamilton, joined the winter team at Scott Base towards the end of last month. He replaces the original mechanic, Andrew Pallesen, who was seriously injured in a road accident south of Cambridge on September 16. An Invercargill mechanic, Trevor Alexander, took Pallesen's place for the summer only, and went south early in October.

Changes were also made in the summer support team at Scott Base. D. C. Emmett, originally selected as an assistant maintenance officer, replaced N. Smith as mess manager, a new post this season.

Research seminar

Progress in planning for the 1984-85 New Zealand Antarctic research programme and the achievements of the 1983-84 field season will be discussed at a seminar arranged by the Antarctic Research Centre, Victoria University of Wellington on March 15 next year. The seminar will be held in the Cotton Building (Room C.-220) beginning at 9.30 a.m.

All scientific groups in the 1983-84 programme are invited to give short talks (15 minutes). A title and a summary (150 words) are required by March 1 to ensure inclusion in the programme. The Antarctic Division will have a representative who will discuss and comment on planning for the 1984-85 season.



Americans and New Zealanders before the historic altar in the Chapel of the Snows. From left are Mr R. B. Thomson, director, Antarctic Division, D.S.I.R., New Zealand's Governor-General (Sir David Beattie), and Captain Brian Shoemaker, commander, United States Naval Support Force, Antarctica. The chalice and paten used by the Rev. A. P. Spencer-Smith and his stole are on the right.

Antarctic Division photo

Historic altar in Chapel of Snows

Antarctica's first church — the tiny Chapel of the Snows on Ross Island where thousands of Americans from McMurdo Station and New Zealanders from nearby Scott Base have worshipped since 1956 now has a new altar which has historic associations with Scott's two expeditions. The 95-year-old altar from the old St Saviour's Church, West Lyttelton, was formally presented on behalf of the people of New Zealand by the Governor-General (Sir David Beattie) and accepted for the chapel by Captain Brian Shoemaker, commander, United States Naval Support Force, Antarctica, and then dedicated at a service in the chapel on November 20.

Built during the winter of 1956 from surplus materials by volunteers at McMurdo Station the original Chapel of the Snows was destroyed by fire on August 23, 1978. Everything was reduced to ruins, and all that remained were the two stained glass windows and the chapel bell from one of the two small fuel barges frozen in the ice at the foot of Hut Point 27 years ago.

After the fire services were held first in the National Science Foundation

administration building. Then a quonset hut similar in age and size to the original chapel was provided as a temporary place of worship, and the 1979 winter team volunteered to do the necessary modifications, working each day after they had finished their normal duties. The chapel was dedicated in December the same year.

Finally the present Chapel of the Snows was built close to the original site exactly as it was in 1956. The final stages were completed during last winter by about 15 volunteers when off duty, and the chapel was in use by late August.

St Saviour's Church was once a seafarers' church and the parish church of West Lyttelton. Men from the Discovery and the Terra Nova attended services there before their ships sailed south. Since 1976 the church has been the chapel of the Cathedral Grammar School in Christchurch. In 1980 the school gave the altar to the New Zealand Antarctic Division for use in Antarctica.

On the altar for the dedication service last month were relics of the Ross Sea Party of Shackleton's Imperial Trans-Antarctic Expedition (1914-17). They

were the stole worn by a member of the party, the Rev. A. P. Spencer-Smith, and the chalice and paten used for Communion services in Scott's hut at Cape Evans where 10 men lived for two years.

When the seven survivors of the Ross Sea Party were rescued in January, 1917, the Communion vessels and the stole were returned to Spencer-Smith's family. He had died on the Ross Ice Shelf in 1915 during a depot-laying journey for Shackleton's planned crossing of Antarctica. Eventually they were given to the Canterbury Museum's Centre.

Archdeacon Michael Brown, vicar of St Mary's, Merivale, Christchurch, who is the Antarctic Division's chaplain, took the Communion vessels and the stole south for the dedication service. He took also a gift for the Chapel of the Snows — an altar cloth embroidered by one of his parishioners, Miss Doris Tutill.

About 50 Americans and New Zealanders attended the morning dedication service. Among them were Mr Norman Hardie, officer-in-charge at Scott Base, Mr Eric Chiang, National Science Foundation representative at McMurdo Station, Commander R. L. Harden, deputy commander, Naval Support Force, Antarctica, Commander M. Radigan, commanding officer of the United States Navy's VXE-6 Squadron, and his executive officer, Commander D. Fisher.

Archdeacon Brown, Lieutenant Terry Thompson, the United States Navy chaplain, and Father Pat Thwaites, one of the New Zealand priests who assist American chaplains each summer, conducted the service, Mr R. B. Thomson, director of the Antarctic Division, read the lesson, and Sir David Beattie read the epistle. Archdeacon Brown preached the sermon and dedicated the altar.

Governor-general's visit to Ross Dependency

New Zealand's Governor-General (Sir David Beattie) made his first visit to the Ross Dependency last month. He flew south from Christchurch in a Royal New Zealand Air Force Hercules and spent five days at Scott Base as the guest of the Antarctic Division, Department of Scientific and Industrial Research.

This was the third visit by a Governor-General to the Ross Dependency in 20 years. Sir Bernard Fergusson was the first in 1963. He was followed in 1969 by Sir Arthur Porritt whose sons Jonathan (18) and Jeremy (15) accompanied him.

During his visit Sir David Beattie lunched on Mexican food at the South Pole, dined on Antarctic cod caught through fish holes in the sea ice of McMurdo Sound by scientists working from Scott Base, visited the historic huts of Scott and Shackleton, and talked to scientists from New Zealand universities, the Department of Scientific and Industrial Research, and the New Zealand Meteorological Service.

A brief storm over Ross Island

delayed the Governor-General's departure from November 18 to the morning of November 19. His party, which was escorted by Mr R. B. Thomson, director of the Antarctic Division, included his son, Mr John Beattie, his aide-de-camp, Captain Sean Trengrove, and the Clerk of the Executive Council (Mr Patrick Millen).

On their first day in Antarctica members of the Vice-Regal party visited the Discovery hut at Hut Point, built for Scott's 1901-04 expedition. In the evening the Governor-General went to McMurdo Station to attend a formal reception given by Captain Brian Shoemaker, Commander, U.S. Naval Support Force, Antarctica.

Sir David Beattie and his party attended a service on November 20 in the Chapel of the Snows at McMurdo Station for the dedication of a 95-year-old altar from St Saviour's Church, West Lyttelton, where men from the Discovery and the Terra Nova worshipped before they sailed south. The Governor-General presented the altar to Captain Shoemaker on behalf of the people of New Zealand.

Later in the day the Vice-Regal party went to Arrival Heights, 3km north of Scott Base, an electrically quiet area where ionosphere research is in progress. The party also visited the Scott Base Ski Club's chalet and saw the New Zealand-United States survival training team at work.

BULLDOZER DRIVER

In the evening the Governor-General flew his flag on a D4 bulldozer when he drove it a short distance over the sea ice at McMurdo Sound in front of Scott base. The D4 was making the last cargo train trip across the sea ice to the geological drilling camp at Butter Point.

Sir David Beattie presented his flag to the cargo train driver, John Flintoft, an Army plant operator, of Linton, and his escort and mechanic, Chris Mitchell, of Hunterville. In exchange they gave him a Kiwi Cargo, Ross Dependency, patch bearing a bulldozer insignia. Then after the Vice-Regal driver's short stint the cargo train moved off with the flag flying proudly at the rear of the D4.

Most of November 21 was spent at the Amundsen-Scott South Pole Station. The Vice-Regal party flew there early in the morning on a United States Navy VXE-6 Squadron ski-equipped Hercules captained by the squadron's commanding officer, Commander Matthew Radigan. His crew included a woman pilot, Lieutenant Paula Hubbard, and an RNZAF pilot, Flight Lieutenant Brian Grierson.

A temperature of minus 47deg Celsius greeted the visitors when they arrived at the Pole Station shortly before noon. They were given a conducted tour of the station and its laboratories, and saw American scientists at work.

While he was at the Pole the Governor-General sent a message to the Queen from the bottom of the world. In it he noted the convergence there of many great traditions, and New Zealand and United States co-operation, and recalled the achievements of Captain Scott and other Antarctic pioneers, and Rear-Admiral Byrd's flight in 1929.

GIFT OF CRAYFISH

Six New Zealand field parties had cause to be grateful that the Governor-General visited the Chatham Islands before he went to the Ross Dependency. He visited all the parties bringing gifts of Chatham Islands crayfish and a bottle of whisky for each of them.

A United States Navy helicopter took the Governor-General and his party on November 22 to Vanda Station in the Wright Valley where they had lunch. Then the party flew to the Taylor Valley, another of the dry valleys in Victoria Land, and on to the drilling camp at Butter Point. On the way back to Scott Base the party visited the New Zealand biological station at Cape Bird, and the huts built by Shackleton at Cape Royds and by Scott at Cape Evans.

On their last day in the Ross Dependency — November 23 — the Vice-Regal party visited McMurdo Station. There the visitors were briefed on the United States research programme and the United States Navy's facilities, and also visited the Eklund Biological Laboratory and the National Science Foundation administration building.

Before he flew back to Christchurch in the evening the Governor-General sent a message to the Queen from Scott Base: "Your subjects in the Ross Dependency which is the southernmost part of the Queen's realm send their loyal greetings to Your Majesty on the occasion of the visit to the Antarctic of the New Zealand Governor-General. Base staff also recall with pleasure the visit last year of His Royal Highness Prince Edward."



Round world flight over both Poles

A 40-year-old Californian woman pilot, Mrs Brooke Knapp, completed a flight round the world over the North and South Poles last month. With a crew of three co-pilots and a mechanic she flew 48,120km in her twin-engined Gulfstream III business jet American Dream II, and covered the distance in 85hr 1min 44sec. She left Los Angeles on November 14 and returned on November 18.

Mrs Knapp's Gulfstream was the sixth aircraft since 1965 to fly over both Poles and only one of four permitted to land at McMurdo Station. One of the seven attempts failed in 1970 when Max Conrad's twin-engined Piper Aztec crashed at the South Pole on January 23 five minutes after takeoff from Punta Arenas.

