ANTARCTIC

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A Wandering Albatross at rest on one of the Antpodes Islands in the sub-Antarctic south of New Zealand. Southern seabirds are being counted at present as part of the International Survey of Antarctic Seabirds (ISAS).

Photo: P. C. Harper

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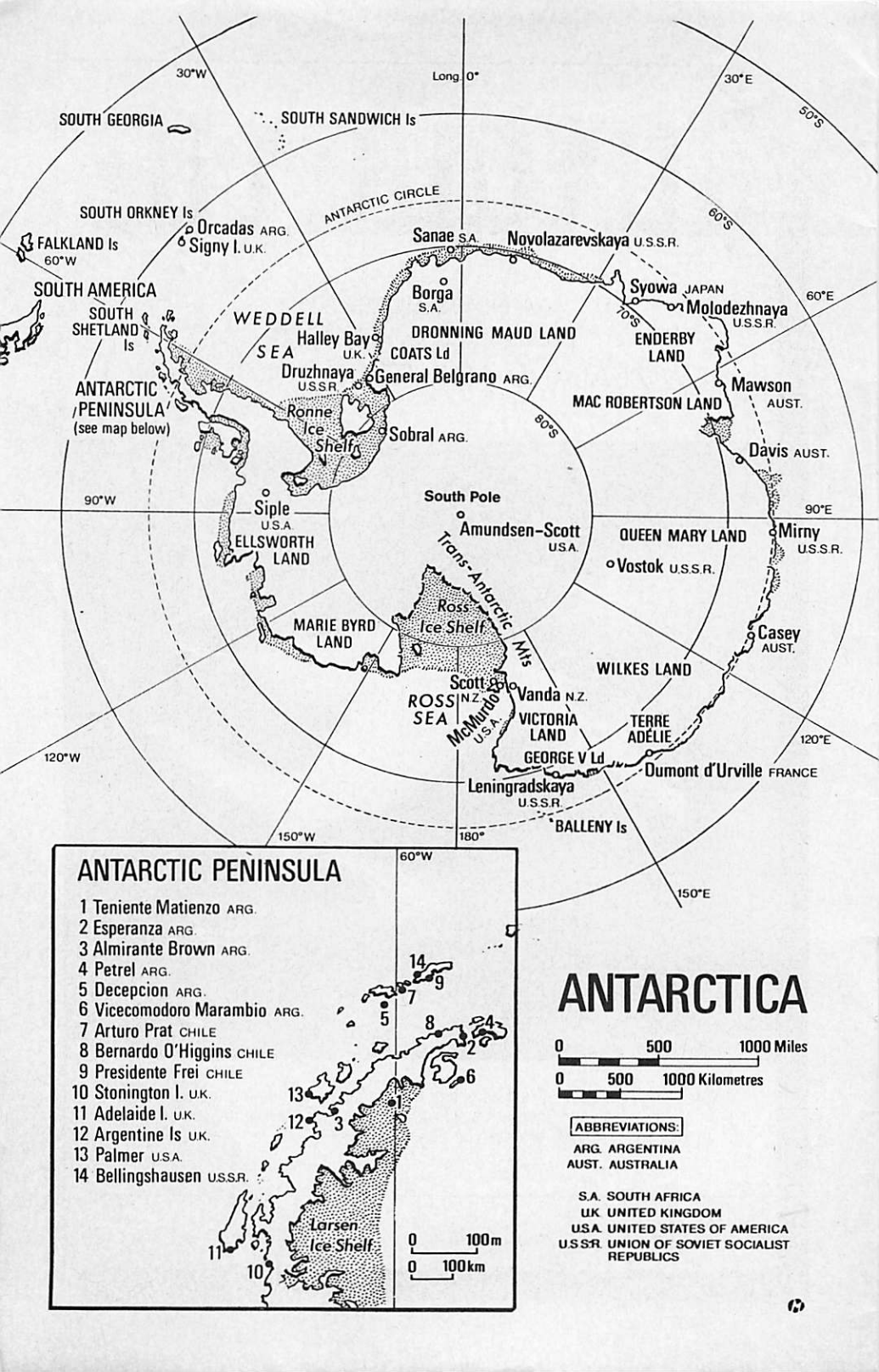
ANTARCTICA
0 500 1000 Miles
0 500 1000 Kilometres
ABBREVIATIONS:
ARG. ARGENTINA
AUST. AUSTRALIA
S.A. SOUTH AFRICA
U.K. UNITED KINGDOM
U.S.A. UNITED STATES OF AMERICA
U.S.S.R. UNION OF SOVIET SOCIALIST REPUBLICS
ANTARCTIC PENINSULA
1 Teniente Matienzo ARG.
2 Esperanza ARG.
3 Almirante Brown ARG.
4 Petrel ARG.
5 Decepcion ARG.
6 Vicecomodoro Marambio ARG.
7 Arturo Prat CHILE
8 Bernardo O'Higgins CHILE
9 Presidente Frei CHILE
10 Stonington I. U.K.
11 Adelaide I. U.K.
12 Argentine Is U.K.
13 Palmer U.S.A.
14 Bellingshausen U.S.S.R.
Larsen Ice Shelf
0 100m
0 100km
60°W
Long. 0°
30°W
30°E
50°S
60°S
70°S
80°S
90°W
90°E
120°W
120°E
150°W
180°
150°E
60°E
ANTARCTIC CIRCLE
SOUTH GEORGIA
SOUTH SANDWICH Is
SOUTH ORKNEY Is
Orcadas ARG.
Signy I. U.K.
FALKLAND Is
SOUTH AMERICA
SOUTH SHETLAND Is
ANTARCTIC PENINSULA (see map below)
WEDDELL SEA
Halley Bay U.K.
Druzhnaya U.S.S.R.
Ronne Ice Shelf
Sobral ARG.
Siple U.S.A.
ELLSWORTH LAND
Sanae S.A.
Novolazarevskaya U.S.S.R.
Borga S.A.
DRONNING MAUD LAND
COATS Ld
General Belgrano ARG.
Syowa JAPAN
Molodezhnaya U.S.S.R.
ENDERBY LAND
Mawson AUST.
MAC ROBERTSON LAND
Davis AUST.
South Pole
Amundsen-Scott U.S.A.
Trans-Antarctic Mts
QUEEN MARY LAND
Mirny U.S.S.R.
Vostok U.S.S.R.
MARIE BYRD LAND
Ross Ice Shelf
Casey AUST.
WILKES LAND
Scott N.Z.
Vanda N.Z.
ROSS SEA
McMurdo U.S.A.
VICTORIA LAND
TERRE ADÉLIE
GEORGE V Ld
Dumont d'Urville FRANCE
Leningradskaya U.S.S.R.
BALLENY Is

ANTARCTIC

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CONTENTS

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Northern Victoria Land expeditions

New Zealand's Antarctic research programme for 1981-82 will include participation in a major international expedition to Northern Victoria Land. Scientists from the United States, New Zealand, and Australia, will undertake geological, geophysical, and glaciological studies in the region.

A major field camp will be established at the head of the Canham Glacier in the Evans Neve area. Scientists and support staff will be flown there by United States Navy Hercules aircraft from McMurdo Station. Three helicopters will be used to transport field parties to various areas, and provide support for them.

Between mid-November and early January New Zealand field parties of scientists and field assistants will carry out five geological programmes. They will include scientists from United States and Australian universities.

Four of the field parties will work in the Rennick Glacier area. One, led by Dr M.G. Laird, of the Geological Survey, will study the Bowers Supergroup. Another, led by Dr R.A. Cooper, also of the Geological Survey, will study the palaeontology of the Bowers Supergroup in co-operation with Australian and United States scientists.

A former Victoria University of Wellington geologist, Dr B. McKelvey, of the University of New England, New South Wales, and a VUW geologist, will make studies of the Beacon sandstone in the Upper Rennick Glacier are. In the same area Dr G.W. Grindley, of the Geological Survey, will lead a party to make palaeontological studies.

A joint Antarctic Division-Geological Survey party led by Dr R.H. Findlay will work further north than the other field parties. It will make a structural and sedimentological study of the Robertson Bay Group.

West Germany will send another geological and geophysical expedition to Northern Victoria Land in the 1981-82 season to continue the programme begun by the GANOVEX 79 expedition in the 1979-80 season. The GANOVEX 81 programme will tie in with the work of the United States, New Zealand, and Australia expedition.

GANOVEX 81, which has been organised by the Federal Institute of Geosciences and Resources (BRG) will use the 2158-tonne cargo ship Gotland II to take the expedition south. This ship was one of the three chartered last season for the establishment of the permanent research station George Von Neumayer on the Ekstrom Ice Shelf off the Princess Martha Coast.

To support the geologists who will work again from the base camp established in the 1970-80 season at the foot of the Lillie Glacier near Mt Mulach BRG has chartered four Hughes 500 helicopters. In addition a New Zealand guest scientist and three mountaineers will take part in the expedition.

EARTH SCIENCES

Apart from the Northern Victoria Land projects the New Zealand research programme next season will include a wide range of disciplines including glaciology, vulcanology, sedimentology, oceanography, soil studies, and biology. Established atmospheric research programmes in atmospheric physics and earth sciences will be continued at Scott Base and Arrival Heights, and meterological observations will be made during the summer at Vanda Station in the Wright Valley.

Scientists will work from Scott Base and Vanda Station, in McMurdo Sound, and the dry valleys of Victoria Land. Two teams will work again on Mt Erebus, and soil scientists will carry out a project at Cape Bird on Ross Island.

Another stage in the programme for rebuilding Scott Base, which will be 25 years old next January, will be undertaken next season. A construction team will finish off the new accommodation block built last season, and prepare for stage IIIB of the rebuildiong programme—a new mess-galley-bar block.

Changes in hut policies

New policies for the preservation and maintenance of historic sites in the Ross Dependency have been decided on by the Ross Dependency Research Committee. Membership of the original huts restoration committee set up in 1974 has been increased to include the New Zealand Historic Places Trust and renamed the Historic Sites Management Committee.

This committee will draft management plans for each historic site. These will be submitted for approval to the RDRC, which has agreed already to the preparation of plans for the sites at Hut Point, Cape Royds, and Cape Evans.

As a start Mr G.A. Turner, of the Department of Lands and Survey, who is secretary of the reconstituted committee, and Mr J. Fry, a conservator at the National Museum, will inspect the historic huts on Ross Island this summer and discuss the management project with interested parties. They will go south for two weeks, probably in December.

Last year the RDRC considered a report on the historic sites prepared by Mr Turner, who is a senior planning surveyor in the Department of Lands and Survey. The purpose of the report was to prepare a strategy for the preservation and management of the historic sites, and to present objectives and policies as a framework for carrying out approved management plans. These objectives and policies have since been adopted by the Historic Sites Management Committee.

