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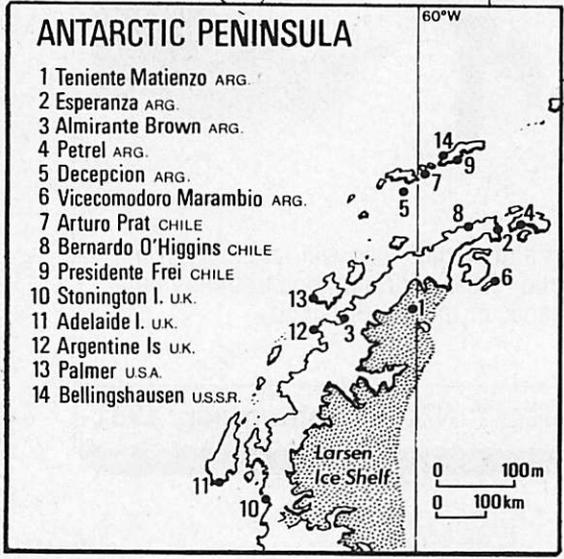
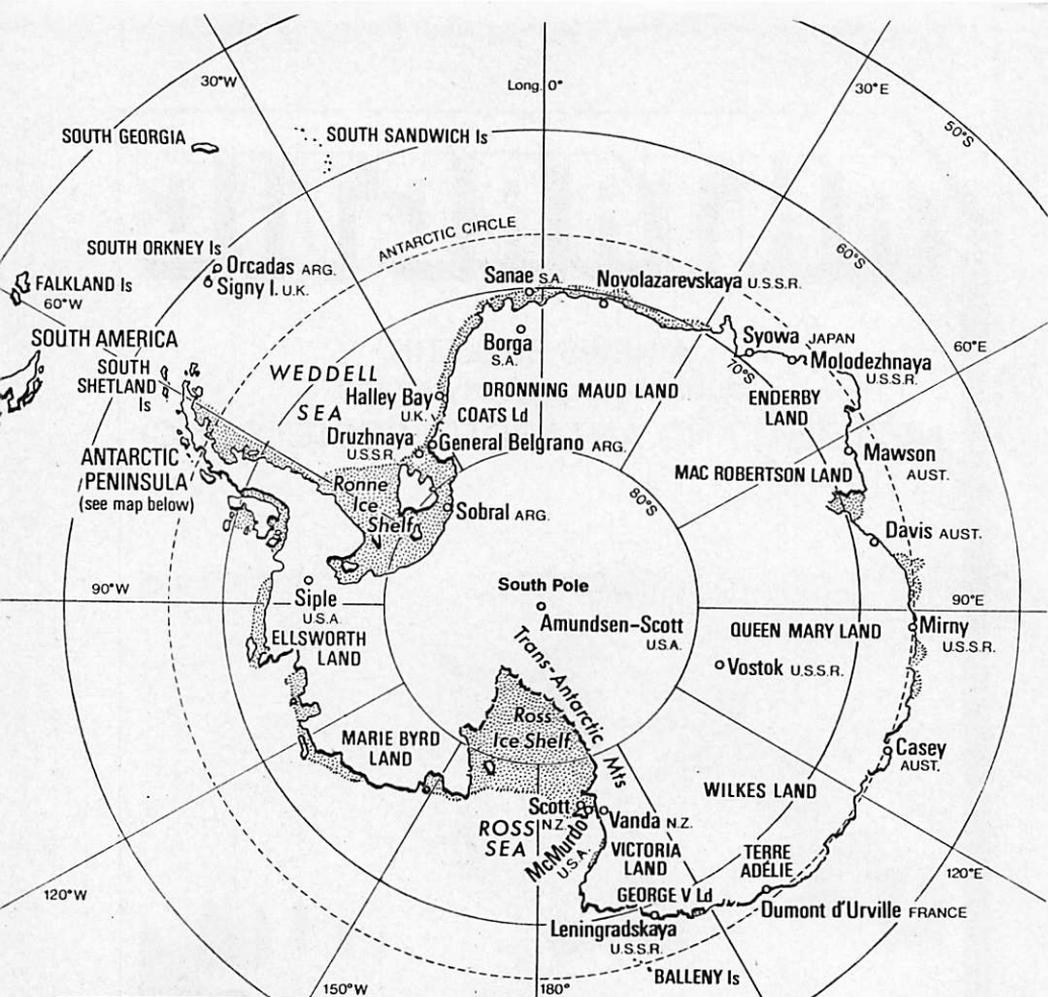


Prelude to Antarctica: Men and women who will take part in the 1981-82 New Zealand Antarctic research programme training in the field at Round Hill, near Tekapo, in the South Island.