With a target of 61 hours the flight plan provided for only nine refuelling stops after takeoff from Los Angeles. They were: Honolulu, Pago Pago, Christchurch, McMurdo Station, Punta Arenas (Chile), Recife (Brazil), Tenerife (Canary Islands), Trondheim (Norway), and Fairbanks (Alaska). There was one delay of 21 hours at Recife when the aircraft had to return shortly after takeoff because of trouble with the landing gear. The crew had to await the arrival of a technical team from the United States to check the gear.

Mrs Knapp and her crew spent only 25 minutes in New Zealand. The aircraft arrived just before 9 a.m. on November 16. It was refuelled and checked, loaded with about 135kg of Antarctic survival gear, and the crew was briefed on the weather south to McMurdo Station.

By 2.20 p.m. the Gulfstream III was on the ice of Williams Field. It was refuelled again and took off an hour later for the 5467.78km flight over the South Pole to the Chilean city of Punta Arenas — the most southerly city in the world. There the aircraft was 49 minutes on the ground — longer than planned.

By the time the longest leg of the trip — 5951.14km from Punta Arenas to Recife — had been completed the flight was behind the clock, and the hands slipped further back because of the

21-hour delay at the Brazilian airport. But the rest of the flight was without incident. Mrs Knapp returned home to receive a congratulatory telephone call from President Reagan — her name is Nancy — and claim 41 more aviation record to add to the 18 she holds already.

Permission to land at the McMurdo Station airfield and use its facilities is rarely given for flights unconnected with United States scientific research in Antarctica. The United States Antarctic Policy Group, which includes representatives of the State Department, of Defence, and National Science Foundation, makes the decisions. Four flights have been approved since 1968, mainly because they were non-recurring and non-commercial.

Mrs Knapp's flight was for two specified purposes — publicity and establishing records. Her aircraft also carried three passengers — a woman journalist/observer, and two photographers. Like her predecessors in 1968, 1970, 1971 (2) she was able to buy fuel at Williams Field. In addition she was loaned tents, parkas, and other survival equipment for the flight from Christchurch to Punta Arenas by the United States Naval Support Force, Antarctica.

Footnote: Mrs Knapp is a highly qualified transport pilot who runs a jet charter service with an annual turnover of more than \$5 million. Her husband is a wealthy banker who heads the Finance Corporation of America.

Vostok lowers its record

Vostok, the Soviet station on the Polar Plateau, is still the coldest place on Earth although the temperature of minus 89.6deg Celsius (minus 129.2deg Fahrenheit) recorded on July 21 this year has since been amended. Earth's absolute minimum temperature is now minus 89.2deg C (minus 128.6 F).

OPERATION GANGOTRI

Indian team to winter in Queen Maud Land

India, now a consultative member of the Antarctic Treaty, will have a permanent station at 72deg S/10deg E on the Princess Astrid Coast of Queen Maud Land by the end of next year. The station will be established this summer, and a team of 12 scientists and support staff will man it next winter.

Early this month 82 members of India's third expedition sailed south from Goa aboard the chartered Finnish cargo ship Finn Polaris. The leader is Dr Harsh Gupta, of the Department of Earth Sciences, and his team includes representatives of the Indian Army, Navy, and Air Force. Their main task will be to provide helicopter support, maintain communications, and put in a satellite communications link with India.

Scientists and support staff will spend two months in Queen Maud Land. They will work from a base a few kilometres from the Soviet station, Novolazarevskaya, and will continue projects initiated by the first two expeditions. In addition they will carry out research in several fields, including geology, geophysics, glaciology, oceanography, microbiology, meteorology, and medicine.

India's first winter team will live in Indian-made modules built to withstand extreme sub-zero temperatures and high winds. The modules are of aluminium alloys and fibreglass and have been insulated with polyurethane foam. They will be lifted from the ship after its 28-day voyage from India and taken to the station site by helicopter.

This season's expedition is expected to cost more than last season's. Operation Gangotri, led by Dr S. Z. Quasim, Secretary of the Department of Ocean Development, needed 20 men, and cost about \$US2. million. Last season's expedition of 40 men led by Mr V., K. Raina, director of the Geological Survey of India, cost \$3.5 million. To provide polar experience to the maximum number of Indian experts scientists and

service representatives will be rotated at regular intervals.

For the last two seasons India has chartered the Norwegian research vessel Polar Circle. Dr Qasim, whose department is responsible for the organisation of the Indian research programme, said earlier this year that the Indian Government was likely to buy an ice-strengthened ship next year.

In the meantime Operation Gangotri III will use the Finn Polaris, which is an ice-strengthened general cargo ship of 6762 tonnes. Built in Helsinki in 1981 she is used for the transport of paper products. She is 159m long, and has two decks. Her ice rating is 1A Super.

So far Indian air support for its Antarctic operations has been confined to Indian Navy helicopters which were carried aboard the Polar Circle. Last season's expedition established a tent camp near the ice edge, marked out a 3048m runway with powder dyes and put in large metallic markers for identification.

Provision of an air link between India and its Antarctic station depends on the availability of aircraft with long-range capacity, and the ability to operate from ice runways. India is reported to have

plans to buy Hercules aircraft, some of them ski-equipped, from the United States, but the Soviet station, Molodzhnaya, which can take heavy wheeled aircraft during the summer, is some distance from the site of the proposed Indian station, and Novolazarevskaya is not suitable for Hercules operations. Ski-equipped Hercules aircraft have to be fitted with skis for polar flying when they are built, and quick delivery is not possible.

Last season the Argentine Air Force made two non-stop flights to the Indian camp from its base on Vice-comodoro Marambio Island (Seymour Island) and dropped 1.08 tonnes of supplies. Extra fuel tanks were fitted to the aircraft for the flights over a distance of more than 3075 nautical miles to the Indian camp and back.

When the first expedition established its base camp at 69deg 59min S/11deg 07min E it put in a solar powered unmanned automatic weather station named Dakshin Gangotri 80km to the south. Last season's expedition retrieved data from the station, reactivated it, and also erected two prefabricated fibreglass huts at the site.

Bad weather caused some problems last season. A blizzard damaged the blades of one of the two helicopters and

the camp, and communications were also affected. The high frequency radio transmitter used for communications between the camp and the helicopters did not work properly, and the expedition had to use the satellite terminal on the Polar Circle. But the helicopter pilots, who flew for 28 hours continuously during the first three days, nevertheless transported 40 tonnes of supplies and equipment from the ship.

Ice samples taken in the base camp area by scientists from the Physical Research Laboratory, Ahmedabad, and the Geological Survey were brought back to India for analysis. A report released by the Physical Research Laboratory several months later said that the samples contained traces of nuclear debris from French tests on Mururoa Atoll. According to the report the samples contained "metallic spherules." They were described as young and represented "fresh precipitation."

Seven different agencies were represented in a last season's expedition which left India on December 3 and returned on March 21. The team covered 20,000km in the execution of its programme which included some mineral exploration in Antarctica.

Brazil to build modular station

Brazil, which sent two ships south last season on its first expedition to Antarctica, and is now a consultative member of the Antarctic Treaty, plans to spend 1.2 billion cruzeiros on its second expedition this summer. The Minister of the Navy (Admiral Maximiaro Eduardo de Fonzeca) has released this amount to cover the cost of establishing a modular summer station in the Antarctic Peninsula region, the operation of the research vessels Barao de Teffe and Professor W. Besnard, and the purchase of equipment and permanent supplies needed for future substantial scientific research in Antarctica.

Establishment of the modular station is expected to begin this month. A contract for building six prefabricated

fibreglass living modules at a cost of about \$US240,000 was arranged by the Ministry of the Navy with S.A.E.F.

Equipamentos Ferroviarios Ltd, a Brazilian company which manufactures railway equipment. The modules which will provide accommodation for a summer party of up to 15, and all the equipment, will be transported to the site by the Barao de Teffe.

Vice-Admiral Mucio Piragibe Ribeiro de Bakker has indicated that the station can be expanded in future seasons according to the requirements of the scientific programmes that will be established gradually in Antarctica. The exact site of the station has not been named but the Antarctic Peninsula has been chosen because it offers the greatest research potential.

When the Barao de Teffe made a preliminary survey of alternative sites for a future station last season it visited several Antarctica Peninsula bases, and then worked in the Weddell Sea and off the Princess Martha Coast of Queen Maud Land. Since then three sites have been suggested for the station — Elephant Island, Adelaide Island or Port Lockroy, Wiencke Island. This season's programme includes geological studies in the Elephant Island group.

There have been reports that Brazil will accept for future operations the Polish station, Arctowski, on King George Island in the South Shetlands. One report suggested that the station would be accepted in part settlement of debts owed by Poland to Brazil. But these reports are not supported by official statements.

POLISH INTEREST

Poland is interested in co-operation with Brazil, and has offered seven positions at Arctowski for Brazilian scientists. Also Brazil has asked the Polish shipbuilding industry to prepare a new design for the construction of a ship to support its future Antarctic research. The ship previously offered by Poland did not meet the necessary specifications. Vice-Admiral Bakker has indicated that the new ship is likely to be built overseas because Brazil has a foreign exchange credit with Poland.

Construction of an Antarctic research ship is expected to take about two years. Until then the Brazilian programme will

be conducted with the Barao de Taffe and the Professor W. Besnard. The former Thala Dan will be used for support and construction of the base — adding more modules for use by meteorology, geophysics, and geology teams — and the Professor W. Besnard will conduct oceanographic studies.

This summer the main research projects in the Brazilian programme include biology (krill, fish, and mollusca), geological studies in the Elephant Island group, atmospheric observations, and marine sedimentology. Scientists from the marine geology section of the National Department of Mineral Production, and the University of Rio de Janeiro, will take part in the marine sedimentology project.

They will be joined by scientists from the Oceanographic Institute, and the Institute of Geosciences, University of Sao Paulo.

Other institutions engaged in the programme will be the Ministry for Foreign Relations, the National Council of Scientific and Technological Development, the Space Research Institute, the Directory of Hydrography and Navigation, and the Federal Universities of Parana and Paraiba.

SIBEX PROJECT

Last season the Professor W. Besnard, which is attached to the University of Sao Paulo, undertook a marine biology and oceanographic research programme in the Bransfield Strait between the Antarctic Peninsula and the South Shetlands. This was a preliminary to Brazilian participation in the second International Biological Experiment (SIBEX) which is part of the Biological Marine Systems and Stocks Programme (BIOMASS).