Five organisations are now represented on the committee, which is a sub-committee of the RDRC. They are the Department of Lands and Survey, the Department of Scientific and Industrial Research, National Museum, Historic Places Trust, and the New Zealand Antarctic Society.

Since 1969 the Antarctic Society has provided two volunteer caretakers for the Antarctic Division, DSIR, to work on Scott's huts at Hut Point and Cape Evans, and Shackleton's hut at Cape Royds. It also provided the volunteers for the Antarctic Division's original restoration programme for the three huts between 1960 and 1965.

No Antarctic Society caretakers have worked on Ross Island since the 1978-79 season. Two members selected, Messrs Alan Wright and Gavin Doughty, were unable to go south because of pressure on facilities at Scott Base as a result of the DC10 crash at Mt Erebus.

Last season the huts project had to be cancelled for economic reasons, but maintenance work on the huts was done by Scott Base staff as part of the summer works programme. Tourists from the World Discoverer were shown over the Cape Royds hut by the officer-in-charge at Scott Base and his deputy, and those from the Lindblad Explorer who visited all three huts were escorted by Mr John Mazey, a ranger from the Department of Lands and Survey, who had joined the ship in South America.

Many visitors to historic huts

Since 1978 there have been more than 1300 recorded visitors to the three historic huts on Ross Island. The total of 1376 does not include all the visitors to the Discovery hut at Hut Point, however, because there are no records for 1979 and 1980.

In 1978 most of the 345 visitors to Hut Point were Americans from McMurdo Station who came to the Discovery hut to look through it. The visitors' books in the huts at Cape Evans and Cape Royds show more visitors in the seasons when cruise ships call at McMurdo Sound.

This year two cruise ships, the World Discoverer and the Lindblad Explorer visited the Ross Dependency in February. More than 100 passengers and crew from the World Discoverer visited Shackleton's hut at Cape Royds. Ice and a heavy swell prevented a landing at Cape Evans. Later about 90 passengers from the Lindblad Explorer visited all three huts.

No cruise ships called last year, and there were only 95 visitors to Scott's hut and 82 to Shackleton's hut. The numbers visiting Scott's hut in 1979 rose to 260 because between 110 and 120 passengers and crew from the Lindblad Explorer came ashore at Cape Evans early in February. They went ashore at Cape Royds two days earlier but did not enter the hut.

Complete records for the period from December, 1977 to December, 1978 show that 208 people signed the visitors' book in the Cape Evans hut, and 176 visited the Cape Royds hut and signed the book. With 345 visitors to Hut Point the 1978 total, plus those recorded in December, 1977, was 729.

Snow cave site first marked in 1969

A wooden signboard placed in a stone cairn on Inexpressible Island in Terra Nova Bay by a New Zealand geological party more than 11 years ago is still there. The signboard was put there in the summer of 1969 to mark the site of the snow cave in which six men of Scott's last expedition lived for more than six months in the winter of 1912.

On January 16 this year a party from Scott Base flew to Inexpressible Island to place a plaque by the cairn to indicate that the site is one of 43 historic monuments in Antarctica preserved under the terms of the Antarctic Treaty.

Later this year a photograph of the plaque printed in several New Zealand newspapers recalled to Martin Hawke, of Rotorua, his part in the erection of the signboard. He was an Antarctic Division field assistant in a geological party which spent two months in the Terra Nova Bay area. Dr David Skinner, of the New Zealand Geological Survey, was the leader, and the others in the party were Michael Chapman-Smith (geologist) and Keith McIvor (field assistant), who died later in a climbing accident on Mt Cook.

Before the party flew to Terra Nova Bay on November 24 by a United States Navy Hercules aircraft Martin Hawke spent several hours at Scott Base carving and engraving an inscription on the signboard. The inscription, still legible after 11 winters, reads: "In the winter of 1912 Campbell, Priestley, Levick, Abbott, Browning, and Dickason, were forced to snow-cave on this site when the H.M.S. Terra Nova failed to pick them up." N.Z.A.R.P. 1969.

In 1971 Martin Hawke was in Britain. He visited Sir Raymond Priestley, last survivor of the Northern Party of Scott's expedition, and was able to tell him about the New Zealanders' visit to the snow cave site.

Blizzard stops Cape Crozier trip

Windless Bight was not early in April when four men from Scott Base and one from McMurdo Station set off on a trip to Cape Crozier. The party was caught in a raging blizzard for two days and had to return to Scott Base.

April 1 began with a clear morning and the promise of a blizzard from the weather forecaster at McMurdo Station when Allan Remnant, John Mackey, Tom Early, Robin Hodgson, and the American, Paul Wilson, left for Cape Crozier on motor toboggans. After two hours the party stopped and pitched two tents in the middle of Windless Bight 32km from Scott Base because visibility had dropped to about 15.24m.

A few hours later the wind became a raging blizzard and the party was stormbound. During the next two days the wind gusted to 76 knots at Scott Base. In Windless Bight the tents were obscured from view at some stages although only 3m apart.

When the wind died down visibility was still low, but the party made a mad dash towards Scott Base, stopping for the night when not very certain of the correct direction to go. An early start was made on April 4, and the rest of the trip was made in increasing visibility. Scott Base was almost snowbound when the party arrived home in time for breakfast.

Three weeks later Scott Base was hit by another storm. The sun set for the last time on April 24, and the next day the wind reached a maximum speed of 89 knots. Three members of the winter team were trapped at McMurdo Station, and a large amount of snow was blown into the cold porch of the base garage.

Damage was minor. The side of a case of furniture for the new accommodation block was blown out, a wannigan was tipped sideways off a sledge, and a bale of glass wool blown across the road landed on a sledge on the other side.

A parting gift from April was a cold spell with temperatures down to minus 48deg Celsius. These caused some plumbing to freeze up, and the loss of nearly all the base supply of potatoes stored in the hangar bunkroom. Much worse was the loss of 30 dozen cans of beer.

By contrast the previous month was fine although temperatures were low and the water in front of the base was frozen. Five men who made the first trip to Cape Crozier had fine weather all the way there and back.

On March 11 the party started out in a tracked vehicle driven by Allan Taylor. With him were John Sims, Stan Whitfield, Don McKnight, and Ian Johnstone. The sno-trac made slow progress in soft snow, leaving tracks more than .3m deep, but 10 hours after leaving Scott Base the party made camp just short of Cape Crozier.

In fine weather the next day the party made its first stop at Igloo Spur, site of the remains of the stone igloo built by Wilson, Bowers, and Cherry-Garrard on their winter journey from Cape Evans in 1911. After leaving the vehicle at The Knoll the party continued on foot to the base of Post Office Hill.

While Allan Taylor did some hill climbing the rest of the party took photographs, ate chocolates, and admired the view. From their vantage point they could see two large Adelie penguin rookeries, several large icebergs floating just offshore, and to the east the Ross Ice Shelf. Beaufort Island was clearly visible to the north-west.

There was no sign of any occupation of the Emperor penguin rookery. There were, however, a few Adelies at the water's edge.

On March 13 the party started the return trip at 10 a.m. in fine and sunny weather. Surface conditions were better, and the party made faster progress by keeping well out of Windless Bight.

Visibility was excellent and the party had magnificent views of the peaks and ice fields of Mts. Terror, Terra Nova, and Erebus. By 7 p.m. the men were back in the warmth of Scott Base in time for a late meal.

Causes of DC10 crash on Erebus

Neither the two pilots nor the two flight engineers of the Air New Zealand DC10 which crashed on the north-east side of Mt Erebus on November 28, 1979, made any error which contributed to the disaster, and were not responsible for its occurrence. That is the finding of Mr Justice Mahon, who headed the Royal Commission appointed by the New Zealand Government to inquire into the crash which occurred on a scenic flight to the McMurdo Sound area, and claimed the lives of 237 passengers and a crew of 20. ("Antarctic, " December, 1979. Pages 410-412).

In his report, made to the Government in April this year Mr Justic Mahon says that the single dominant and effective cause of the disaster was the mistake made by Air New Zealand officials who programmed the DC10 to fly directly at Mt Erebus and omitted to tell the aircrew. The mistake is directly attributable, not so much to the persons who made it, but to the incompetent administrative airline procedures which made the mistake possible.

Ten factors which Mr Justic Mahon says are all contributing causes to the disaster are detailed in his report. Summarised, they are:

(1) Captain T.J. Collins, pilot in command of the DC10, had complete reliance upon the accuracy of the navigation system . . . The Area Inertial Navigation System had demonstrated to him its extreme accuracy on countless occasions.

(2) Captain Collins was not supplied either in the route control unit briefing or on the morning of the flight with any topographical map upon which had been drawn the track along which the computer system would navigate the aircraft.

(3) Captain Collins plotted the navigation track himself on the night before the flight on a map or maps, and upon an atlas.

(4) The direction of the last leg of the flight path to be programmed into the aircraft's computer was changed about six hours before the flight departed.

(5) Neither Captain Collins nor any member of his crew was told of the alteration to the computer track.

(6) Checks made in flight at the Balleny Islands and at Cape Hallett demonstrated to the crew that the AINS was operating with its customary extreme accuracy, and that any cross-track drift upon arrival at the destination waypoint would not be greater than about one mile or two miles at the most.

(7) McMurdo Air Traffic Control believed that the destination waypoint of the aircraft was 27 miles west of McMurdo Station, and that the aircraft would approach at a low altitude down McMurdo Sound.

(8) Mac Centre (main radio communications centre at McMurdo Station) invited the aircraft to descend to 1500ft in McMurdo Sound for the reason that visibility at that altitude was 40 miles or more.

(9) Captain Collins accepted this invitation and made the decision to descend to that altitude.

(10) The nature of the cloud base in Lewis Bay and the unrelieved whiteness of the snow-covered terrain beneath the overcast combined to produce the whiteout visual illusion.

Appointed on June 11 last year the Royal Commission heard evidence over a period of 75 days. Mr Justic Mahon and an assisting counsel spent more than three weeks in the United States,

Canada, and the United Kingdom interviewing experts and obtaining depositions from witnesses who were unable to come to New Zealand.

From November 26 to 29 last year Mr Justice Mahon visited Antarctica. He inspected all relevant areas of the terrain, including the crash site on the slopes of Mt Erebus, and the McMurdo Station radio and radar, and air traffic control facilities.

Men honoured for work on Erebus

Three New Zealand mountaineers have been honoured for their work on Mt Erebus during the recovery of the bodies of those who died in the Air New Zealand DC10 crash on November 28, 1979. In the New Year Honours List Mr John Stanton was made a member of the Order of the British Empire (MBE), and Messrs Colin Monteath and Hugh Logan received the Queen's Service Medal for Public Services (QSM) in the Birthday Honours List this month.