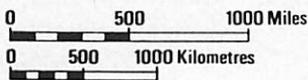
Christchurch "Star" photo

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ANTARCTICA



ABBREVIATIONS:

- ARG. ARGENTINA
- AUST. AUSTRALIA
- S.A. SOUTH AFRICA
- UK UNITED KINGDOM
- USA. UNITED STATES OF AMERICA
- U.S.S.R. UNION OF SOVIET SOCIALIST REPUBLICS

ANTARCTIC

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NEW ZEALAND PLANS FOR SEASON

Two international projects — a major geological study of Northern Victoria Land and observations on Mt Erebus — are included in New Zealand's Antarctic research programme for 1981-82. Five scientific field parties will work in Northern Victoria Land with United States and Australian scientists, and one New Zealand guest scientist and three mountaineers with Antarctic field experience will take part in the second West German expedition to Northern Victoria Land.

New Zealanders will return to work on Mt Erebus with a United States party which, for a second season, will include scientists from the Japanese Antarctic Research Expedition. The New Zealand team will have scientists from Victoria University of Wellington and Waikato University, the Geological Survey, a Lands and Survey Department surveyor, and an Antarctic Division field assistant.

In addition to the major projects in Northern Victoria Land and on Erebus New Zealand will provide support for or take part in other projects with the United States, Japan, and Australia. Four Japanese scientists will conduct geochemical research in the Wright, Miers, and Victoria Valleys, and at Cape Bird.

For the first time two scientists from the People's Republic of China will be guests of the New Zealand programme. They are Mr Ye Dezan, a microbiologist from the 3rd Oceanographic Institute, and Mr Wang Sheng-yuan, a geochemist from the Institute of Geochemistry, Academy of Science. The two will be attached to scientific parties working in the dry valleys.

This season 160 men and women will take part in the programme during the summer months. All the continuous scientific studies at Scott Base will be maintained, and the programme covers a wide range of disciplines, including glaciology, geology, vulcanology, geophysics, oceanography, botany, and ornithology. In addition to the parties in Northern Victoria Land and on Erebus New Zealand will have teams working at Cape Adare, in the Ross Sea from a

United States icebreaker, along the coast of Victoria Land, in the dry valleys, at Cape Bird, and on the sea ice of McMurdo Sound.

Of particular significance this season will be the celebration of the 25th anniversary of the opening of Scott Base. On January 20 New Zealanders in Antarctica will honour the occasion in company with a group of invited guests, some of whom took part in the first New Zealand Antarctic programme in 1957. As part of the official proceedings the new accommodation block will be commissioned.

MANY PROJECTS

Scientists from four universities will undertake a number of field research projects, including programmes in biology, vulcanology, glaciology, geology, botany, paleontology, geochemistry, and ornithology. Men and women from the universities, Antarctic Division, Ministry of Works and Development, Geological Survey, Geophysics Division, Physics and Engineering Laboratory, Soil Bureau, Meteorological Service, Institute of Nuclear Sciences, and National Museum, will

work on a wide range of projects. Army construction teams will continue the Scott Base rebuilding programme, and Post Office riggers will check aerial installations.

New Zealand science parties will begin their work in Northern Victoria Land early in November and will be in the field until early January. They will be flown to a United States major base camp established late next month on a high snowfield at the head of the Canham Glacier in the Evans Neve area. United States Navy Hercules aircraft of VXE-6 Squadron will make about 50 flights to support the operation.

Five Jamesway huts will be erected alongside a skiway to accommodate up to 100 men and women (60 scientists and support staff). Three helicopters will be flown to the camp which is 648km from McMurdo Station. These will be used to transport field parties to their work sites.

Using motor toboggans and sledges the five New Zealand parties will remain in the field for extended periods, calling on helicopter support for movement to other sites if required. Two of the parties will be led by Geological Survey scientists who have worked in Northern Victoria Land in previous seasons.

SLEDGING TEAM

Dr Malcolm Laird will take a sledging team into the Bowers Mountains in an attempt to define the regional extent of the Bowers Supergroup. He and Dr John Bradshaw, geology department, University of Canterbury, and Dr Chris Adams, Institute of Nuclear Sciences, will resolve outstanding stratigraphic structural and correlation problems created after Dr Laird's 1974-75 expedition to the area. The field leader in the team is Ken Sullivan.

This group's area of operations will be the edge of the Rennick Glacier, the Bowers Mountains, the Mariner Glacier, and Mt McCarthy. It will amalgamate with the other Geological Survey party led by Dr Roger Cooper for scientific reasons and also because Dr Adams will join a United States project led by Dr

Carlos Plummer in the Daniels Range of the USARP Mountains later in the season.