This summer the Professor W. Besnard's programme will give priority to the objectives of the SIBEX programme. In addition to meeting the minimum (obligatory) sampling requirements for SIBEX which for the first summer will concentrate on the relationship between animals and the physical structure, the scientists aboard the ship will also study krill abundance and distribution in relation to other fac-

tors, krill reproduction, and development and decomposition. Krill stock identification will be done by population studies, using biochemical and cytogenetics techniques, and biomass calculation will be developed by hydro-acoustic recording.

Footnote: Brazilian expenditure on Antarctic research is difficult to relate to the United States dollar because of the frequent adjustments of the exchange

rate since a 23 per cent devaluation of the cruzeiro on February 18. When the Minister of the Navy announced the release of 1.2 billion cruzeiros the amount in U.S. dollars was more than 850,000. A devaluation of 1.9 per cent which was the 38th adjustment since February 18 became effective on November 23. In terms of the U.S. dollar the original figure has now increased to more than \$1.25 million.

ANTARCTIC TREATY

Consultative status for India and Brazil

Brazil and India became consultative parties to the Antarctic Treaty at a special consultative meeting in Canberra on September 12. This decision allowed both nations to participate fully in the 12th Antarctic Treaty Consultative Meeting (ATCM) which began the next day and continued until September 27.

Countries which have acceded to the treaty can become consultative parties if they conduct substantial scientific research in Antarctica. Brazil acceded in 1975, and sent a scientific expedition south in the 1982-83 summer. India did not accede until August 19 this year, but sent expeditions to Antarctica in the 1981-82 and 1982-83 season. Both countries plan to establish research stations in Antarctica this summer.

Some 130 delegates from 16 consultative and 11 observer nations attended the 12th ATCM. The consultative parties were Argentina, Australia, Belgium, Brazil, Chile, France, Federal Republic of (West) Germany, India, Japan, New Zealand, Norway, Poland, South Africa, United Kingdom, United States, and Soviet Union. All except Brazil and India were original signatories of the treaty which came into force in 1961.

For the first time in 22 years 11 of the 12 nations which are acceding parties to the treaty attended the ATCM as

observers. They were Bulgaria, Denmark, German Democratic Republic (East Germany), Italy, Netherlands, Papua New Guinea, Peoples Republic of China, Peru, Spain, Rumania, and Uruguay. Czechoslovakia was unable to send an observer. Also present were observers from two non-government organisations, one from the Fund of Animals with the Australian delegation, and the other from the International Institute for Environment and Development with the United States delegation.

New Zealand was represented by three delegates. They were Mr C. D. Beeby, Assistant Secretary, Ministry of Foreign Affairs, Mr R. B. Thomson, director, Antarctic Division, Department of Scientific and Industrial Research, and Mr F. Wong, assistant head, Legal Division, MFA.

Australia's Minister for Foreign Affairs (Mr W. Hayden) officially opened the consultative meeting. After the opening session Mr J. R. Rowland, of the Australian Department of

Foreign Affairs, was elected chairman.

MAIN TOPICS

Main topics on the agenda before the meeting dealt with the protection of the Antarctic environment, the effects of tourism and non-governmental expeditions in the Antarctic Treaty area, activities of countries not parties to the treaty, exchange of information, operation of the treaty system, improvement of telecommunications, and the collection and distribution of meteorological data. A paper on the uses of Antarctic ice was presented by the Australia delegation, but there was no substantial discussion of marine living resources or exploration and exploitation of mineral resources.

Questions relating to the exploitation of marine living resources are now dealt with by the Convention for the Conservation of Antarctic Marine Living Resources (CCAMLR) which held its second annual meeting in Hobart from August 29 to September 9. Negotiations to formulate guidelines to govern any exploration for or exploitation of any mineral resources found in Antarctica in future are continuing at a series of special consultative meetings.

Two special consultative meetings have been held, the first in Wellington, New Zealand, in June last year, and the second in Bonn, West Germany, in July this year. It was preceded by an informal meeting in Wellington this year. The third meeting will be held in Washington next month.

After the 12th ATCM meeting Mr Rowland described some of the issues discussed. He said that many recommendations to member governments contained concrete proposals for improving and extending co-operation in Antarctica.

MAN'S IMPACT

Special emphasis was placed on the protection of Antarctica's vulnerable environment. Practical proposals to deal with the impact of man's activities on the Antarctic were adopted. Among them were the development of procedures for evaluation of the impact of

scientific work and its related logistic support, and an examination of conduct for Antarctic stations in the light of increasing activity and technological improvements.

Implications of the increase of tourism and non-governmental expeditions in Antarctica were discussed by the meeting. There was wide agreement that while the provision of emergency assistance to private expeditions was a humanitarian obligation, it was important to impress upon organisers of them the need for careful and thorough planning and self-sufficiency. Rescue operations were costly, disruptive to scientific work, and possibly hazardous to life and equipment.

One recommendation adopted was aimed at developing the Antarctic telecommunications network to take account of increasing air and shipping activity in the region, and advantage of developments in satellite communications. Another recommendation was directed towards improving the collection and distribution of meteorological data through the world weather watch system of the World Meteorological Organisation.

Prohibitive costs and considerably technological difficulties make it unlikely that icebergs will be harvested for fresh water in the immediate future, according to the paper on the uses of Antarctic ice. Although it seems technologically possible that icebergs can be located, towed, and used for fresh water, there are considerable technological uncertainties to be tested and resolved before it will be attempted. Even at optimum efficiency the costs of towing and melting ice seem prohibitive.

Discussions on an Antarctic mineral resources regime were continued at the second special consultative meeting held in Bonn between July 11 and 22. Representatives of the 14 Antarctic Treaty consultative parties elected Dr E. F. Jung, representative of the Federal Republic of Germany, as chairman.

Good progress was made in the discussions, according to a statement issued by Dr Jung. The discussions focused on the future development of

solutions to accommodate the positions of all consultative parties, on the way in which the interests of all mankind could best be taken account of, and on such key issues as the preservation and protection of the Antarctic environment.

Special attention was paid to the objectives and principles of a future minerals regime as well as to its institutions, their membership, and functions, and their procedures.

Uruguay plans polar programme

Uruguay, which has had an Antarctic institute since 1968, and acceded to the Antarctic Treaty in 1980, plans to establish an Antarctic scientific programme by November next year. A small research station to house 12 to 15 scientists and support staff will be built on the Antarctic Peninsula. The programme proposed will include biology, geology, and meteorology, with the emphasis on biology.

Earlier this year the Uruguayan National Council for Scientific and Technical Research applied for membership of the Scientific Committee on Antarctic Research (SCAR). An application for full membership will be accepted after Uruguay has established scientific activity in Antarctica. An observer has been invited to attend the 18th meeting of SCAR in Bremerhaven, West Germany, towards the end of next year.

Last month a Uruguayan Government representative Lieutenant-Colonel Omar Porciuncula y Lamela, who is an associate of the Uruguayan Antarctic Institute, spent two weeks at Scott Base as a guest of the New Zealand Antarctic Division to observe New Zealand operations in Antarctica, and to assess logistic requirements for his country. When he returned to New Zealand he said that he intended to recommend that equipment and materials for the Uruguayan Antarctic programme be obtained as much as possible in New Zealand.

While he was at Scott Base Lieutenant-Colonel Porciuncula took part in the survival training course run jointly as part of the New Zealand-United States research programme, studied the base building programme, and visited the CIROS (Cenozoic

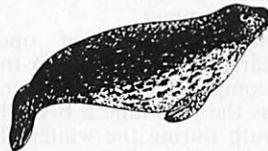
Investigations in the Ross Sea) geological drilling camp under construction at Butter Point. He also studied some of the biological projects at McMurdo Station.

Lieutenant-Colonel Porciuncula paid particular attention to accommodation provided at Vanda Station and the Butter Point camp. His studies of base activities included transport, medical services, fire security, and building construction.

Uruguay's active interest in Antarctica began in 1956 when a technical committee was set up to advise the government on any possible rights the country could claim. An Antarctic Institute was established in 1968, and in 1970 a decree set up a Commission for Antarctic Studies under the Foreign Ministry.

The decree refers generally to Uruguay's rights in the polar region south of the American continent, based on historical geographical arguments.

Since then eight Uruguayan scientists have gained experience with the Chilean programme. In the 1981-82 season two Uruguayan Air Force officers visited McMurdo Station and the Amundsen-Scott South Pole Station and studied the United States research programme under the auspices of the National Science Foundation.



New chairman of R.D.R.C.

New Zealand's Ross Dependency Research Committee, which is responsible to the Minister of Science and Technology for formulating the Antarctic research programme, has a new chairman. He is Dr Trevor Hatherton, director of the Geophysics Division, Department of Scientific and Industrial

Research, who was previously vice-chairman.

Dr Hatherton, who was chief scientist for New Zealand Antarctic programmes during the International Geophysical Year (1957-58) and wintered at Scott Base in 1957, succeeds Sir Holmes Miller, who had been chairman since 1970 and a committee member since 1958. Sir Holmes Miller was deputy leader of New Zealand section of the Commonwealth Trans-Antarctic Expedition from 1955 to 1958.

BAS NEWS

Satellite links to ships and bases

A major increase in research programmes, particularly in the earth sciences and marine life sciences, has been made by the British Antarctic Survey this summer. It is able to spend more on research and equipment as the annual budget of six million sterling has been raised to 10 million for the 1983-84 season. Included in the field programme are a joint geological/geophysical project south from the Ellsworth Mountains with United States scientists, starting this month, and a winter cruise by the Royal Research Ship John Biscoe as part of the long-term Offshore Biological Programme (OBP) which was completed early in October.

This summer the new Halley Station on the Brunt Ice Shelf off Coats Land will be completed at a cost of about 1.5 million. Satellite communications equipment for voice, telex, and facsimile links with BAS headquarters in Cambridge has been installed at Halley and Signy in the South Orkneys, and in the RRS John Biscoe and Bransfield. It will be installed also at Faraday in the Argentine Islands and Rothera on Adelaide Island this summer.

Normal summer relief operations began early in October when the John Biscoe completed its first winter cruise. This was the first time a BAS ship had been south during the winter although another British research ship, Discovery II, circumnavigated the continent in the

winter of 1932.

In late July the John Biscoe arrived at Grytviken to begin its first task, the South Georgia zone survey, in Cumberland East and West Bays. This included oceanographic stations and an acoustic survey of krill. Interesting data and material were obtained in spite of high winds and problems with the equipment, but the zooplankton standing crop was low. The survey terminated after 25 days when the ship had to take a medical emergency case to the Falkland Islands.