Mr Monteath, field operations officer, Antarctic Division, Department of Scientific and Industrial Research, was co-ordinator of the recovery operation at the crash site. He flew south the day after the crash and worked on Erebus from December 1 to December 11 without a break.

Mr Logan was field leader of the Antarctic Division's snowcraft and survival training team at Scott Base during the 1979-80 season. He and two other mountaineers in the team, Messrs Daryll Thomson and Keith Woodford, landed at the crash site on November 29 in hazardous conditions to search for survivors. Then he took part in the recovery operation.

Mr Stanton is a highly-experienced mountaineer, who was deputy leader at Scott Base in the 1974-75 season. He led the New Zealand face rescue team, which included mountaineers with experience on Erebus in past seasons, and directed its recovery work from December 1 to December 11.

New Zealand's share in seabird survey

by
Peter C. Harper

Antarctic penguins and petrels are getting the count-down. Estimates in 1976 put the number of seabirds living in the Antarctic and sub-Antarctic at 165 million. With a collective biomass of 500,000 tonnes, these birds are believed to eat about 32 million tonnes of food annually (48 per cent crustaceans, 37 per cent squid, and about 15 per cent fish).

These are impressive, even mind-boggling figures. But how accurate are they? With international attention now focusing on the enormous marine resources of Antarctic seas, the collision course between man and polar fauna for the southern larder is a matter of international concern. Without sound resource management plans the polar ecosystem, which has had some 20 million years to perfect itself, could be headed for catastrophe.

For Antarctic birds, seas and whales krill, the shrimp-like crustacean, quite simply means survival. It is the key organism in the food web which supports higher forms of life in the Southern Ocean.

During the 1980/81 summer season, some 15 research vessels operated under the auspices of the SCAR/BIOMASS research programme in the Antarctic as part of FIBEX (First International Biological Experiment), a unique international experiment in cooperative research and data collecting. The prime objective of the programme is to gather sufficient information before intensive exploitation of krill takes place. The international survey of Antarctic birds is a non-commercial but integral part of the SCAR programme.

Dr Harper, an authority on Antarctic seabirds, is national project supervisor for the International Survey of Antarctic Seabirds (ISAS). He is on the staff of the Department of Extension Studies, University of Canterbury.

New Zealand clearly needs to be involved in this research but it has a major problem — no ship, and therefore, in the meantime at least, has to rely upon other nations for assistance. Fortunately, several nations have been quick to help, and as a result, four New Zealanders took part in the 1980/81 ISAS programme aboard British, French and Japanese vessels.

Graham Wilson undertook the 1980/81 Adelie penguin census at Cape Bird and Cape Royds as part of a long-term study begun by the University of Canterbury in 1966. After a small decline in numbers which began in 1977, the penguin populations have now recovered: the latest census figures are 36.843 for Cape Bird and 2039 for Cape Royds.

Jeni Bassett joined the British Transglobe Expeditions support ship Benjamin Bowring in Lyttelton on January 7, 1981, and spent 7½ weeks observing birds in the Ross Sea, and to and from New Zealand and McMurdo Sound. She and Graham Wilson returned to Lyttelton aboard the Benjamin Bowring on February 27, having logged 36 species of birds and filled in 3000 10-minute bird log cards to be forwarded to the ISAS data centre in South Africa.

Paul Ensor went south in the Toshi Maru II, a Japanese whale catcher, for two months observing and marking minke whales in the International Whaling Commission's third assessment survey. In addition to marking whales, he identified 37 species of birds and completed 3161 10-minute bird log cards.

An ornithologist from the National Museum, J. A. Bartle, took part in the French contribution to the FIBEX programme aboard the Marion-Dufresne in the Indian Ocean. He spent 39 days at sea, with brief calls at Kerguelen and the Crozet Islands. In all, 52 species of seabird were recorded, including several not previously seen in the South Indian Ocean and 400 10-minute counts were made.

Preparations for the 1981/82 summer ornithological research programme are already well under way. Again, several nations have offered shipboard and other facilities to New Zealand ornithologists. Provided sufficient internal funds are forthcoming, New Zealand's expertise in marine bird research will again ensure another substantial New Zealand contribution to the 1981/82 ISAS programme.

Third French yacht sails to Antarctica

Another French yacht sailed from New Zealand to Antarctica last summer. The 12m steel ketch Kim, registered officially as Him, left the North Auckland port of Whangarei on December 4, called at the Chatham Islands on December 17, and reached the United States Palmer Station on Anvers Island off the Antarctic Peninsula on January 29. Her crew of four sailed north on February 2 to cruise among the islands, and then planned to winter in a small bay at 65deg S.

Kim was the third yacht to depart from a New Zealand port for Antarctic waters. The first was the 10m aluminium yacht Isatis with three mountaineers, Jean Lescure, his wife, Claudine, and her brother Jean-Marie Pare. They sailed from Lyttelton on December 3, 1978, and arrived at Palmer Station on January 15, 1979. On November 29, 1979, Charles Ferchaud and his sister, Jean-Marie, sailed their 12m steel ketch Momo from Auckland into southern waters. They reached Palmer Station on January 26, 1980. After nearly two months' cruising they were reported to have reached Cape Town on their way home to France.

Kim's crew, Michael Chopard, Claude Monchaud, Bruno Maroux, all aged 27, and Daniel Gazanion, aged 32, built their ketch three years ago to a design by Marcel Subrero. They had never sailed before, but managed to take the Kim from the south of France into the South Atlantic by way of Spain, Gibraltar, and Madeira. Then they spent eight months working in a factory on the Ivory Coast where they fitted Kim with new sails and an engine, and made self-steering equipment.

From the Ivory Coast the four men sailed to Ascension Island, then to Brazil, French Guyana, Venezuela, the West Indies, and then through the Panama Canal to the Galapagos Islands, the Marquesas, and Tahiti. They spent six weeks in New Zealand on their way to Tasmania, and came back to Whangarei in November last year.

In Tasmania the Kim's crew met Jerome and Sally Poncet, who took their yacht Damien II as far south as Marguerite Bay on the Antarctic Peninsula where they wintered in 1978. The Poncets sailed from the area in February, and after calls at Faraday (Argentine Islands) and Grytviken, South Georgia. They went on to Leith Harbour where Sally gave birth to a boy.

Later the Poncets sailed by way of the Falkland Islands (Islas Malvinas) to Tasmania. When the Kim's crew met them to obtain advice on Antarctic sailing Jerome told them that he and his wife planned to return for a two-year visit. A report in August last year indicated that the Lescures also intended to return. They planned to sail first to South Georgia, and then round the coast of East Antarctica to Adelie Land, arriving in January next year.

Confirmation of the Lescures' intention to return was received in March this year. Their yacht Isatis called at Palmer Station on February 14, and the crew of two, not named, but probably Jean Lescure and his wife, Claudine, remained for three days.

When the crew of the Kim left Whangarei they had food for 18 months, although they planned to spend only a year in Antarctica. The yacht also had a diesel fuel stove, and carried a home-made sledge and skis, and a winter tent made from strong sail cloth.

Kim anchored in Hero Inlet for three days when she reached Palmer Station. The crew were were entertained at two evening meals by the station staff before sailing on the morning of February 2. They planned to cruise north of Anvers Island, and later moor the Kim in the shallow waters of a small bay at 65deg S where the pressure of ice on the hull would be less. Then they intended to spend two months tramping to obtain material for a film and a book.

Yachting and mountaineering in the Antarctic Peninsula area have become popular with French yachtsmen in recent years. The Isatis, the Damien II, the Kotick, and the Champi, were all there in the 1978-79 season. When the Momo arrived in the 1979-80 season the Ferchauds called at Grytviken after the departure of a French marine and mountaineering expedition in the yacht Basile which spent two months climbing on South Georgia. Another French yacht, the Shieldaig also arrived at Grytviken last season.

A Spanish-owned 20m ketch cruised in Antarctic waters during February and March last year. She was the Dione, which was sailed from England by Brian Harrison, his wife Judy, and a naval architect, Guy Anderson, and reached New Zealand in January this year.

After calls at South American ports the Dione sailed from Punta Arenas to the Antarctic Peninsula area. She was not reported calling at any of the research stations, but two members of the crew went ashore, remaining only a short time because of ice conditions.

World's strongest earthquake in sub-Antarctic

A sub-Antarctic earthquake recorded in the region of the Auckland Islands on the evening of May 25 was the world's strongest in seven months. Its magnitude on the Richter scale was measured at 7.9 by the United States Geological Survey in Colorado, and at 7.3 by the Japanese Meteorological Agency. In Algeria an earthquake measuring 7.7 was recorded on October 10 last year.

When the earthquake was recorded at 5.27 p.m. New Zealand time the American and Japanese agencies placed its epicentre between 215 and 270 nautical miles south-west of New Zealand. The Auckland Islands (50deg 50min S/166deg E) are about 174 nautical miles south of New Zealand.

To the south-east of the Auckland Islands the meteorological station on Campbell Island (52deg 33min S/166deg 59min E) reported an earthquake tremor in its daily report, but it was not strong. The earthquake was followed by a Tsunami (submarine tidal wave) but at Campbell Island the height of the wave was only .3m.

In New Zealand the earthquake, shock was felt as far north as Christchurch. Buildings were shaken in Dunedin but no injuries or damage were reported. An earthquake measuring between 6.5 and 7.2 on the Richter scale was felt in New Zealand on October 12, 1979.

Nuclear fallout check

A brief attempt to detect radioactive fallout on the sea ice at McMurdo Station was made by scientists from the University of Kansas and the West German Federal Institute of Geosciences and Resources during the 1979-80 field season. No fission products were found during the survey in which an airborne gamma-ray spectrometer was used.

Fallout measurements were made in an effort to detect a supposed nuclear bomb test off the South African coast. The survey team was engaged primarily in a resource and radioactivity survey of exposed rocks in the Ellsworth Mountains.

Members of the team were Dr Edward J. Zeller (leader) and Gisela Dreschhoff, of the Space Technology Centre, University of Kansas, and Messrs Volker Thoste and Klaus Bulla (West Germany). Their project is a continuing joint research effort by the two organisations.

BAS NEWS

Two men at Rothera die in crevasse accident

Bad weather over the southern half of the Antarctic Peninsula for much of the season affected both sea and air operations by the British Antarctic Survey in the 1980-81 summer. Scientific landings from the Royal Research Ship Bransfield were delayed, flying time was reduced, and one Twin Otter was badly damaged while taking off in the Ellsworth Mountains area at the end of February.

There are 68 men wintering this year at the five main BAS stations, 15 less than last year. Fourteen are at Faraday in the Argentine Islands, 12 at Grytviken on South Georgia, 11 at Rothera on Adelaide Island, 15 at Halley, and 16 at Signy in the South Orkneys.