Dr Cooper's party will work in the centre of the Bowers Mountains, the Leitch Massif, and the Mt McCarthy area, to continue investigations of various fossiliferous units begun in the 1974-75 season. Dr Jim Jago, of the South Australian Institute of Technology, who is under the auspices of Australian National Antarctic Research Expeditions (ANARE), worked with Dr Cooper in the 1974-75 season. The other members of the party are Professor Bert Rowell, University of Kansas, and Peter Braddock (field leader).

Another Geological Survey scientist, Dr George Grindley, plans to establish a polar wander path for the volcanic and sedimentary rocks of Northern Victoria Land. By comparing this with polar wander paths for Australia, New Zealand, and other parts of Antarctica, Dr Grindley will test the reconstruction of Eastern Gondwanaland, and check the possibility of large (greater than 500km) strike dip movements between Australia and Antarctica, and with Antarctica, since the early Paleozoic period.

HELICOPTER SUPPORT

In the first three weeks of November, Dr Grindley will work with Dr Plummer's party in the Daniels Range. Towards the end of the month he will be joined by Dr Peter Oliver (Geological Survey). Using a combination of helicopter and motor toboggan support the pair will visit outcrops in the Gallipoli Heights, Canham Glacier, Lanterman Range, Leitch Massif, Morozumi Range, Mariner Glacier, and Mt McCarthy regions.

An Antarctic Division geologist, Dr Bob Findlay, will lead a sledging party of four on a traverse from the Lyttelton Range to the Millen Range in an effort, to look at structural and sedimentological aspects of the Robertson Bay Group rocks. With him will be a Geological Survey geologist, Brad Field, Walter Fowlie (field leader) and Bill Atkinson (field assistant).

A former New Zealand geologist, Dr Barrie McKelvey, now of the University

of New England, Armidale, New South Wales, who is under ANARE auspices, plans to study the Beacon Supergroup of Northern Victoria Land, and investigate the paleohydrology of the Triassic part of the Beacon sequence. With helicopter support from the Evans Neve camp he and a Victoria University of Wellington geologist, Barrie Walker, will examine sequences on Mt Moody, in the southern Freyberg Mountains, and the northern Morozumi Range.

In addition to the field parties New Zealand will provide two men to aid the base camp administration. A field leader, Eric Saxby, who is a former Vanda Station leader, will co-ordinate all New Zealand interests in the area, and maintain communications with Scott Base. Graeme Morgan will be an assistant cook at the camp.

GERMAN PLANS

Four New Zealanders will take part in the West German GANOVEX II expedition which will also work in Northern Victoria Land this summer. The expedition's ship *Gotland II* will operate off the coast from mid-November to the end of February and scientists will be transported inland by four Hughes 500 helicopters. The New Zealanders are a guest geophysicist, Tim Stern, of the Geophysics Division, and Gary Ball, Maurice Conway, and Andy Brown, who will oversee the field safety of the expedition. Ball and Conway worked with GANOVEX I in the 1979-80 season, Brown was a snowcraft and survival training field assistant at Scott Base in the 1978-79 summer.

Six New Zealanders will take part in the three-year International Mt Erebus Seismic Study (IMESS) which was begun last season. The project has been planned to obtain a long-term record of seismic activity, and to gain a better understanding of the volcano's magma chamber and the magma lake in the crater, the only accessible active lava lake in the world.

This season a fourth permanent seismic station will be installed on the east flank of Erebus. A seismic array established last season at three locations

on the volcano has transmitted signals to recorders at Scott Base 30km away during the 1981 winter.

A VUW seismologist, Dr Ray Dibble, will continue the seismic audio and magnetic studies he made on Erebus last summer, and also check and service the seismic array. He has been on several earlier expeditions to Erebus, and his work is an integral part of IMESS.

EARTH MOVEMENT

Last season Peter Otway, of the Geological Survey, established a volcanic deformation monitoring programme around the summit caldera of Erebus. This summer he will observe the survey network again to determine the nature of earth deformation associated with observed variations in the level of volcanic activity.

Two Waikato University scientists, Dr Keith Thompson and Neville Rogers, will join the IMESS group to continue botanical research begun at the summit area in the 1977-78 season. They will examine mosses, algae, and fungi thriving in the fumaroles and warm soil of the summit area.

A Lands and Survey Department surveyor, Pat Tinnelly, will work with Peter Otway in the summit caldera area. An Antarctic Division field assistant, Nick Cradock, will be responsible for the safety aspects of the project.

CLIMATIC CHANGES

Vanda Station in the Wright Valley will be operated for the summer only. A team of three led by Russell Millington will continue a programme of daily meteorological observations, and measurements of wind and temperature variations in the free air above the valley floor.