For the second part of the programme the scientists concentrated on individual krill patches. The ship headed for Elephant Island, another area where krill are normally abundant in summer.

Again krill and zooplankton were not found in any quantity in spite of a search lasting 20 days and covering 160 square nautical miles north of the island, and a 2 by 440nm zig-zag transect of the Scotia Sea.

After a nine-day study of plankton in Cumberland East Bay, South Georgia, the John Biscoe proceeded to Montevideo. She arrived there to pick up summer field workers and cargo and disembark most of the OBP biologists who were then on their way home.

Little sea ice was encountered by the ship on her voyage south with the newcomers and cargo bound for Damoy air facility, Wiencke Island (off the west coast of the Antarctic Peninsula) to await transport to Rothera Station and remote work sites. The John Biscoe arrived at Damoy on October 26, and the refuge hut and the snow airstrip were found to be in good condition. But severe weather hampered cargo handling and forced the ship to move out to sea twice.

As sea ice conditions were favourable, geological landings were made on the Biscoe Islands and the Argentine Islands, and fuel was delivered to Faraday Station. An attempt was made to reach Rothera but conditions deteriorated, and it was impossible for the ship to proceed beyond northern Adelaide Island.

After the ship turned north again men and cargo were landed at Damoy by November 10. Then the John Biscoe continued on to Punta Arenas, the Chilean port of Tierra del Fuego, to effect a change-over of ship's officers for the second part of the eight-month voyage. Geological landings were continued last month in a number of areas to enable the geologists to fill in gaps in the existing maps.

On November 3 the Bransfield sailed from Southampton. Early this month she relieved the winter team of three men at the Bird Island biological station, which is at the north-western extremity of South Georgia. Then she sailed south by way of Signy for Halley where she was due on December 23.

For seven weeks the Bransfield will remain at Halley to assist in the transfer

of equipment from the old station to the new (14km away) which was built last summer. Then the old station will be closed down.

Last winter there were 66 men at BAS stations, including the three on Bird Island. Of these 13 were at new Halley and 15 at the old station. There were 12 men at Faraday, 12 at Rothera, and 11 at Signy.

Operations by the three BAS Twin Otter aircraft will cover a wide area this summer. Two will be used throughout December and January on the joint geological/geophysical projects with the Americans. Air support will also be given to BAS parties continuing work on the Ronne Ice Shelf, the Antarctic Peninsula south and east of Marguerite Bay, Alexander Island, and the George VI Ice Shelf.

Bad weather further south held up the three aircraft at Punta Arenas for two weeks. They left Britain in mid-October and eventually arrived at Rothera at the beginning of November to start ferrying men and supplies from Damoy almost immediately. Preparations for their arrival had included the annual transport of 1000 drums of fuel from the station to the piedmont airstrip 5km inland.

For the third season the airstrip is being used by Chilean aircraft as a staging post for flights further south. In the 1981-82 season Chilean Air Force Twin Otters made geophysical flights to Siple Station, and reconnaissance flights over Charcot Island, south-western Alexander Island, and the southern end of the Larsen Ice Shelf.

In mid-November one BAS Twin Otter flew to the Chilean Rodolfo Marsh Station on King George Island to pick up BAS scientists who were en route to Rothera. Also at the same time BAS men were flown by Chilean helicopter to inspect the old British stations, Horseshoe Island and Adelaide. These are used during the summer months, and the buildings were found to be in good condition.

Fitting out of the new complex of buildings at Halley was continued throughout the winter and was nearly completed by the end of last month. The

new station was visited by a number of parties from the old station. They went not only to admire such hitherto-unknown luxuries as the lift for moving heavy equipment but also to begin meteorological observations in October and construct aerials for the ionospheric programme.

Some men also managed field excursions in the spring. One party reached the Low Ice Shelf, 80km to the east, in October, and a second party travelled another 50km to the Stancomb-Wills Glacier. All geophysical programmes were continued during the winter and spring.

Satellite communications equipment

installed at Signy and Halley last season to link the bases with headquarters in Cambridge has proved extremely successful. The facsimile facilities are a particularly valuable addition as they allow the transmission of such things as ionograms, scientific abstracts, circuit diagrams, and medical X-rays. The transmission of real-time data from the Halley observatory now enables day-to-day supervision of Antarctic programmes by senior staff at Cambridge.

Satellite equipment has been now installed in the Bransfield and the John Biscoe. It will be added to Faraday observatory and Rothera during this summer.

N.Z. South Georgia Expedition will try again

After more than four years of planning the privately-organised New Zealand South Georgia Expedition 1983-84 was cancelled for this summer early last month. The expedition, led by Dr Ian Turnbull, of the New Zealand Geological Survey, Dunedin, was to have spent December and January on the island; now it plans to investigate less expensive and more convenient transport for the 1984-85 season.

Originally the expedition intended to reach South Georgia by way of Britain, Dakar, Ascension Island, and the Falkland Islands by courtesy of the Royal Air Force and the Royal Navy. With help from research institutions the four members of the expedition were able to raise enough money to travel from New Zealand to Britain and back, and pay for food and equipment. Then they were advised that the expedition would have to meet the cost of its return transport between Britain, Port Stanley, and South Georgia.

A week before the expedition's planned departure from Auckland on November 7 there were hopes that some of the extra cost might be met. Alternative bookings for the party to leave Ascension Island on December 29 were available but one member of the expedition had to be back in New Zealand for

the first week in February.

Support for the expedition came from the New Zealand Alpine Club, the Trans-Antarctic Association, the British Antarctic Survey, the British Foreign and Commonwealth Office and Ministry of Defence, and the New Zealand Department of Scientific and Industrial Research. Financial contributors included the Otago University Science Foundation, the Trans-Antarctic Association, British Airways, the Alpine Club, the National Museum, and the New Zealand Oceanographic Institute.

All experienced mountaineers, the expedition members are: Dr Turnbull, aged 34; Alan Knowles (34) of Wellington, a photo-journalist and television researcher, who is deputy leader; Dr David Craw (30), an Otago University geology lecturer; and Peter Johnstone (44), a biometrician with the Ministry of Agriculture and Fisheries, Dunedin.

Objectives of the expedition are to carry out geological mapping and sampling, comparing the geology of the island with similar rock formations found in Antarctica and New Zealand. This work will help unravel the history of the ancient land mass of Gondwanaland.

IWC MEETING

Four nations to end all whaling

Chile and Peru, two of the five whaling nations which filed formal objections to the International Whaling Commission's decision last year to end all commercial whaling as from the 1985-86 season, now intend to cease their activities. In addition, Brazil, which voted against the ban, and Spain, have told the IWC they will stop whaling by 1985.

Support for a negotiated end to all coastal and pelagic whaling was maintained at the 35th annual meeting of the IWC in Brighton, England, from July 18 to July 23 this year. Three of the 38 members, the Soviet Union, Japan, and Norway, did not withdraw their objections to the worldwide ban on all commercial whaling. Under IWC rules whaling nations have 90 days from the date of a decision by the commission to object to it. The objectors are not bound by last year's resolution, which was adopted by 25 votes to seven.

Last year Chile was one of five nations which abstained from voting on the issue. Later in the year it lodged an objection to being allocated a zero quota for Bryde's whales, although it had not used its quotas to kill any in 1981 and 1982. But this year it withdrew its objections and announced that it had decided to give up commercial whaling immediately.

Peru, which voted against the ban last year, also objected to a quota of 165 Bryde's whales for 1983. At this year's meeting it withdrew its opposition to the ban, and was allowed to retain a quota of 165 for 1984. Spain voted for the ban, and, like Peru, will give up commercial whaling by 1985.

This year the IWC reduced the catch quotas for whale stocks of all species in the Northern and Southern Hemispheres from 11,855 to 9875. This is the first time in 36 years that the quotas have dropped below 10,000.

Norway, one of the objectors last

year, has announced that it will continue to hunt minke whales in coastal waters and on the high seas in the North-eastern Atlantic after 1985. Last year it assured the IWC meeting that it would take no more than 1690 minke whales in 1983. This year its quota for 1984 has been reduced to 635.

This year the IWC set a zero quota for sperm whales in 1984, but the decision is subject to consideration at next year's meeting. For the 1983 coastal season the catch limit was fixed at 450. Sperm whales are hunted mainly in the North Pacific.

Most of the minke whales are caught in the Southern Hemisphere by Japanese and Soviet factory ship expeditions operating in the Antarctic. Small quantities are also caught in the North Atlantic and off the coasts of Norway and West Greenland.

For 1984 the minke whale quota for the six separate Southern Hemisphere areas was reduced from 6826 to 6655. The Area IV quota of 1969 was increased to 1995, the largest reduction being in Area V from 1896 to 1376.

Norway's minke whale quota in the North-east Atlantic was reduced from 1690 to 635. The West Greenland catch limit was reduced from 444 to 300 but a block quota of 588 was fixed for 1984 and 1985 with a maximum catch of 300 in any one year. The central stock catch limit was reduced from 300 to 291.

No change was made in the catch limits for the Okhotsk Sea/West Pacific minke whale stock which remains at

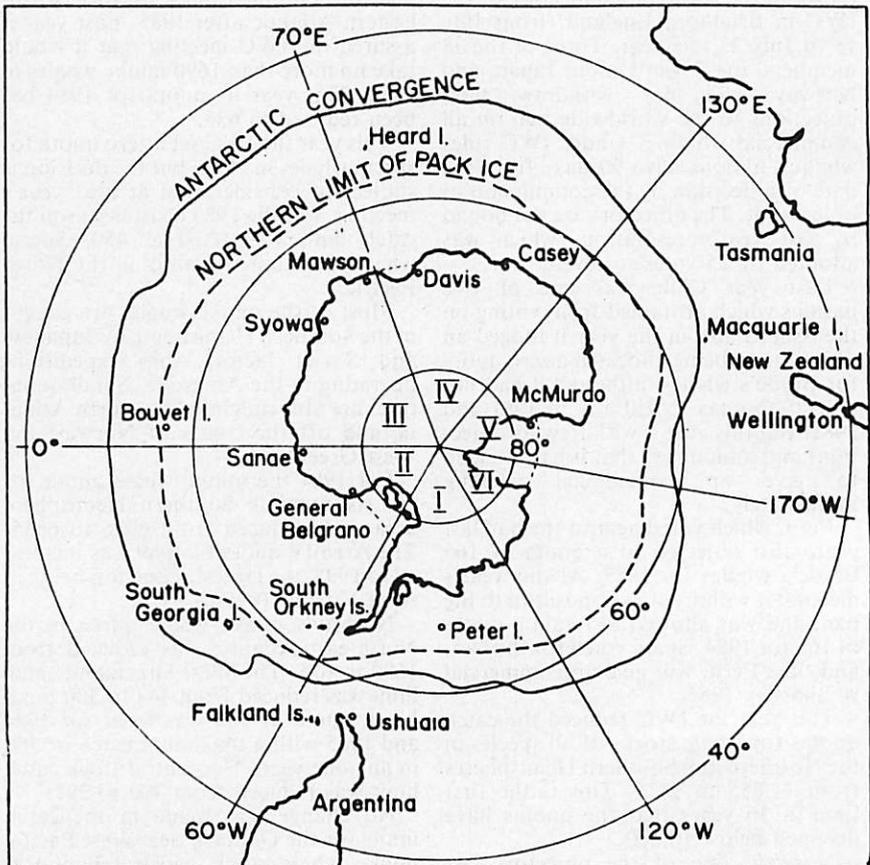
421. Some change is likely in the present catch limit of 940 for the China Sea stock, and the remainder of the existing block quota may be taken in 1984 and 1985.