A recreational trip from Rothera by motor toboggan ended tragically on May 16 when two men died in a crevasse accident. They were **John Anderson**, general assistant, aged 23, and **Robert Atkinson**, cook, aged 25.

Both men were new recruits but they were with two experienced second-year men; one of them was a tractor mechanic. The four men had travelled 48km north from Rothera, using four motor toboggans, and were on their way home after having been delayed by bad weather.

They were travelling together on three of the vehicles — the fourth had been left behind because of broken tracks. The weather was overcast and visibility and surface contrast were poor.

HIDDEN CREVASSE

Because the men believed themselves to be on known safe ground on a regularly-used route the vehicles were not linked together. But, unfortunately, they were just off the route.

Anderson and Atkinson were on the second vehicle, and as they crossed a hidden crevasse the bridge collapsed and they fell to their deaths. It is impossible to recover their bodies.

Their two companions, safe but shocked, established camp (it was dark by then) and radioed to Rothera for help. A rescue party set out at daybreak the next day and escorted the men back to base.

The loss of the two men is keenly felt throughout BAS, but especially at Rothera which, like all the stations, is a small, tightly-knit community.

After relieving Halley and Signy and revisiting Grytviken, the Bransfield made a mid-season visit to Montevideo and then returned to Signy to deliver the residue of her cargo. She then began a series of biological landings which were to extend from the South Orkneys and South Shetlands to Hope Bay, and down the west coast of the Antarctic Peninsula to Rothera. Exceptionally bad weather west of the South Orkneys held her up for a few days.

Landings were later made on the volcanic Deception Island, which seemed to be quiet, and at various islands near the Argentine Islands; Faraday was revisited and the ship eventually reached Rothera on March 7.

Fuel and general cargo were discharged and the scientific landings resumed, but the latter were hampered by sea ice and strong winds. Among the places visited by biologists and geologists in the Marguerite Bay area were the Dion Islands and two other specially protected areas.

After rendezvousing with H.M.S. Endurance and embarking the remaining summer parties, the Bransfield left the area on March 16. Further landings were made on the way north, in spite of severe weather, and Faraday was revisited.

MARINE PROGRAMME

A day was spent at Deception Island and another day at Hope Bay, and the ship then sailed through Active Sound (between Joinville and Dundee Islands) to Livingston Island where further landings were made before she turned north to take some home-bound passengers to Punta Arenas.

After final visits to the Falkland Islands, Bird Island and Grytviken, the ship sailed for Rio de Janeiro. She arrived back at Southampton on May 13.

Withdrawn from the Antarctic in November because of a defective propellor, the R.R.S. John Biscoe arrived home in February. She entered dry dock immediately, and the repairs and general maintenance should be completed in time for her to sail early next season. She will then resume work on the long-term marine biological programmes which had to be abandoned in the 1980-81 summer.

Apart from towing the John Biscoe to Montevideo, flying emergency supplies to Signy, and taking the Governor of the Falkland Islands (Mr R. M. Hunt) and his wife on a visit to Faraday, H.M.S. Endurance, the Royal Navy's ice patrol ship, again gave valuable assistance to a number of BAS field parties throughout the summer.

SCOTIA SEA

Hydrographic surveys were continued in a number of areas. In the latter part of the season, priority was given to continuing a general survey of the approaches to Marguerite Bay, and also of the approaches to Rothera, within Marguerite Bay, where the Bransfield ran aground last season.

A former BAS ship, R.R.S. Shackleton, which is now operated by the Research Vessels Services unit of the Natural Environment Research Council, also went south this year and spent three months in the Scotia Sea. A team from the Department of Geological Sciences, University of Birmingham, used the ship to complete its long-term Scotia Arc project.

AIR OPERATIONS

Air operations continued until the beginning of March. Unfortunately, bad weather persisted over the southern half of the Antarctic Peninusla throughout much of the season. In the three weeks between mid-January and the beginning of February only two flights were possible, and in February only three days out of 11 spent in the Ellsworth Mountains were suitable for flying.

Nevertheless, radio-echo sounding flights totalled about 9,800 miles in 78½ hr. and extended to the Bryan Coast south of the Bellingshausen Sea and Pine Island Glacier which flows into the Amundsen Sea at about 75°S/102°W. In some areas work was possible in only two out of a total 10 weeks.

To add to the troubles, the aircraft which had been delayed at the beginning of the season hit hard sastrugi while taking off from the Mount Charity (Eternity Mountains) area at the end of February. When it landed at Rothera the nose section and ski were found to be badly damaged and could not be repaired locally, so the aircraft was dismantled and put on board the Bransfield. The other aircraft, meanwhile, ferried the remaining field parties back to Rothera and departed for Canada on March 3, flying by way of the Chilean base Presidente Frei, on King George Island, and Punta Arenas.

DIVING AT SIGNY

A new building for biological diving operations at Signy is now more or less complete. The 3-tonne recompression chamber and compressor have been installed and laboratories and workshops are being fitted out.

Work continues on diving physiology which is producing some most interesting results. These show the cooling effects of repeated aqualung diving in very cold water and have demonstrated that divers have difficulty in assessing how cold they have become.

This research, which is organised by the University of Aberdeen's Institute of Environmental and Offshore Medicine, is directly relevant to North Sea operations in which several diving accidents have been attributed to undetected hypothermia. Associated research in Scotland has included the experimental use of a respiratory gas heater to re-warm hypothermia casualties.

A new field laboratory has been set up inland from Signy Station as a refuge for biologists working on the lakes. At Faraday the work of re-cladding and generally refitting the old buildings is continuing. A desalinator installed at Rothera is now working well after initial difficulties.

NEW JETTY

At Grytviken a team of Royal Engineers has completed work on the jetty. Some idea of the magnitude of their task is given in the following newsletter:

"A team of 15 of Her Britannic Majesty's Royal Engineers (well, actually, one is in the Catering Corps) have, at no extra cost or inconvenience, escaped from the confines of their Cambridge barrcks to descend on BAS and sort out the contorted wreck that they call a jetty on South Georgia. We came complete with plant ops, chippies, divers, welder, fitter, blacksmith and cook together with all the stores and equipment necessary to build a jetty, the whole issue transported from Southampton on the Bransfield.

"To give you a scale of the work, we had about 300 tonnes of assorted stores taking up a space of nearly 200 cubic metres. This included 40 timber piles, the biggest being 18.2m long weighing about four tonnes, all the other timbers and nuts and bolts, and, of course, a Meccano-type pile-driving machine.

"Within the first month, all that we had achieved was to totally destroy the existing jetty, much to everybody's consternation, and we prayed that we would be able to rebuild it. However, with the excellent weather that we had in the next couple of months, everything started to appear much faster than expected.

"Of course, a lot more damage had been caused to the jetty in the 18 months that had elapsed between the original survey and our arrival. Fortunately, Grytviken general stores was well stocked for our needs, the storeman being very helpful."

SHIP VISITS

Among visitors to the BAS stations were the West German hydrographic research vessel Meteor which called at Signy, the cruise ship World Discoverer, the United States research vessel Hero and two French yachts, Kim and Isatis II, which visted Faraday. The two West German terrestrial biologists who worked with BAS on South Georgia, also spent some time at Signy. A party of Russians visited Halley from Druzhnaya I.

Two wild-life photographers, Cindy Buxton and a companion, who were reported to have visited South Georgia, spent the summer in the Falklands and hope to visit South Georgia next season. They will be able to use a new BAS field hut which was put up at St. Andrews Bay at the beginning of February.

HISTORIC RECORDS

A BAS microbiologist, Dr David Wynn-Williams, who was south for the summer, presented Signy with photographs of Sir Ernest Shackleton with Captain Peter Bernsten, after whom Berntsen Point was named, and Mrs Signy Sorlle after whom the island was named. He also presented a taped interview with Mrs Sorlle made in the course of his researches for a book in Norway.

Captain Bernsten, master of the Orwell, assisted in the transport of scientific staff aboard the Discovery during their whaling and oceanographic investigations in the 1927-28 season. Captain Petter Sorlle was a Norwegian whaler who made a running survey of Signy Island in the 1912-13 season.

Considerable damage has been caused by marauding seals in the whaler's cemetery at Grytviken where Shackleton is buried. Last season BAS staff working on South Georgia put the cemetery in order, as far as possible.

Veteran icebreakers sold for scrap

After more than 30 years of Arctic and Antarctic service the United States Coast Guard icebreaker Burton Island has ended her career in polar waters. She has been sold for scrap to a Californian metals corporation, which paid $261,000 for the ship.

As a United States Navy ship the Burton Island was the first American icebreaker to enter McMurdo Sound. She was there in 1947 from February 16 to 20 when she took part in Operation Highjump, and broke through the ice as far as Cape Evans. In the 1947-48 season she was the flagship of Operation Windmill, which explored the coast of Wilkes Land, and on January 29, 1948, made a second visit to McMurdo Sound, but remained there less than 24 hours.

In February the Burton Island and the icebreaker Edisto, also part of Operation Windmill, entered Marguerite Bay to assist the Ronne Antarcitc Expedition's ship Port of Beaumont, which had been frozen in for the previous winter. The Burton Island broke the ice about the ship and towed her out of the bay. Without this help the expedition would have faced a second winter on Stonington Island.

Ten years later the Burton Island sailed south again in Task Force 43 of Operation Deepfreeze. She assisted in the relief of Wilkes Station (now the Australian station Casey), and her crew were the first Americans to visit the Soviet station, Mirny. In the 1959-60 season she and the icebreaker Glacier succeeded in penetrating the ice-bound Bellingshausen Sea, and charted 120 miles of the Thurston Peninsula coastline.

In the 1960-61 season the Burton Island took two New Zealand geophysicists, A. L. Burrows and A. Hanley, to Commonwealth Bay on the George V Coast. Their mission, supported by the icebreaker's helicopter, was to determine the position of the constantly shifting South Magnetic Pole.

By the 1975-76 season the Burton Island was due to be decommissioned and her 12th voyage south was expected to be her last. But she was called back to duty in the 1976-77 season, and definitely for the last time in the 1977-78 season.

Another icebreaker sent to the breakers' yard is the General San Martin, which was replaced in the 1979-80 season after participating in Argentine Antarctic operations since 1955. She was sold for scrap last year, and was towed to Taiwan by the South African salvage tug Causeway Salvor.

A veteran United States Antarctic supply ship, the Private John R. Towle, was also scrapped last year. She was 35 years old, and between 1956 and 1976 supplied United States and New Zealand bases almost every summer. In 1976 she was placed on ready reserve standby, a prelude to scrapping, but was called out of "retirement" for one more voyage in the 1979-80 season.

South Africa's first Antarctic research and supply ship, the RSA, which made her first voyage south in 1962, and was replaced by the Agulhas in the 1978-79 season, has been given a new lease of life. She has become South Africa's first training vessel for coloured merchant seafarers.