There were no changes in the catch limits for the Peruvian stock of Bryde's whales in the Southern Hemisphere. Peru objected to a quota of 165 for 1983, but withdrew its objection and was permitted to keep the present quota for 1984. The catch limit of 536 on the North Pacific stock was unchanged but the East China limit was reduced from 10 to zero.

As in previous years the catch limit for the Iceland/Denmark of 179 fixed

for gray whales. Like the humpback and the bowhead they are protected but small catches are allowed under the aboriginal section of IWC regulations for subsistence whaling. This year the humpback limit was reduced from 10 to nine.

For several years the IWC scientific committee has recommended that subsistence whaling by Alaskan Eskimos should cease because their main catch, the bowhead whale, is one of the most endangered species. Last year the catch limit of 17, part of a three-year quota, was unchanged. This year after long discussion the IWC decided to fix a two-year quota of 43 with a maximum catch



of 27 bowheads in any one year.

Quotas for whale stocks of all aspects in the Northern and Southern Hemispheres set by the IWC show a reduction from 11,855 to 9875 for the 1984 season. Total catch limits by species for 1984 compared with the 1983

figures in brackets are: Sperm, zero subject to further decision (450) minke, 8302 (11,221); sei, 100 (100); fin, 293 (293); gray, 179 (179); Bryde's 701 (711); humpback, 9 (10); bowhead, 27 (17) aboriginal catch.

Minke whale assessment cruise

Scientists from Argentina, Australia, Japan, New Zealand, the Soviet Union, and the United States, took part in the International Whaling Commission's 1984 research cruise to assess the population of minke and other whales last season. They spent two months in the Ross and Amundsen Seas and off the coast of Marie Byrd Land working aboard three whale catchers, two from Japan and one from the Soviet Union.

An Australian biologist, Durant Hambree, formerly of the Western Australia Museum, who has participated in five previous cruises, led the 1983-84 cruise to survey Area V (130deg E/170deg W) and Area VI (170deg W/120deg W). He also led the 1982-83 cruise to survey Area I (60deg W/120deg W). New Zealand's representative this summer was Paul Ensor, of Christchurch, who took part in the 1980-81 survey of Area V, and the 1982-83 cruise in Area I.

Last season's programme was the sixth in the IWC project which is part of the International Decade of Cetacean Research (IDCR). The main purpose of the research is to provide accurate scientific data on the numbers of minke whales in the Antarctic region. Since 1979 they have been the only large whales permitted to be caught by pelagic whaling fleets under IWC regulations.

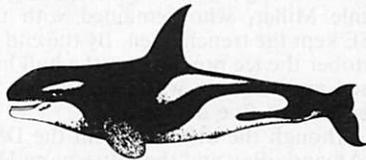
A decline in minke whale population was detected in the mid-70s in Area IV (70deg/130deg E), but the means of data analysis were inadequate to deal with statistics compiled in the early 1970s. This led the IWC to establish the series of research cruises which began in Area IV during the 1978-79 season, and continued in Area III in 1979-80, Area V in 1980-81, Area II in 1981-82, and Area I in 1982-83.

With experienced international crews

aboard the four catchers sailed from Wellington, New Zealand, at the end of December. They cruised along the edge of the pack ice and offshore, and then returned to Wellington early in March. Information on minke whales was obtained using sighting and marking techniques, and detailed information was gathered on all other species of cetaceans sighted.

Three Japanese whale chasers and one from the Soviet Union took part in the cruise. The Japanese ships were the Kyo Maru 27, the Shonan Maru, and the Shonan Maru. Like the Kyo Maru 27 the Soviet chaser, Vdumchiviyi 34 took part in the 1980-81 cruise.

In the 1982-83 survey of Area I the 10 scientists who worked aboard the Shonan Maru and the Shonan Maru II, and the Soviet chaser Vdumchiviyi 34, sighted 4113 minke whales. Other sightings included three blue whales, 28 fins, four sei, 64 humpbacks, two right whales, 475 killer whales, 229 beaked whales, 29 pilot whales, and 68 dolphins.



RAUER ISLANDS

David Lewis leads 50-day spring journey

A major spring journey of 50 days over rough sea ice south of the Rauer Islands in the south-east part of Prydz Bay, East Antarctica, was completed on October 28 by four members of the Oceanic Research Foundation Expedition led by Dr David Lewis. Using a snowmobile and hauling sledges the party travelled to Amanda Bay, Hovde Island (69deg 15min S/76deg 52min E) and the Larsemann Hills from the 21m auxiliary schooner Dick Smith Explorer which has been locked in the ice of Prydz Bay for more than seven months.

Science projects undertaken by David Lewis, the American anthropologist, Mimi George, Gill Cracknell, the English geomorphologist, and the Danish naturalist, Jannik Schou, on the journey included Emperor penguin counts at the Amanda Bay rookery, and Weddell seal tagging in the Larsemann Hills area. The party also observed seabirds, collected lichens and mosses, and counted Adelie penguins.

Since late March the Dick Smith Explorer has been in her winter anchorage — a small shallow bay off Filla Island, the largest of the Rauer Islands, which is about 55.5km from Davis, the Australian mainland base in the Vestfold Hills area. From April onwards thickening ice exerted pressure on the ship, and when David Lewis and his companions made their first field journey between July 27 and August 15 the expedition ship had tilted 10 degrees to starboard.

Ice pressure was eased by cutting a trench in the ice on the port side. During the main journey the two Australians, Norman Linton Smith, radio operator and base engineer, and the geologist, Jamie Miller, who remained with the DSE kept the trench open. By the end of October the ice pressure on the hull had eased and the ship was returning to an even keel at five degrees.

Although the distance from the DSE to Amanda Bay and the Larsemann Hill

is 70km in a straight line the snowmobile driven most of the time by Mimi George covered 343km to complete the main journey. The party had to cope with rough ice, whiteouts, temperatures down to minus 25deg Celsius, and a blizzard which lasted for three days.

FIRST JOURNEY

To prepare for the main journey David Lewis and his companions made a route-finding reconnaissance of rough sea ice in the berg field west and south of the Ranvik Glacier (66deg 07min S/77deg 35min E) encompassing Svenner Island 22.5km south-west of the Rauer Islands, and extending to the smooth ice strip in front of the Brattstrand Bluffs and Amanda Bay. This strip joined smooth ice clear to the Stornes Peninsula in the Larsemann Hills area.

A supply dump was laid at the tip of the Ranvik Glacier during the journey, which took 20 days, and the party reached the first bluff south of the glacier on foot. Lichens were collected from an island just offshore, and one Weddell seal was tagged. Four fish specimens were caught, and a preliminary identification suggested they were *Pleuragramma antarctica*.

In the third week of August all hands were kept busy spring cleaning the DSE and re-organising the storage of food

and equipment. August 22 was a windless day with a temperature of minus 11deg C so everyone celebrated the occasion by visiting the ice edge two miles west of the anchorage.

Six more fish specimens were obtained on August 24 but they were not frozen. Jannik caught them from the comfort of the galley. He fed his line through the vent into the trench in the ice alongside the DSE.

A gale on August 25 broke out new ice in front of the Sorsdal Glacier but the ice to the south remained intact. This was encouraging because of the plans for the southward spring journey.

MORE SUNLIGHT

Fine weather early in September and increasing sunlight brought hundreds of seals out on the ice, and the number tagged rose to more than 150. Scientific work continued with hydrophone recordings of seals under the ice, meteorological recordings, and fishing. Norman Linton Smith was kept busy with engine oil changes.

An inspection of the DSE showed that she had reacted well to the winter ice pressure. Her tilt had increased only marginally to 7.5deg and the bow had been pushed up nearly a metre.

From the end of August to the first week of September the expedition tagged 94 Weddell seals along the ice edge west of Filla Island. Nine fish specimens were caught in August and 12 in September.

David Lewis and his party began the spring journey on September 9. For the first eight days the team attempted unsuccessfully to penetrate rough sea ice offshore, and after camping 13km offshore during a blizzard, were compelled to seek a route south among jumbled iceblocks and pressure ridges off Ranvik Glacier near the depot and camp established on the reconnaissance journey.

UNSTABLE ICE

After several days' reconnaissance the team traversed the 10km to smooth ice in five days, spending three nights uncomfortably close under unstable ice

cliffs while everyone chipped and built a road through the worst part of the ice. While Mimi drove the snowmobile with its heavily loaded sledge the others pushed or walked ahead to indicate the track in a whiteout.

By September 27 the party reached the Emperor penguin rookery at Amanda Bay. Gill and Jannik counted 2339 chicks and 2448 adults. The mortality count was 42 chicks and 63 eggs. A tent was pitched by the penguin track and in 24 hours 908 Emperors were counted going to the sea 40km away, and 558 returning. Their speed over a distance of 5km was timed at 2.5km an hour.

After six days taping penguin vocalisations, filming and photographing rookery behaviour, and collecting lichens, the party continued for 28km to the Larsemann Hills where it spend 13 days. The first Weddell seal pups were born on October 6 by a crack between bergs just offshore. Dozens more followed the next week. Jannik and Gill tagged 103 Weddells, 21 of them pups, Mimi recorded seal sounds above and below water and filmed newborn pups, and lichens were collected from the plateau to the outer islands.