More husky pups

This winter the husky population at Scott Base has increased from 19 to 22. In March Kiritea had a litter of eight pups by Muff. Only three survived, but they are reported to be healthy and strong.

An Alaskan name, Awuna, has been given to the male pup, and the two females have been named Amak and Tui.

Soviet research in Weddell Sea region

Soviet scientists based at Druzhnaya I, the summer station on the Filchner Ice Shelf, carried out their most significant research last season in the Weddell Sea zone. Their exploration helped to establish the principal characteristics of the geological formation in the region, and to determine, in the first approximation, the regional structures of the sedimentary cover, which is considered promising in relation to the presence of oil and gas.

This information is given in a review of the last 25 years of Soviet Antarctic research by Dr Y. Tolstikov, deputy-chairman of the USSR State Committee for Hydro-meteorology and Environmental Control. Dr Tolstikov has had a long association with polar research; he was leader of the third Soviet Antarctic Research Expedition in 1957-58.

Another result of recent Soviet research, according to Dr Tolstikov, has been the further development of the system of scientific and operational support of ship navigation, aviation, and expedition work. A computer at Molodezhnaya Station now automatically collects and processes information obtained by synoptic meteorologists and aerologists, and supplied by satellites. Information supplied by satellites is now being received by specialists at Bellingshausen Station on King George Island in the South Shetlands.

Dr Tolstikov says that an analysis of aerometeorological observation has helped to determine the regularities of the formation and variations of humidity concentration in the air and its dependence on different conditions of circulation. On the whole, the Antarctic regions, which occupy about 2.5 per cent of the territory of the planet, annually consume about 6 per cent of the excessive moisture released by the world's oceans into the atmosphere.

Scientists have established that the Western Antarctic regions are the principal "suppliers" of heat and moisture to the continent. For the last 20 years Soviet scientists have observed a rise in temperature near the surface of the earth. At the continental stations the rise in temperature was 0.5 deg Celsius, Antartic Peninsula zone up to 4 deg, and on the coast of Eastern Antarctica, 1.5 deg.

ICE SHIELD

With the help of mass-scale sonar measurements of ice cover thickness scientists have established a more accurate description of the Antarctic ice shield. The volume of the shield is equivalent to 24.9 by 10^6 cubic kilometres. Thermal drills have been used to sink 5 km of wells and to obtain samples of the ice core.

This method of drilling as well as geophysical and radiochemical methods for studying core samples and bores have created conditions for paleoclimatic research. The scientists have come to an important conclusion about the synchronous nature of the principal climatic changes of the Holocene epoch in both hemispheres. Glaciological research has proved that within the global climatic system the Antarctic regions represent a heat loss area as it annually emits 3.3×10^{22} joules of energy through radiation.

The studies of the edge zone of the ice cover of Antarctica have helped to determine the principal characteristics of interaction between ice and the ocean, and the genetic classification of the ice-covered shores of Antarctica. Scientists have learned that the ice cover has retreated along considerable sections of the coast in Eastern Antarctica, in particualar near Molodyozhnaya and Mirny Stations.

Exploration of the Southern Ocean has been effected under the POLEX-SOUTH programme, mostly within the framework of Soviet and American cooperation. In the course of this exploration scientists have determined the vertical structure of the Antarctic circumpolar current. For the first time water mass transport within the system of this current has been measured and the principal parameters of the seasonal changes of currents have been determined.

Two Soviet glaciological traverses

Two glaciological traverses were made in East Antarctica last season by scientists of the 26th Soviet Antarctic Expedition. One was to Dome B in Wilkes Land from Mirny by way of Komsomolskaya; the other was to Dome C by way of Pioneerskaya. The traverses were part of the Soviet contribution to the International Antarctic Glaciological Project.

Geological and geophysical investigations on the Weddell Sea coast and in the adjacent mountain regions were carried out from the two seasonal stations on the Filchner Ice Shelf, Druzhnaya I and II. Druzhnaya II, which is about 643km west of Druzhnaya I, was established last summer as a seasonal station, not for winter operations as reported in the March issue of "Antarctic."

In its summer operations SAE-26 employed 1400 scientists and support staff, eight ships, seven aircraft, and five helicopters. The summer activities were led by Dr V.I. Serdyukov, a deputy director of the Arctic and Antarctic Institute in Leningrad, who was with SAE-26 in 1974-76.

This winter there are 300 men at the seven permanent stations — Molodezhnaya, Mirny, Vostok, Novalazarevskaya, Bellinghausen, Leningradskaya, and Russkaya. They are headed by Dr V.A. Shamont'yev, who was with SAE-13 in 1967-69.

To supply its continental station, Vostok, and support scientific projects on the continent SAE-26 used four Ilyushin-14 twin-engined aircraft, two aging Antonov-2 biplanes, and five Mi-8 long-range helicopters. A four-engine Ilyushin-18D turbo-proper aircraft which made the first regular flight to Molodezhanya from Odessa in February with some members of the expedition, was also used in air operations last season.

Testing of a new ski undercarriage system for Antarctic operations was carried out during the season at Molodezhnaya and Vostok. A special machine developed to deal with snow condensation on the new compacted snow (snow-ice) runway at Molodezhnaya was also tested. Glaciologists investigated the snow-firn thickness on the Vostok runway, in the region of the Novolazarevskaya runway, and in the region of temporary and projected runways at Mirny

Two passenger ships, the Bashkirya and Estoniya were the first to leave Odessa last season with most of the summer staff of SAE-26. The cargo ship Kapitan Markov was next to sail from Leningrad, and was followed by the Mikhail Somov, flagship of the Soviet Antarctic research fleet. Supplies were also carried south by the cargo ship Pioner Onegi, and a Samotlar-class tanker, which delivered bulk fuel to Molodezhnaya and Mirny. Drummed fuel for Druzhnaya I was carried in other ships. Other research ships in Antarctic marine research programme were the hydro-meteorological vessels Professor Vize and Professor Zubov.

Three Soviet scientific exploration ships, and a production training vessel operated in Antarctic waters during the 1979-80 season, but not with the 25th Soviet Antarctic Expedition. The Ekvator worked in the Pacific sector, and the Yelogradovo, Professor Deryugin, and the production training vessel Professor Kozhin operated in the Indian Ocean sector.

FRG EXPEDITION

Five men at West German station

West Germany's first permanent research station on the Ekstrom Ice Shelf in Atka Bay is occupied this winter by five men — a doctor, a meteorologist, and three technicians. They will be relieved in December when the summer research team arrives. Early in April after their first month's isolation the men reported via the Martisat satellite that all was well but the weather was decidedly rough.

Construction of the new station, named George von Neumayer, was completed on February 24 when the West German flag first flew above the buildings. Severe blizzards stopped work entirely on some days, and even on sunny days there were snow flurries which made the removal of drifts a heavier task than erection of the station buildings. To complete the project in time a construction team of 40 had to work up to 18 hours a day — 6 a.m. to midnight.

Ice conditions in the Weddell Sea prevented the expedition's three chartered ships from reaching the Gould Bay area of the Filchner-Ronne Ice Shelf where the station was to be established inland and west of Berkner Island. The Norwegian polar research vessel Polarsirkel, the Gotland II and the Titan were only 108 nautical miles from their destination when the increasing heavy pack forced them to head north and then set a course for Atka Bay 650 miles to the east off the Princess Martha Coast.

This move eastward was made on January 15, and the decision to build the station at the second choice site meant the loss of 16 days of precious working time. But the race against time and the advance of winter ended on February 28 when the station's winter team began operations.

All of the summer scientific programme, which included glaciological, meteorological, and geophysical studies, was completed by February 26, and the expedition's 12 scientists spent the next few days packing their tents and equipment for loading on the ships. On March 2 the three ships sailed for home by way of Cape Town, leaving the West German flag flying bravely over the new station.

One of the busiest members of the expedition both at sea and on the ice was the medical officer, Dr Norbert Klapdor. Many of the 108 members of the expedition were seasick on the outward voyage, and again on the return trip when the ships were caught in severe gales.

Dr Klapdor's main problem on the ice was to combat the effects of the perpetual daylight. Many of the men were unable to sleep, and others were inclined to over-estimate their strength because of the euphoric state induced by the sunlight. The main item Dr Klapdor had to prescribe for the construction workers was sleeping tablets.

But Dr Klapdor could not prevent almost all the scientists going down with a a stomach bug for two days — probably caused by tinned soup. When the expedition called at the Soviet summer base, Druzhnaya I, on the Filchner — Ronne Ice Shelf he also had to treat one man there for appendicitis, and another for severe toothache.

Although most members of the expedition arrived home with colds and still suffering from the effects of seasickness, some good news awaited them. They learned that West Germany had been accepted as a consultative member of the Antarctic Treaty.

A special consultative meeting of the Antarctic Treaty nations in Buenos Aires in February admitted the Federal Republic of Germany as the 14th consultative member. Twelve nations originally signed the treaty in 1959, and Poland, which acceded in 1961, was given consultative status in 1977. West Germany acceded in 1978.

Eight other nations have acceded to the treaty since 1962, but do not have continuing scientific programmes of their own in Antarctica. They are Czechslovakia, Denmark, East Germany, Netherlands, Rumania, Brazil, South Korea, and Uruguay.

Diamonds in Antarctic meteorite

One of the iron meteorites found in the Allan Hills area of Victoria Land is diamond-bearing, according to scientists in the Department of Mineral Sciences at the Smithsonian Institution. It is only the second diamond-bearing meteorite ever found — the other being from Meteor Crater in Arizona.

Since the 1976-77 season several hundred meteorites have been collected in Victoria Land by United States-Japanese expeditions led by Dr William A. Cassidy, of the University of Pittsburgh. Specimens from different areas have been studies in several United States laboratories to establish their organic or inorganic content and terrestrial age.

In a paper submitted to the scientific journal "Nature" by Dr Roy Clarke and colleagues in the Department of Mineral Sciences at the Smithsonian Institution suggest that the diamonds in the Allan Hills meteorite (ALHA77283) must have been formed before the meteoroid entered the Earth's surface as the iron meteorite landed softly, not producing enough shock to cause the formation of diamonds.

"The most reasonable assumption is that these features (metallographic changes, diamonds and lonsdaleite) in the (iron) meteorite were produced in the meteoroid at the time of parent body breakup," Dr Clarke and his colleagues say. Analyses of other Allan Hills meteorites in the same group have confirmed long terrestrial ages for ALHA77272 (600,000 to 700,000 years) and ALHA77278 (400,000 years). These analyses have been made by scientists at other scientific institutions.

Millions of tons in krill swarm

A swarm of krill believed to be probably the largest school of sea life ever measured — 10 million metric tons — was discovered by scientists aboard the United States research ship Melville which took part in the First International BIOMASS Experiment (FIBEX) last summer. The swarm, which covered several square miles, and ranged in depth from about 18.28m to 182.88m, was measured by acoustic survey and netting techniques during three days of a research cruise north of Elephant Island in the eastern Scotia Sea.

Twenty-eight scientists from the United States, Argentina, Australia, Chile, Japan, and Norway, worked aboard the Melville during her 45-day cruise. At times their work was hampered by high winds, fogs, and icebergs. The project was headed by Dr Osmun Holm-Hansen of the Scripps Institution of Oceanography, and the cruise was financed by the National Science Foundation's Division of Polar Programmes.

Two West German research ships, the Meteor and the Walther Herwig, and a Polish vessel, the Professor Siedlecki, worked with the Melville in the FIBEX acoustic survey and the netting studies, and the scientists aboard exchanged information and data with those on the Melville. During the measurement of the krill patch 35 Soviet trawlers were sighted in the vicinity.

Many visitors to Palmer Station

Each summer Palmer Station, the United States base on Anvers Island off the Antarctic Peninsula, has more visitors than any other Antarctic station. The attractions are Arthur Harbour, the best harbour in the Antarctic Peninsula area, and the facilities for ships to take on water.

Last season Palmer Station had more than 1500 visitors who arrived aboard nine ships and icebreakers or flew in on three helicopters. The cruise ship World Discoverer made four calls, and the Lindblad Explorer three. Between them the cruise ships brought 747 people to Anvers Island.

First of the callers on December 5 was the Argentine supply ships Bahia Aguirre. Then the World Discoverer arrived on December 7. She called again on December 26, January 11, and January 29. The Lindblad Explorer's calls were on January 10 and 26, and February 7.

A four-hour goodwill visit was made on December 15 by the Royal Research Ship Bransfield on her way to relieve British Antarctic Survey bases. She returned for eight hours at the end of the season on March 20 to pick up United States cargo for delivery on her way back to Southampton. The United States Coast Guard icebreaker Polar Star stayed three days when she made her annual resupply visit on December 28.

H.M.S. Endeavour, the Royal Navy's ice patrol ship made a 12-hour goodwill visit on February 1, and a week later the Coast Guard icebreaker Glacier, which had been supporting science projects in the Bellingshausen Sea, arrived for an 18-hour stay. Two Chilean Antarctic supply ships, the Yelcho and the Piloto Pardo called on February 16 and March 8 respectively.

Smallest of the visitors were two French yachts. The first was the 12m ketch Kim, registered officially as Him, which arrived on January 29 after leaving New Zealand on December 4. Her crew of four stayed for three days. On February 14 the 10m yacht Isatis arrived. Jean Lescure and his wife Claudine, who plan to sail round the continent to Adelie Land next summer, also made a three-day stop.

Polar Sea caught in Arctic ice

When the United States Coast Guard icebreaker Polar Sea made her first voyage to Antarctica in the 1979-80 season she cut a 16.5-mile channel in McMurdo Sound through solid sea ice .9m to 2.4m thick in 16 hours. Her first winter cruise to Point Barrow in the Arctic winter was quite different. She was trapped in the ice on her way home to Seattle, and was not expected to break free until the middle of this month.

Early in October last year the Polar Sea was reported to be 80 nautical miles north of Point Barrow. Ten scientists were engaged in studies of underwater sound and oceanography in support of the United States Navy's submarine warfare programme. Five of the team were working from a camp established in mid-September on an ice floe 120 miles north of Prudhoe Bay. The others were doing oceanographic research from the Polar Sea and her helicopters.

According to American reports the Polar Sea arrived safely at Point Barrow on February 11. But on March 17 she was reported to be 155 miles west of Point Barrow and 90 miles off Wainwright, locked in ice 9.1m thick, rudderless, and drifting about 40 miles a week.

Coast Guard helicopters evacuated 50 of the icebreaker's crew, but several scientists were taken aboard to continue biological, glaciological and polar communications studies. Late in March it was expected that the ship would be released by the middle of June.

Search for minke whales in Southern Ocean

by
Paul Ensor

Last summer 10 scientists from six of the International Whaling Commission member countries took part in the third minke whale assessment cruise in the Southern Ocean south of New Zealand and Australia. The New Zealand representative was Paul Ensor, of Christchurch. In the following article, specially written for "Antarctic," he describes his work and experiences during a cruise of 58 days aboard the Toshi Maru II, one of three whale catchers provided for the survey by Japan and the Soviet Union.

The alarm rings. 0400 hours January 17, 1981. As I reach the flying bridge, the masthead lookout intercom calls "Thar she blows, port 35 degrees, 3 miles, blow . . . blow, blow, three minke whales." "Thar she blows, starboard 15 degrees, 2.5 miles." It's another day of searching for whales from the Toshi Maru II, a whale catcher chartered from Nippon Kyodo Hogei Kaisha Ltd, a Japanese whaling company, by the International Whaling Commission for the 1980/81 Minke Whale Assessment Cruise.

Conditions for finding whales are good this morning. It's overcast, calm,and the air temperature is minus 3 deg Celsius. Whale "blows" are obvious as clouds of steam above the waves. As the vessel approaches the position of the first sighting it slows and turns in a tight circle. All eyes are searching. The whales surface and "blow" at some distance on the stern quarter. The helm is thrown down and at full speed, 17 knots, the chase is on. There are many more stops, starts, circles and showers of chilling spray before the whales can be counted and their body lengths estimated.

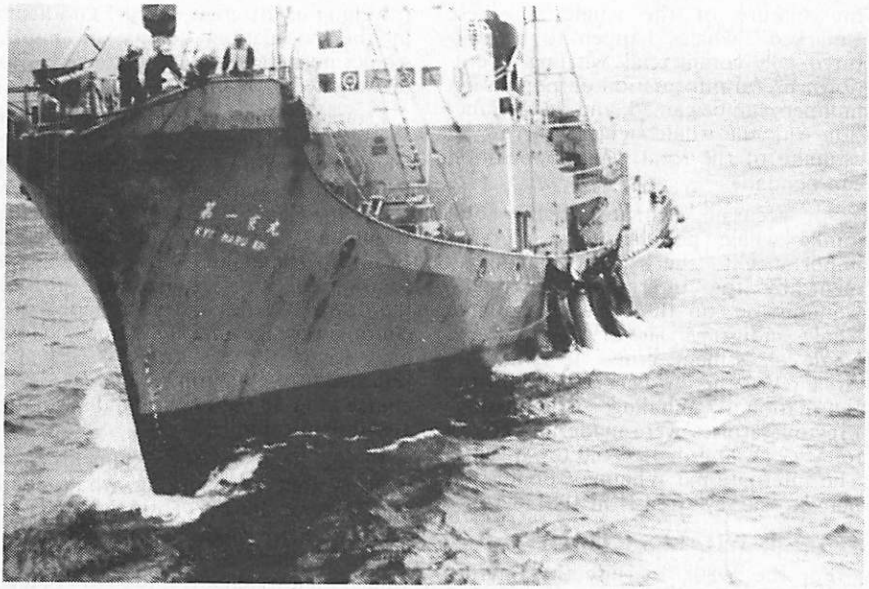
Then the lookout calls a further sighting: "Port 20 degrees 4.5 miles." There are four more sightings. Our heads turn, trying to remember and to relate bearings and distances of successive sightings to the gyro-compass and the changing horizon of waves. I hurriedly plot position, bearing, distance, numbers of whales and their body lengths.

More than an hour has passed before we make our way to the position of the last sighting but these whales are lost in the waves. No whales are sighted in the 12 nautical miles covered in the next hour of searching along the edge of the pack ice, but there are magnificent ice bergs and many seabirds — Cape pigeons, Antartic petrels and snow petrels.

PLAYFUL SCHOOL

Another school of three minke whales is seen and then in the distance two blue whales. Near to these we find a school of four blue whales; swimming slowly and playfully, they are easy to approach. The largest in the school, at 27m, is half the length of our vessel. What a beautiful sight in such calm, transparent ocean. The clouds darken and a brief snow flurry blocks our visibility, curtain-like a dramatic ending to the play of the blue whale.

We follow the pack ice edge south and by 1100 hours, Young Island, the most northerly of the Balleny Islands is eight miles to port and the pack ice edge three miles to starboard. Near the islands there are many more seabirds. Small flocks of Cape pigeons and snow petrels are splashing to the water surface to feed on zooplankton.



One of four Japanese whale catchers with the factory ship Nisshin Maru in the South Indian Ocean returns with its catch of minke whales. The photograph was taken on January 11 by Paul Ensor from the Toshi Maru II one of three whale catchers used for the International Whaling Commission's minke whale assessment survey.

Along the west shore of the Ballenys the pack ice gets too tight. We turn back. On the thick ice floes there are scattered groups of Adelie penguins and occasionally resting seals too distant to identify but probably Crabeaters. We steam north again and then along the east coast of the islands. Rounded ice-cape under puffy cumulus, wind, wave and ice-battered rock bluffs and pinnacles, shoreline bounded by ice cliffs.

Amongst scattered ice floes and small melted icebergs, we find a solitary minke whale and nearby a 20m to 21m humpback whale and calf. On this coast of the Balleny Islands, thick pack ice again blocks our southerly heading so we follow the ice edge eastwards. The heavy overcast sky fades to blue patches. During the afternoon a wind starts and sunglare makes conditions difficult for finding whales. Light-mantled sooty albatrosses and black-browed mollymawks on rigid wings enjoy the wind.

We find four schools of minke whales amongst scattered melting ice floes in a large bay in the pack ice edge. Before we can count them they swim rapidly into dense inaccessible fields of ice floes. All too soon it is 2000 hours. Time to shut down the main engines and with the vessel drifting, rocking to sleep is easy with the thought of starting searching for whales again at 0400 hours. It has been another interesting day, whale sightings: minke 16, blue 6, humpback 2.

We are now 31 days out of Wellington and from the Toshi Maru II we have carried out a whale survey on a systematic grid, north of the pack ice in the western sector of Antarctic Area V. During the survey we have had very poor weather for finding whales — many days of gales and large waves and also fog and snow.

Whenever we sight whales we try to "mark" them with "Discovery" markers. These are small numbered stainless steel cylinders. They are fired accurately at whales at close range (less than 30m) from a .410 gauge shotgun. Ideally, the markers penetrate the blubber and become embedded in the dorsal

musculature of the whale. If these "marked" whales happen to be captured in commercial whaling operations, useful information on population numbers can be gained; and, in conjunction with the whale sighting survey, an estimate of the total whale population can be made.