Several very dubious anchorages were examined and photographed, and the party began its return journey on October 16. It was able to camp for six days 6.4km outside Amanda Bay where 205 Weddells, 94 of them pups, were tagged, making 344 for the whole trip. David and Mimi counted 739 Adelie penguins, mostly male, on Stodoy Island 13km from the camp at 69deg 06min S/76deg 45min E and 60 fulmars on nest sites, and collected lichens.

PENGUIN COUNTS

A hopeful winter anchorage bay was located on October 23. It was on the lee side of Brattstrandoyana Island (69deg 12min S/75deg 57min E). Access had been complicated by bergs when the DSE passed to windward of it in February. After collecting more lichens the party proceeded to camp off the Brenesholmene Islands (69deg 10min S/77deg 14min E) where 4093 Adelie

penguins were displaying themselves and mating for the camera, and 36 Weddells, 17 of them pups, were tagged. On the largest of the Brenesholmene Islands the Adelie population was 27837. The south islands gave counts of 776 and 580 respectively.

One long day took the party over its 10km road through rough ice thanks to new snow cover. Then a three-day blizzard (a peak wind of 90 knots was recorded at Davis) delayed the return from the Ranvik Glacier trip.

Observations of birds and penguins

began soon after the party's return to base. Antarctic petrels and Cape pigeons nesting on the cliffs of Filla Island were mapped and counted, and on November 4 four areas were marked out in the Adelie penguin colonies on Filla Island for monitoring productivity and mortality.

Preparation of the DSE for the expedition's summer programme was in progress early last month. David Lewis reported that the collection of lichens and mosses would be continued in the Rauer Islands.

Second oil survey programme off East Antarctica

A second three-year programme of marine geophysical surveys in the Australian and Norwegian sectors of Antarctica sponsored by the Japanese Agency for Natural Resources and Energy began on November 25 when the Japanese Metal Mining Agency's geological survey ship *Hakurei Maru* sailed from Tokyo to work off the Wilkes Land coast until March next year. In the summer of 1984-85 surveys will be continued off Australian territory from the Shackleton Ice Shelf (66deg 00min S/100deg 00min E) to Amundsen Bay (66deg 55min S/50deg 00min E), Enderby Land. The programme will end in the 1985-86 season when the *Hakurei Maru* will work in the Norwegian sector of Queen Maud Land.

Since the 1980-81 season scientists from the technology centre of the Japan National Oil Corporation have conducted geological and geophysical surveys for the Agency for Natural Resources and Energy. The first covered an area of 700,000 square kilometres in the Bellingshausen Sea, and was followed by a similar survey in the Weddell Sea in 1981-82.

Last summer the 1982-83 survey was completed in two stages. The first was in the Wilkes Basin area of the Dumont d'Urville Sea off Adelie Land, and the second was in the Ross Sea. Between December and early February the *Hakurei Maru* worked in the Dumont d'Urville Sea area for a week, and then in the Ross sea for 23 days.

In the 1984-85 survey the *Hakurei Maru* will start in the waters off the Shackleton Ice Shelf which extends from

the Queen Mary Coast of Wilkes Land. The shelf extends from 105deg E to 95deg E. Then the ship will continue around the coast of East Antarctica to Amundsen Bay which lies between the Kemp Coast and the Prince Olav Coast of Enderby Land.

New venue for SCAR

Because of financial problems the Chilean National Committee for Antarctic Research has had to withdraw its invitation to the Scientific Committee on Antarctic Research (SCAR) to hold its 1984 meeting in Santiago. The Federal Republic of Germany has agreed to bring forward its invitation from 1986-1984, and XVIII SCAR will now be held in Bremerhaven from September 24 to October 5.

ANTARCTIC SOCIETY

Vanda ice sent north for anniversary

New Zealanders in Antarctica provided ice from Lake Vanda to help the New Zealand Antarctic Society celebrate its 50th anniversary last month. Early this month the society marked the anniversary and recognised the work of the men and women who have maintained New Zealand's presence in Ross Dependency since 1957 by the gift of a painting to hang in the mess at Scott Base.

While Scott Base is the subject of the painting, the artist, Maurice Conly, has not painted the base as it is but as it was. His work shows the original base and the buildings which have gone gradually from the site since the rebuilding programme began in 1976-77. It was presented to the officer-in-charge, Mr Norman Hardie, by Squadron Leader W. Hopper, RNZAF (ret'd), president of a society which spent more than 20 years urging the New Zealand Government to establish a New Zealand scientific station in the Ross Dependency.

In Wellington where the society was founded on November 2, 1983, the anniversary celebrations began on October 27 with the launching of "Looking South," the history of the society's first 50 years, publication of which was assisted by the Department of Internal Affairs. Among those present were Dr Ritchie Simmers, a foundation vice-president of the society, and representatives of several of the Antarctic Treaty nations.

In his launching speech the Minister of Internal Affairs (Mr D. A. Highet) revealed an interest in Antarctica dating back to 1935 when his brother, Dr W. B. Highet, was associated with Byrd's second voyage of the Bear of Oakland from Dunedin to the Bay of Whales. Twenty years later Mr Highet headed the Wellington committee which worked hard to raise funds for the New Zealand section of the Commonwealth Trans-Antarctic Expedition.

New Zealand's association with Mawson's Australasian Antarctic Expedition (1911-14) was recalled at a wine

cheese evening to which members and friends were invited by the Australian High Commissioner (Mr James Webster) on November 2, the anniversary date. By courtesy of the commission the TV documentary film, "Mawson — The Survivor," co-produced by the Australian Antarctic Division and Broadcasting Commission, was screened.

Dr Simmers, one of only two surviving foundation members of the society, became a life member on November 5, the announcement being made at the anniversary dinner. He was honoured for his 50 years of continuous membership and his unabated support of the society from the beginning.

A former chairman of the Ross Dependency Research Committee and director of the Meteorological Service, Dr Simmers began his Antarctic associations as a young meteorologist when he took part in Mawson's British, Australian, and New Zealand Antarctic Research Expedition (1929-31). With him then in the Discovery was the late Sir Robert Falla, the society's president from 1949 to 1952.

When New Zealand decided to take part in the Antarctic Expedition and establish a scientific station in Antarctica the society not only gave full support to the project but also provided some of its members to go south. Two of them at the dinner were the principal speaker, Dr Trevor Hatherton, and Commander W. J. L. Smith, RNZ (ret'd).

SLEDGING FLAG

With an Otago branch member, Dr Bernard Gunn, Trevor Hatherton and Bill

Smith were members of the Ross Sea advance party in the 1955 - 56 season. They manhauled sledges nearly 483km to find a suitable site for Scott Base and a route to the Polar Plateau for laying supply depots. Their early sledging efforts were recalled when Bill Smith presented the party's New Zealand sledging flag to the society.

Wellington's celebrations ended on November 6 when a service was held in Wellington Cathedral. The contributions of Arthur Leigh Hunt, Ritchie Simmers, Robert Falla, Leslie Quartermain, and Harold Griffiths to the society in its early years were recalled, and the lessons were read by Arthur Helm, secretary of the society from 1953 to 1959, and Jeremy Sutton-Pratt, chairman of the Wellington branch. An address was given by Sir Holmes Miller, president of the society from 1960 to 1962.

ANTARCTIC ART

Canterbury celebrated the society's anniversary and its first 28 years without its chairman, Margaret Bradshaw, the first woman member to head a branch. She was at Scott Base waiting to be flown to the Ohio Range of the Horlick Mountains 550km from the South Pole.

But the celebrations in Christchurch owed much to her leadership of a hard-working committee before she flew south towards the end of October. She had little spare time because she had to plan the Canterbury Museum's geological expedition to the Ohio Range and carry on her normal duties as the museum geologist.

A major event of the celebrations was an exhibition of more than 30 paintings and sketches of Antarctic since 1901. The exhibition — the first of its kind in New Zealand — included paintings from New Zealand, Australia, Britain, and the United States by professional and amateur artists. Among them were works by Charles Reginald Ford, who was with Scott's 1901-04 expedition in the *Discovery*, Sidney Nolan, the eminent Australian painter, and Nel Law, wife of the Australian explorer Phillip Law, who

went south aboard the *Magga Dan* in the 1960-61 summer.

Mr John Coley, director of the Robert McDougall Gallery, opened the exhibition in the Canterbury Museum lounge on October 29. The opening was followed by a wine and cheese evening. Then from October 30 to November 12 the exhibition was open to the public.

AUSTRALIAN LINK

Australia's most distinguished Antarctic explorer and scientist since Mawson is Phillip Law, who was invited to be the principal speaker at the branch celebrations. Dr Law, who was director of the Australian Antarctic Division from 1949 to 1966, led expeditions which established Australia's first two bases in Antarctic, Mawson (1954) and Davis (1957) and also explored the coast of Australian Antarctic territory on several voyages.

With the help of the Australian — New Zealand Foundation and Qantas, and the support of the Australian High Commissioner, the branch was able to bring Dr Law to Christchurch. On November 2, he gave an illustrated anniversary lecture on the exploration of Greater Antarctica and the work of Australian National Antarctic Research Expeditions (ANARE) to a large audience in the Ngaio Marsh Theatre, University of Canterbury.

Large chunks of ice from Lake Vanda flown north specially for the drinks sparkled like diamonds on the tables at the anniversary dinner on November 5. A centre of attraction was an Antarctic-inspired sculpture in frozen margarine by a New Zealand Army chef, Corporal Kevin Strange. It represented a scientist with a sledge and huskies.

Dr Law was the after-dinner speaker. Then a large anniversary cake decorated with the society's badge, penguins, seals, and killer whales, was brought in to be cut by 95-year-old William Burton, now the last of Scott's men who went south in the *Terra Nova* 73 years ago. Bill Burton is a life member of the society, and joined the Canterbury branch way back in 1955.



Bill Burton cuts anniversary cake.

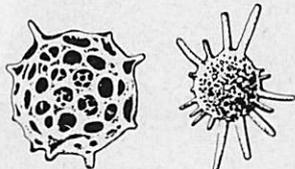
David Harrowfield photo

MINIATURE CAKE

Members of the committee did not have to save a slice of cake for their absent chairman. When one member of her geological party, Jane Newman, flew south towards the end of October she carried in her baggage a miniature anniversary cake specially for Margaret Bradshaw.