An accurate estimate of the total minke whale population is of vital importance to the scientifice management by the International Whaling Commission of the Antarctic minke whale industry. The 1980/81 minke whale assessment cruise to Antarctic Area V was the third such cruise for the International Whaling Commission. Previous cruises were made in 1978/79 to Area IV and in 1979/80 to Area III. The International Whaling Commission plans to survey Area II in 1981/82.

45 WHALES CAUGHT

For the 1980/81 cruise the International Whaling Commission chartered three whale catchers. Two were from Japan, the Toshi Maru II and the Kyo Maru 27, and one from the Soviet Union. Vdumchivyi 34. The Kyo Maru 27 made a survey for minke whales along the pack ice edge between 160°E and 120°E and the Vdumchivyi 34 marked whales in the same area as the Kyo Maru 27. In order to mark the greatest number of whales the Vdumchivyi was directed to areas of high whale density by the Kyo Maru 27.

Although the minke whale assessment cruise was, in essence, independent of the commercial whaling operations, all three survey vessels refuelled from the Japanese whaling factory vessel, the Nisshin Maru III in the South Indian Ocean January 11. During the day we spent aboard the vessel, about 45 minke whales were harpooned by her four whale chasers and dragged up the stern ramp to be processed.

After refuelling, all three survey vessels steamed eastwards along the pack ice edge. During this time, behavioural observation of the minke whales were made, and experiments were carried out to investigate the response of minke whales to searching vessels, and the sighting of whales from searching vessels travelling at different speeds. Gradients in the population density of minke whales near the pack ice edge were also investigated.

From the Balleny Islands, the Toshi Maru II commenced a survey for minke whales along the pack ice edge in the Ross Sea. This navigation course took us close to Cape Adare, Cape Hallett, Coulman Island, Franklin Island, Beaufort Island and Ross Island. We followed the Ross Ice Shelf eastwards to the Bay of Whales and then made a circuitous passage through thick, close pack ice in the eastern Ross Sea and returned to Wellington by a Great Circle course after 58 days at sea and steaming 10380 nautical miles.

In the Ross Sea the Vdumchivyi 34 concentrated on marking whales and was directed by the Toshi Maru II to areas of high whale density. The Kyo Maru 27 made a survey and marked whales on a systematic grid in the central Ross Sea area.

Numbers of whales observed from the Toshi Maru II during the voyage were: minke, 2759; blue, 7; fin, 38; sei, 2; humpback, 7; sperm, 51; beaked whales, 36; killer whales, 727; pilot, 125; hourglass dolphins, 6; dusky dolphins, 20. The total number of minke whales marked from the three vessels was 474.

Highlights of my time aboard the Toshi Maru II were to see most of the species of large whales of the Southern Ocean. Some of the most impressive views of these whales were obtained when they were near the vessel in large schools: 450 killer whales near Coulman Island, 118 minke whales near the Bay of Whales, and further north in the open ocean, schools of 29 fin whales and 100 pilot whales.

Many interesting seabirds were seen on the voyage and in the pack ice, and also Crabeater, Leopard, Weddell and Ross seals. Perfect Antarctic summer days were spent searching for whales along the edge of the pack ice near the Possession Islands, Cape Hallett, and around Beaufort Island, to the north of McMurdo Sound. On the Toshi Maru II the hospitality of the Japanese crew was exquisite.

Soviet ban on North Pacific whaling

Two years ago the Soviet Union indicated that it would end its whaling industry within five years, first in the North Pacific, and then in Antarctica. Now it has taken the first step; the Far Eastern whaling fleet has stopped operations and its three factory ships are being re-equipped to process fish and shellfish.

When the International Whaling Commission's scientific committee met in California at the end of 1978 Dr Vyacheslav Zemsky, leader of the Soviet delegation, told the committee of his country's plans to phase out commercial whaling. He said that seven fleets had been scaled down to four, two in the North Pacific, and two in Antarctica which took fish as well as whales. One fleet was excluded from the North Pacific in 1979.

Although the Soviet Union has suspended all whaling in the North Pacific except for limited catches of gray whales by ethnic hunters in the extreme north-east of Siberia, the statement issued in Vladivostok early this year, made no mention of any intention to stop Antarctic whaling. Soviet operations have been reduced by the IWC ban in 1979 on catching and processing of all whales except minke by factory ships, and the reduction of the 1980 sperm whale quota in the Southern Hemisphere from 4875 to 580.

Japan now operates only one fleet with a mother ship, which concentrates on minke whale hunting in Antarctic waters. The Japanese Whaling Association has announed that Japan will continue to kill whales in the North Pacific in coastal waters, using catchers along the Japanese coast.

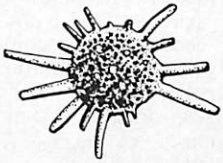
After the IWC banned factory ship whaling in 1979 Japan and the Soviet Union objected. Later the Soviet Union sought an increased quota of sperm whales to assist in the re-adjustment, but did not succeed. Since then, however, Japan has accepted the IWC decision and has agreed not to use long-range fleets in the North Pacific.

Tasmanian Antarctic Committee

Tasmania's future role in Antarctic activities will be co-ordinated by a special committee set up by the State Government. It is made up of representatives of the Premier's Department, Lands Department, Tasmanian Fisheries Development Authority, Transport Commission, and the Solicitor-General's Department

Because of Tasmania's important role in Antarctic research and development, and expected interest in the island as the base for nations involved in Antarctic research the Government has asked the committee to draft a policy on the Antarctic for consideration by the State Cabinet. This will include the co-ordination of foreign and/or joint venture operations in the Antarctic and the development of Tasmania as the focal point for such ventures.

When agreement was reached in Canberra last year on the establishment of an international regime for the conservation and rational use of Antarctica's marine living resources provision was made for an international commission signed by representatives of 15 nations. The Tasmanian Antarctic Committee will consider matters relating to the establishment of the commission.



Veterans of Heroic Age in Antarctica

An Englishman, two Australians, and a New Zealander, are the last links with the Heroic Age of Antarctic exploration. They served with Scott, Shackleton, and Mawson, and still retain their memories of historic events of more than 65 years ago although three are in their nineties, and one is 88.

William Burton, who joined the Terra Nova from the Royal Navy 71 years ago, is now the only survivor of Scott's 1910-13 expedition. He was born in London, but has lived in Christchurch for nearly 60 years.

On April 7 this year Bill Burton was 93. Three days later he was the first Antarctic veteran to be presented to the Prince of Wales, who spent nearly an hour at the Canterbury Museum talking about Antarctica with men and women who had served with later expeditions or the New Zealand Antarctic research programme.

An 87-year-old Australian, R. W. Richards, known to the Antarctric fraternity as Dick Richards, is now the last survivor of Shackleton's Imperial Trans-Antarctic Expedition of 1914-17. He was one of 10 men in the expedition's Ross Sea Party who were marooned without warning on Ross Island for 20 months and endured two bitter winters.

Dick Richards lives at Port Lonsdale, Victoria, and still maintains his interest in Antarctica, and particularly Ross Island. In a recent letter to "Antarctic" he had high praise for Maurice Conly's painting of Mt Erebus which was reproduced on a Scott Base Christmas card last year.

"It is one of the best pictures I have seen (of the many) of the dearly loved mountain for when we left the hut (at Cape Evans) it always seemed to tower over us," he writes. "This is an effect that pictures seem to fail to convey. It was our very close companion, and when it first peeped above the horizon on returning from sledging it seemed we were really home."

There are still two survivors of Mawson's Australasian Antarctic Expedition (1911-14). One is the chief magnetician, Eric Webb, who was born in Lyttelton, educated at Canterbury University College, and became a distinguished civil engineer.

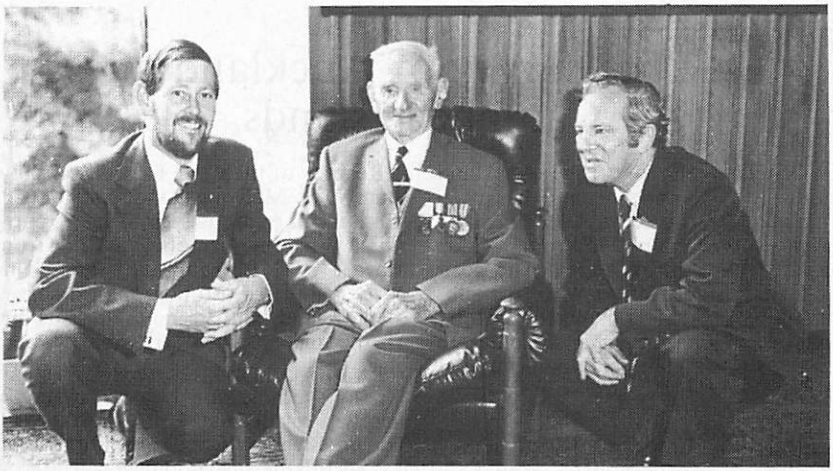
Eric Webb now lives in England, and will be 92 later this year. He was a member of the main party of the expedition based at Cape Denison in Commonwealth Bay, and on December 21, 1912, with two Australians, Bob Bage and Frank Hurley, came within 80km of the South Magnetic Pole.

In 1912 Eric Webb and the other survivor of the expedition, 95-year-old Captain Morton Moyes, were 2200km apart because the latter was one of the eight men of the western party led by Frank Wild who lived for a year and a day at the western base on the Shackleton Ice Shelf off Queen Mary Land. The two men are now even further apart, but still keep in touch.

Captain Moyes, who retired from the Royal Australian Navy after 32 years' service, served as meteorologist with Mawson's expedition. In 1916 he went south again in the Aurora with Shackleton to rescue the survivors of the Ross Sea Party. He went south with Mawson a second time in the Discovery as survey officer for the first cruise of the British, Australian, and New Zealand Antarctic Research Expedition in 1929-30.

Although Captain Moyes is unable to walk far from his home north of Sydney, and his eyesight is not as good as it used to be, he is still active in mind and spirit. Recently he spent two periods "under the lights" for an Australian Broadcasting Commission TV team which is making a documentary to mark the centenary of Mawson's birth which falls next year.

After more than 50 years there are few veterans of Byrd's first expedition in 1928-30 which marked the beginning of



Ninety-three-year-old William Burton, who is the last survivor of the crew of the Terra Nova and Scott's last expedition (1910-1913) at the Canterbury Museum after meeting the Prince of Wales. With him are David Harrowfield (left) and Baden Norris (right).

Canterbury Museum photo by Alan MacNaughton

the age of aircraft, radio, and mechanised transport in Antarctic exploration. Of the 41 men who wintered with Byrd at Little America I in 1929 only nine survive. There are also eight men, including three New Zealanders, who served aboard the expedition's ships, City of New York and Eleanor Bolling, on their voyages from New Zealand to the Bay of Whales.

Shore party veterans are: Dr Laurence Gould (geologist and second-in-command), Henry Harrison (meteorologist), Dr Frank Davies (physicist), Kennard Bubier (aviation mechanic), Edward Goodale (dog driver), Howard Mason (radio operator), Quin· Blackburn (geologist), Norman Vaughan (dog driver), and Dean Smith (pilot).

Of the eight men who served aboard the ships Edward Roos, John Bird, Percy Wallis, and Allan Innes-Taylor went south in the City of New York, and Lelan Barter, Carroll Foster, Neville Shrimpton, and John Morrison sailed in the Eleanor Bolling. The New Zealanders were Neville Shrimpton (radio operator), who lives in Nelson, John Morrison (fourth engineer), of Dunedin, and Percy Wallis (assistant sailmaker), of Auckland.

Winter vegetable grower

One of two women wintering in Antarctica this year, Dr Louise Holliday, medical officer at the Australian base, Davis, has taken up vegetable growing as a hobby for the dark winter months. Dr Holliday, whose name was changed to Halliday by a typographical error in the September issue of "Antarctica", is responsible for the health of 24 men of the winter team at Davis.

Dr Holliday is the first Australian woman to winter on the Antarctic Continent; she is not the first member of a winter team to grow fresh vegetables. The Australian Antarctic gardeners who have engaged in the hobby during past winters have had no need of soil. They have used hydroponic techniques, growing tomatoes and other vegetables in nutrient solutions under artificial light.

SUB-ANTARCTIC

Satellite survey of Auckland and Campbell Islands

A satellite survey of the Auckland Islands and Campbell Island has been completed by the Royal New Zealand Navy's survey ship Monowai, which spent five days in each area. The position of the islands on maps of the sub-Antarctic may be changed slightly because satellite surveying systems are more accurate than the conventional methods used in the first surveys many years ago.

During the Campbell Island survey the Navy hydrographers found a weather report nearly 40 years old. The summary of the weather from April, 1942 to January, 1943, and a message were in a canister on top of Beeman Hill where the landing party established a survey post.

A badly waterstained note inside the canister was signed by a man named W. S. McDougall. He was a member of the secret wartime Cape Expedition which maintained coastwatching parties on the Auckland Islands and Campbell Island from 1941 onwards to keep a lookout for enemy raiders and supply ships.

Records of the Cape Expedition show that W. S. McDougal, not McDougall, was a member of the second year's party which was on Campbell Island from March, 1942 to February, 1943. This party completed a topographical survey of the island, and Beeman Hill was one of the places where trig marks were placed.

Why the note and weather summary were left on Beeman Hill is not known. The note reads: "Cape Expedition. I am leaving this message hoping it will interest you. We left Wellington on February 25, 1942 by M.S. Ranui for Auckland and Campbell islands to relieve and take over duty."

There are also references to the landing of the first party in 1941, and the number of men at the three camps, Port Ross and Carnley Harbour in the Auckland Islands, and Perseverance Harbour, Campbell Island. The note also describes the work done by the men on Campbell Island — wireless watches and meteorological reporting, surveying, geological studies, and recording fish, bird, and animal life.

Polish fisheries research

Feasability studies of commercial fishing in New Zealand's sub-Antarctic waters have been amde by a Polish research vessel, Professor Bogucki, as a preliminary to a joint venture by the Central Fisheries Board of Poland, and two New Zealand companies, R. and W. Hellaby Ltd, and Mauri Bros and Thomson (N.Z.) Ltd. The Professor Bogucki's first two voyages from Bluff have included the sub-Antarctic Auckland Islands and Campbell Island.

Built three years ago, the 2376-tonne Professor Bogucki is named after a famous Polish ichthyologist, and is owned by the Polish Fisheries Institute. She carries two Polish fisheries scientists aboard, and is fitted with advanced fish finding and communications electronic equipment.

As a joint venture project the Professor Bogucki is operated in New Zealand by Rybex, a Polish foreign trading enterprise, the Central Fisheries Board's biggest fishing company, Dalmor Deepsea Fishing and Fishing Services Enterprises, and the two New Zealand companies. Joint venture fishing operations will start after the feasability studies are completed, probably in March next year.

Since the beginning of December last year the Professor Bogucki has completed two voyages from Bluff, which included the Auckland Islands, Campbell Island, the Pukaki Rise, and the Chatham Rise. She left Auckland at the beginning of April on her third voyage which is planned to last 55 days.

During the first two voyages the Professor Bogucki carried out trawling at 1200m, but her best catch rate was at a depth between 1000m and 1200m. The main target species was orange roughy (deep-sea perch). On later voyages the target species may include hoki, hake, ling, and southern blue whiting.

Most of the foreign fishing activity in sub-Antarctic waters of the Exclusive Economic Zone so far this year has been off the Auckland Islands. Twenty-eight trawlers were reported in the area in mid-March — 12 Soviet vessels, one Japanese, one South Korean, and 14 joint venture trawlers.

In mid-January only one Soviet trawler was fishing near the Auckland Islands, and two Japanese ships were working near Campbell Island. North of 50deg S between 170deg and 175deg E there were nine Soviet vessels. Two Japanese trawlers and one joint venture vessel were south of the Snares in Area F of the EEZ.

Six Soviet trawlers were reported in mid-February south of Campbell Island and another six were at 52deg S/174deg E. In Area E south of the Snares there were three Japanese vessels and three working for joint venture projects.

Thirty-two squid boats — 30 Japanese, one joint venture, and one South Korean were reported during mid-March south of the Snares in Area E. In addition three joint venture trawlers and two Japanese were reported.

Activity in mid-April was concentrated in the Auckland Islands area. Twenty-two trawlers were reported there — four Soviet vessels, 15 joint venture trawlers, two Japanese, and one South Korean. There was another Soviet trawler near 49deg S/170deg E, and five were working in the Campbell Island area.

Marion Island Eruption

A long-dormant volcano on Marion Island, the volcanic island in the Indian Ocean sector of the Southern Ocean, is reported to have erupted in December last year. An American report says that the eruption did not cause any injuries to the staff of the South African scientific station, and equipment and buildings were not damaged.

Elephant seals which normally feed off the shore near the volcano are reported to have scattered when the eruption occurred. But King and Macaronic penguins are said to have warmed themselves by the heat produced by the slowly flowing lava.

Marion Island, which is one of the Prince Edward Islands group, is 2300km south of Cape Town. Both Marion Island and Prince Edward Island are of volcanic origin, and geological research has shown that they are about 250,000 years old. There has been a meteorological station on Marion Island for many years, and it is also a centre for biological research in the sub-Antarctic.

U.S. research costs

Support for the United States Antarctic research programme, provided by the National Science Foundation, amounted to $55,835,945 in the 1979-80 season. Base level support cost $32,819,000, direct operational support of science projects by ship and aircraft amount to $9,011,000, and $6,630,388 was spent on major construction and procurement of materials.

Biological and medical sciences cost $1,982,995, atmospheric sciences $1,865,323, and earth sciences $1,195,365. Oceanography took $911,619, and glaciology $758,998. Information and advisory services were allocated $661,256.

OBITUARY

Charles Morgan made early seismic soundings of ice

One of the veterans of Rear-Admiral Byrd's second expedition (1933-35), who made some of the first seismic soundings of Antarctic ice, has died in the United States. He was Charles Gill Morgan, geophysicist and geologist with the expedition.

Morgan was co-leader with a physicist, Dr Erwin H. Bramhall, of the Plateau Party, which made a 1311km journey to the Rockefeller Plateau to measure ice thickness by seismic sounding, and make magnetic observations. The original plan was for the Geophysical Party, which included two Norweigan skiers and dog drivers, Finn Ronne and Albert Eilefsen, to ascend the Robert Scott Glacier after reaching the base of the Queen Maud Mountains, and determine the thickness of the Polar Plateau ice-cap.

With the Geological Party of three men led by Quin Blackburn, the Geophysical Party left Little America II on October 16, 1934. By early November the parties, using dogs, had crossed a belt of crevasses at 81deg 10min S and camped 336km from Little America II to wait for two Citroen tractors bringing 7.25 tonnes of supplies.

When the tractors ran into crevasses trouble the parties were regrouped. The geophysical equipment, which weighed 385kg, was transferred to the tractors, and Morgan and Bramhall joined the tractor drivers, E. J. (Pete) Demas, Joe Hill, and Amory Waite. On November 6 the renamed Plateau Party left 81deg 09min S, heading north and then east to avoid the crev :se belt on its way to the Rockefeller Plateau.

Bad weather, treacherous crevasses, some 9m across, and mechanical failures made the journey a gruellling one. One tractor had to be abandoned at 79deg S/150 deg 24min W, but the determined drivers battled on, and by December 14 the party had climbed more than 820m above sea level and was on the plateau. It camped at 78deg 33min S/150deg 24min W to make its observations.

Two days later the party reached the 241km depot on the eastern trail to Little America II. It left the next day after completing the seismic and magnetic work. But when only 24km west of the depot the hard-driven tractor broke down. A radio call to Little America II brought Finn Ronne and Richard Black out by dog team with spare parts on December 30.

On December 31 the tractor was running again, and at 4.30 a.m. on January 2, 1935, struggling through drift and fog, it arrived at Little America II, almost at its last mechanical gasp, but under its own paper as the crew had vowed it would. Morgan was not with the party; he made a side trip to the Rockefeller Mountains with Ronne and Black, climed Mt Nilsen, and returned on January 6.

Ice research project

Research into the physical properties of ice and their effect on the flow of glaciers and the movement of sea ice will be done by a New Zealand scientist, Dr W. Robinson, who worked in Victoria Land during the 1978-79 season. He has been awarded a Commonwealth scholarship and will work at the Scott Polar Research Institute.

Dr Robinson, who is head of the physics division, Physics and Engineering Laboratory, Department of Scientific and Industrial Research, was one of three PEL scientists who studied the properties of Antarctic ice, using physical metallurgy techniques. He worked at Lake Vanda in the Wright Valley, on the Clark, Canada, Commonwealth and Taylor Glaciers, and on the Erebus Ice Tongue in McMurdo Sound.

ANTARCTIC

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Overseas subscribers are asked to ensure that their remittances are converted to New Zealand currency.

NEW ZEALAND ANTARCTIC SOCIETY (INC.)

The New Zealand Antarctic Society was formed in 1933. It comprises New Zealanders and overseas friends, many of whom have seen Antarctica for themselves, and all of whom are vitally interested in some phase of Antarctic exploration, development, or research.

You are invited to become a member, South Island residents should write to the Canterbury secretary, North Islanders should write to the Wellington secretary, and overseas residents to the secretary of the New Zealand Society. For addresses, see below. The yearly membership fee is NZ$5.00 (or equivalent local currency). Membership fee, overseas and local, including "Antarctic", NZ$11.00.

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