Everyone at Scott Base knew about the society's 50th anniversary. On the evening of November 2 they were able to enjoy the liquid hospitality of the Canterbury branch which was extended to them by the chairman. A permanent reminder of the occasion has been presented to the base by the branch. It is a shield bearing the society's badge and a plate recording the occasion.

Post Office staff at Scott Base were also well aware of the society's anniversary. The postmaster, Ian Sayers, and his two assistants had to frank more than



12,000 envelopes with the special date stamp issued by the New Zealand Post Office at the request of the society. Three thousand special first-day covers designed by Maurice Conly were in the franked mail sent from Scott Base to many countries.

Sir David Beattie's enjoyment of and interest in Antarctic are emphasised in the Governor-General's letter to the Minister of Science and Technology (Dr I. J. Shearer) whose department is responsible for New Zealand's Antarctic research programme. Dr Shearer has made the letter available to "Antarctic."

"My grateful thanks for making it possible for my son and me to visit Antarctica," says the Governor-General. "It was entirely successful — perfect weather, good organisation, co-operation from the Americans, and a warm welcome from all New Zealanders on the ice."

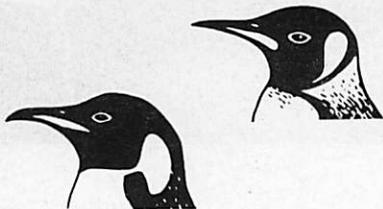
"We managed to see all our people and the field parties were pleased, I think, to get some crayfish and Scotch I had brought from the Chathams and New Zealand. Overall, a great few days!"

Antarctic appendicitis operation

A 20-year-old New Zealand soldier had his appendix removed on the night of November 3 at the McMurdo Station hospital. He was Sapper Darryl Lark, of Wellington, an apprentice carpenter at Burnham Military Camp, near Christchurch. Sapper Lark, who was flown home later last month, has been at Scott Base since October 14 as a member of the Army construction team engaged in the base rebuilding programme.

A United States Navy doctor, Lieutenant-Commander D. Brice, aided by Commander R. Skipworth, performed the operation at midnight. An anaesthetist, Dr R. C. Schneider, of Massachusetts General Hospital, Boston, who is doing research on pregnant Weddell seals, administered the anaesthetic.

Wing Commander D. Stewart, medical officer in charge of the Defence Environmental Medicine Unit, Royal New Zealand Air Force, Auckland, also assisted with the operation. He was at Scott Base earlier to do research into cold weather clothing and assess the joint New Zealand-United States survival training.



TOURISM

Cruises to end at Bluff and Cape Town

Only one Antarctic cruise ship will take tourists to see the Ross Dependency this season. The Lindblad Explorer will leave Punta Arenas, the Chilean port of Tierra del Fuego, in January, and will end its Antarctic and sub-Antarctic cruise programme at the New Zealand port of Bluff in February. This summer the World Discoverer's final cruise will end at Cape Town.

Up to 800 tourists are expected to make Antarctic cruises aboard the Lindblad Explorer and the World Discoverer between November and February. This season calls will be made at Grytviken, South Georgia, which has been under military occupation since the Falklands conflict ended. The Lindblad Explorer will make three calls, and the World Discoverer two.

On its first cruise the Lindblad Explorer sails from Montevideo, Uruguay, on November 19 and returns to Punta Arenas on December 13. The ship will visit the Falklands, South Georgia, the South Orkneys and South Shetlands, and Petermann Island.

During the second cruise which will begin at Punta Arenas on December 13 and end there on January 5 the Lindblad Explorer will go first to the South Shetlands and then to the South Orkneys. She will cruise in the South Georgia area from December 26 to December 28 and visit the Falklands on the last stage.

Between January 6 and January 28 the Lindblad Explorer will visit the Falklands, South Georgia, the South Orkneys, and then the South Shetlands. She will call at the United States Palmer Station on Anvers Island, and also call at Deception Island on her way to Punta Arenas.

When the ship leaves Punta Arenas on January 29 to visit the Ross Dependency she will go first to the South Shetlands.

After calls at Paulet and Deception Islands she will visit Palmer Station and the Argentine Islands. Then she will head for the western Ross Sea.

Before she starts her cruise off the Ross Ice Shelf in the middle of February the Lindblad Explorer will sail as far south as 77deg 15min S/170deg E. Between February 17 and 18 she will be in McMurdo Sound, and her passengers are expected to go ashore at Capes Evans and Roys to inspect the historic huts, and visit McMurdo Station and Scott Base. When she heads north the ship will cruise off Cape Hallett, Cape Adare, and the Balleny Islands. Then she will call at Campbell Island, the Auckland and Snares Islands, Stewart Island, and arrive at Bluff about February 28.

On her first cruise which will begin at Montevideo on November 30 and finish at Punta Arenas on December 16 the World Discoverer will go first to the Falklands. She will also call at Admiralty Bay, King George Island, in the South Shetlands, and at Palmer Station. Her second cruise between December 16 and January 5, which begins and ends at Punta Arenas, will include visits to the Falklands, South Georgia, the South Orkneys, Palmer Station, and Faraday, the British base in the Argentine Islands.

Between January 5 and January 18 the World Discoverer will take tourists from Punta Arenas to Anvers and Deception Islands. She will cruise off the Fildes Peninsula and then call at King George Island and Elephant Island before returning to Punta Arenas.

Cape Town is the ship's final destination on the cruise which will begin at Punta Arenas on January 18. She will go first to Anvers and Deception Islands, cruise off the Fildes Peninsula, call at Elephant Island, and then head for the South Orkneys and South Georgia.

A call at the isolated island of Tristan de Cunha in the South Atlantic is planned for February 5. Then the World Discoverer will continue on to Cape Town where she is expected to arrive on February 11.

Tourist activity in the Ross Dependency and on New Zealand sub-Antarctic islands has been controlled and monitored for several years. There are historic sites, especially protected areas, and sites of special scientific interest in Antarctica, and protected flora and fauna on the sub-Antarctic islands

which are nature reserves.

Therefore the Lindblad Explorer will carry a New Zealand guide on its last cruise of the season. Mr John Charles, of the Lands and Survey Department, who has been a senior ranger in the Arthur's Pass Park for several years, will join the Lindblad Explorer at Punta Arenas, and will also represent the Antarctic Division. He has an Antarctic background, having been deputy officer-in-charge at Scott Base for the 1976-77 summer.

READER WRITES

DISCOVERY HUT

Sir, I too, feel strongly opposed to the suggestion of erecting a plastic geodesic dome over the Discovery Hut at Hut Point and entirely support the comments of Baden Norris ("Antarctic", Sept. 1983) whose experience and awareness I respect.

Unfortunately, I suspect that before the hut was inspected by a staff member of the National Museum, some strong preconceived ideas about its future needs had already been formed.

From my observation of the hut as a caretaker in 1978 I felt the immediate problem was the deterioration of supplies from handling by visitors. Greater control and supervision of visitors was required.

Any major reconstruction or construction creates an ethical issue. Time will take its toll — this is all part of the historical process. Any effort to stop this completely or in fact reverse the process presents ethical (as well as technical) problems. I agree the problem under dispute is one of degree but a plastic dome is a vast and total alteration of the environment and mood of the place.

Yours etc.
CLIVE PATTERSON

HUT RELICS

Sir, I have in hand a copy of "Antarctic" of June, 1983, in which I find an article labelled "Ross Island's relics for museum." I wish to state the following corrections:

1. I was obliged to sell my polar books for personal reasons (unfortunately).

2. The items brought back from Mawson's, Scott's and Shackleton's huts were never for sale. They were put in the auctioneer's catalogue by mistake. When I found out about this, it was too late to make any changes. (I do not live in France anymore. I have lived in French Polynesia since 1977 and the mail takes sometimes three weeks). As a matter of fact, as you may have noticed, there was no price given for these items.

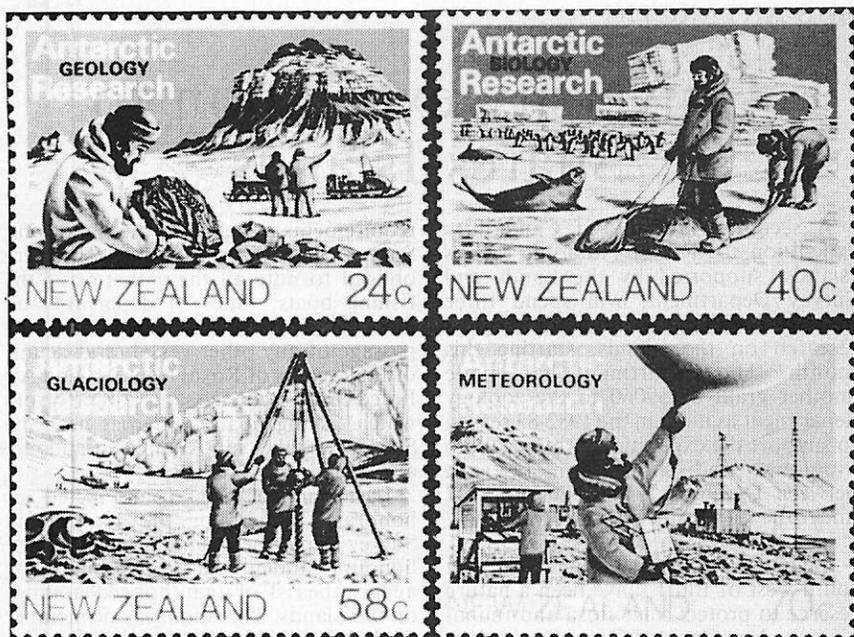
3. I always intended to give these items to museums — and have been in contact from the very first days with: Museum of Science and Technology in Paris; Wally Herbert for his explorers' museum in England; and J. C. Wilson, of the Canterbury Museum.

4. It is therefore a mistake to write: "Finally most of the relics were withdrawn from the auction..." as they were never intended for sale.

Yours etc.
PAUL-EMILE VICTOR
Honorary Director, EPF, Paris
Bora, Bora, French Polynesia

Copies of "Looking South", the society's history of its first 50 years are still available at NZ\$7.50. Orders accompanied by cheque or money order should be sent to the Treasurer, N.Z. Antarctic Society, P.O. Box 1223, Christchurch, New Zealand.

A limited number of first-day covers from Scott Base is also available at NZ\$3.00. Orders with remittance should be sent to the same address. (All overseas payments must be converted to the equivalent New Zealand currency.)



New Zealand's presence in Antarctica for nearly 30 years, and the work its scientists are doing there, will be the subject of a special topic stamp issue by the New Zealand Post Office on February 1. The four stamps depict areas in the Ross Dependency where some of the most important scientific studies in geology, biology, glaciology, and meteorology are continuing.

Geologists appear at work in Victoria Land on the 24 cent stamp. For many years they have studied the Beacon Supergroup sandstone formations, particularly those of the appropriately named Shapeless Mountain (2740m) which also appears on the stamp. It was named by a New Zealand survey party in 1957.

Seal colonies abound in the Ross Dependency and along the coast of Ross Island. New Zealand biologists have done extensive research on colonies like those depicted on the 40 cent stamp.

In the dry valleys of Victoria Land glaciologists have used the drilling equipment shown on the 50 cent stamp to obtain cores of sediments laid down

during the various epochs of Ross Sea glaciation. The study of these has increased scientific understanding of the Late Cenozoic glacial and climatic history of the dry valley region up to 65 million years ago.

Since the establishment of Scott Base in 1957 meteorological studies of the type seen on the 70 cent stamp have been conducted every year winter and summer. Data from daily observations and recordings forms part of the world weather pattern. From 1968 scientists at Vanda Station in the Wright Valley have recorded climatic variations in the dry valleys each summer.

All the new stamps have been designed by Maurice Conly, the Antarctic Division's official artist, who has spent two summers in Antarctica. The stamps will be on sale at New Zealand post offices until April 3, 1984, and available from philatelic sales centres, and the Philatelic Bureau, Private Bag, Wanganui (mail orders) until April 30, 1985, unless stocks are exhausted earlier.

SUB-ANTARCTIC

University expedition to Snares Islands

A second University of Canterbury expedition to the sub-Antarctic Snares Islands, supported by the Lands and Survey Department, will spend three months in biological and entomological research on the islands, starting this month. The department has made another grant of \$9060 to the zoology department as it did in the 1982-83 season to support the expedition, which will do long-term and short term research between December 1 and February 27 under the leadership of Mr P. M. Johns, a senior lecturer in zoology.

Since 1961 the Snares Islands, 209 km south-west of Bluff, have been a nature reserve to protect their flora and fauna. Now the New Zealand Government plans to give the group the status of a national reserve because of its immense scientific value, and the need to protect its birds and plants from introduced mammals which have not gained a foothold there.

In the last three years fishermen have visited the islands regularly to catch crayfish in the surrounding waters. The Lands and Survey Department has allowed fishing boats to moor overnight in the protected anchorage of Hoho Bay under strict conditions to minimise the possibility of rats and mice getting ashore.

Any rodents on the islands would modify the ecosystem irretrievably and cause the extinction of some endemic plant or animal species within two or three years.

With regular transport to and from the Snares by fishing boats the zoology department has been able to arrange for some members of this summer's expedition of seven, including two women, to visit the group for shorter periods. Three will stay for three months, and four will spend one month each on research.

In addition to their research and the keeping of daily weather records members of the expedition will have to comply with

requirements attached to the Lands and Survey Department's grant. They are obliged to note all the activities of the fishing boats; times of departure and mooring; state of weather and seas; the passage of any other vessel, and details of flight paths of Royal New Zealand Air Force Orion reconnaissance aircraft from which fishing boats' activities near the Snares and other sub-Antarctic islands are also noted.

Last summer Mr Johns acted as honorary ranger for the Lands and Survey Department, and he and his three honours students acted as guardians against the risk of unauthorised landings on the islands. This summer one member of the expedition as an honorary ranger is now required to examine fishing boats for rats, report any breaches of the regulations, and be prepared to assist in any prosecution.

RESEARCH PROJECTS

Research projects planned for the expedition, which is the ninth mounted by the zoology department since the first visit in 1961, include studies of the Snares crested penguin and Antarctic terns, the collection of mites and insects, and more research on the streams and seepages of the main island. A check will be made on the breeding of the Snares Island snipe, and estimates will be made of the fantail population.

Last year a census of the 111 crested penguin colonies gave a count of 12,405 adults and 10,210 fledglings. Population estimates from these figures suggested 20,000 breeding pairs, and 70,000 to 100,000 birds.

This summer Peter Carey and Peter Wilson will repeat the whole census, and make a more detailed map of the colonies. They will also make the first study of chick survival within colonies. Mr Johns will continue his own research

into insect relationships on the islands. This will include the collection of mites and insects specifically associated with the penguin colonies, and of mites associated with the fur on the underside of *Olearia* leaves.

TERN CENSUS

As well as the census of the Antarctic term population, members of the expedition will observe chicks on nests to determine the effects of weather and sea conditions on their survival. During the 1976-77 expedition 30 breeding pairs of Cape pigeons were studied on the main island and Daption Rocks. The research will be continued this summer.

During January Paul and Joy Sagar, who were members of the 1976-77 expedition will re-examine the breeding patterns of the crested penguins. Joy Sagar will also continue her studies of the streams and seepages on the main island.

In February Colin Miskelly will check on the breeding of the Snares Island snipe, continuing the study he made last summer. He will compare the results with data gained from studies of the Chatham Island snipe in December and January.

A more detailed study will be made by the expedition of rock-bound Broughton

Island (48ha), the second largest island of the group, which has one endemic species not found on the main island. Should rats or other vermin reach the main island from the fishing boat anchorage Broughton Island will provide the only haven for the endemic species of the Snares group.

To reach the remote Snares group Peter Johns, Peter Carey, Peter Wilson, and Mrs Gillian Eller, sailed there from Deep Cove aboard the Lands and Survey Department's launch Renown late last month. Mr Johns will leave on December 28 aboard the research vessel Acheron for the Auckland Islands and Campbell Island where he will continue his research until late February when he will be picked up by the Antarctic cruise ship Lindblad Explorer.

Fishing boats from Stewart Island will take Paul and Joy Sagar to the Snares where they will be from December 28 to January 30 when they will return the same way. Colin Miskelly, who will be on the Snares from January 30 to February 26, will travel by fishing boat, and with Peter Wilson, Peter Carey, and Mrs Eller, will be picked up by the Lindblad Explorer on February 26.

Research on Hooker's sea lions

Every summer since 1979-80 scientists from the Fisheries Research Division of New Zealand's Ministry of Agriculture and Fisheries have carried out a research programme in the Auckland Islands to study Hooker's sea lion (*Phocarctus hookeri*) one of only five sea lion species in the world. One purpose of the research has been to monitor the immediate and potential effects of accidental deaths of sea lions caught in trawlers' nets since a trawl fishery for squid around the islands began in 1979.

Hooker's sea lion has an estimated population of 6000 to 7000, and the main breeding rookery is on Enderby Island in the north of the Auckland group. Because of the growth of the squid fishery in which New Zealand, Japanese, South Korea, and Soviet Union trawlers take up to 30,000 tonnes a year, fisheries research

scientists have been concerned about the relationships of the sea lions to the fishery, and the mortality rates.

Research since 1979 has shown that Hooker's sea lions have a strong seasonal dependence on squid. They appear to follow trawlers to feed, dive into the nets, and sometimes get caught. Although there is a ban on trawling within 19km of the islands the squid fishing coincides with the period when female sea lions are feeding heavily on squid to nourish new season's pups. Also feeding studies have shown that sea lions will travel at least 112km to feed on squid, which is a preferred food.

After three seasons' work 900 pups have been tagged and data on growth, distribution, and age at first maturity, has been obtained. This summer Dr Martin Cawthorn and two assistants, Simon Mit-

chell and Chris Thomas, will return to the Auckland Islands to continue the Fisheries Research Division programme. They will travel to Enderby Island aboard the research vessel *Acheron* from Dunedin early next month, and will remain there until they are picked up by the Antarctic cruise ship *Lindblad Explorer* about February 26.

During the next two months the main purpose of the research will be to improve population assessments, and to try to obtain some idea of the scope of natural mortalities. The scientists will attempt to assess the extent to which incidental catches of sea lions are being reflected in the adult population.

This year's pup production will be tagged at the study site on Enderby Island. Later tag recapture and growth experiments will be conducted on pups. In addition to these and other biological jobs the team will install a data logger

designed to record weather parameters such as wind, rainfall, air and sea temperatures, and luminescence.

Last season only 200 of 400 pups born in one of the Enderby Island rookeries survived. Dr Cawthorn reported that the main causes of death appeared to be starvation and entrapment in the marshy peat soil covering most of the island. Eighty-two of the dead pups were found trapped in the peat which had been saturated by the heavy rainfall.

Dr Cawthorn said that large squid fisheries in Area E of New Zealand's Exclusive Economic Zone also affected Hooker's sea lion mortality. Vessels trawling for squid could net up to 100 a year. Females were almost certainly pregnant and suckling a pup ashore as they gave birth in December and mated again about a week after pupping. As a result each time a mature female was killed not one but three sea lions died.

Southern islands will be national reserves

New Zealand plans to give national reserve status to its five island reserves in the Southern Ocean generally known as the sub-Antarctic islands. The Snares Islands have been given national reserve status already, and next year it is proposed to add the Auckland, Campbell, Antipodes, and Bounty groups.

National reserve status provides protection equivalent to that of a national park, and gives a great level of protection though management controls and a higher level of penalties for offences. Like the Snares group the Auckland, Campbell, Antipodes, and Bounty Islands, have been nature reserves for many years.

National reserve status is considered necessary because the islands are ecologically unique natural environments with diverse endemic species of plants and animals, many of them rare. They also contribute to the global network of protected sub-Antarctic islands which are small but significant breeding areas for the wildlife of the region. Their importance is recognised by the international scientific community, and for the research opportunities they provide.

First seven U.S. ships

Twenty-eight years ago this month seven ships left the New Zealand port of Lyttelton for Antarctica to support Deep Freeze I, the first stage of United States preparations for participation in the International Geophysical Year (1957-58). Commanded by Rear-Admiral George J. Dufek, the ships of the United States Navy's Task Force 43 were the icebreakers *Glacier*, *Edisto*, and *Eastwind*, the cargo ships *Arneb*, *Wyandot*, and *Greenville Victory*, and the tanker *Nespelen*.

A plaque to commemorate the departure of the seven ships was unveiled on the Lyttelton waterfront on September 28 by Captain A. R. Champion, chairman of the Lyttelton Harbour Board. The plaque was placed on the waterfront as a result of the initiative of the Lyttelton Historical Museum and its curator, Mr Baden Norris.

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