Also the station will provide support for Andrew Woods, of the Ministry of Works and Development, who will have the help of a field assistant and a surveyor to continue the monitoring programme that documents long and short term climatic variations in the dry valleys by studying the flow of the Onyx River,

measuring the levels of eight enclosed lakes, and making mass balance and ablation measurements on selected glaciers.

Measurements of lake levels at the beginning and end of summer will be continued on Lakes Vida, Vanda, Joyce, Bonney, Henderson, Hoare (formerly Chad), Fryxell, and Don Juan Pond. One of the world's unique lakes, Don Juan Pond has a salt content so high that it does not freeze in winter. It has also been described as the only known outflow of ground water in Antarctica.

A modified water-level recorder was tested at the pond last summer and was left to operate this winter. If the trial is successful the existence and amount of winter ground water flow will be monitored in future years.

Glacier measurements will be made to monitor longer-term climatic variations (five to 100 years). Mass balance measurements will be continued on the Heimdall Glacier, and comparative ablation measurements will be made again in the margins of one inland glacier (Wright Upper) and two coastal glaciers (Clark and Wright Lower).

ICE TEMPERATURES

To obtain more precise knowledge of mean air temperatures which is needed for a great number of studies in the dry valleys ice temperature will be measured in 20m holes drilled with a motorised auger on a number of glaciers. This will establish approximate values of mean annual air temperatures for different altitudes.

In past seasons Soil Bureau scientists have worked at remote sites far from Scott Base. This season Dr Tom Speir and Jan Heine will work on Ross Island. They will spend three weeks at Cape Bird analysing the organic matter of "soils" in the Adelie penguin rookeries. Samples will be taken from sites in inhabited and uninhabited rookeries as well from a control site never lived in by penguins.

HISTORIC HUTS

Preservation and future management of historic sites and buildings in the Ross

Dependency, which are New Zealand's responsibility under the Antarctic Treaty, will be the concern of two parties this season. On behalf of the Ross Dependency Research Committee's historic sites management working group Mr G. Turner, senior planning surveyor of the Lands and Survey Department, and Mr J. Fry, a National Museum conservator, will evaluate historic sites at Hut Point, Cape Evans, and Cape Royds to develop an effective management plan for future restoration and conservation.

Far to the north three New Zealanders will attempt to make an assessment of the condition of Antarctica's oldest buildings on Ridley Beach, Cape Adare. These are a hut and a storeroom built in 1899 by C. E. Borchgrevink's Southern Cross Expedition, the first to winter on the mainland. Another historic building on the windswept pebbly beach is the hut built in 1911 by the six men of Scott's Northern Party, who spent 10 months there.

A party led by David Harrowfield, of the Canterbury Museum, will assess the condition of the huts so that a management plan can be formulated for possible future restoration and conservation. The Northern Party's hut is now in a state of ruin. It was on the verge of collapse in 1973 when two members of the New Zealand Antarctic research programme, Shaun Norman, deputy-leader at Scott Base, and Laurie Cairns, worked on the huts for two weeks.

Early in January the New Zealand party will be landed at Ridley Beach from the United States Coast Guard icebreaker Glacier on her way south. Another Coast Guard icebreaker, the Polar Sea, will pick the three men up again early in February.

PENGUIN CENSUS

During their stay at Cape Adare David Harrowfield, of the University of Auckland, Dr Maurice Mabin, of the University of Canterbury, and Graham Wilsonhope to do some restoration work on the huts. In addition Dr Mabin will study beach levels in the area to determine the relationship between the

polar ice-cap and world ocean levels, and Graham Wilson will carry out a census of the Cape Adare Adelie penguin rookery.

Most of the work of the surveyors will be in the McMurdo Sound area and the dry valleys. They will monitor the McMurdo Ice Shelf movement study, using a dog team from Scott Base, and will be associated with the base rebuilding project and the installation of a cable to Arrival Heights. Other projects will take them to Mt Erebus, and to Taylor Valley in support of a United States glaciological study.

Established laboratory research programme in atmospheric physics and earth sciences will continue at Scott Base

and Arrival Heights this season and next winter. During the summer a Meteorological Service technician will undertake research at Scott Base and provide a weather briefing service to the officer-in-charge and New Zealand field parties. Physics and Engineering Laboratory staff will reoccupy field magnetic stations at Cape Evans, Cape Roys, and Vanda Station.

As in past seasons courses in basic snowcraft and survival techniques will be provided for United States air crews, Coast Guard icebreaker crews, and American and New Zealand research and support staff. An Antarctic Division field leader and two field assistants will conduct the courses.

Logistic support by air forces

United States, New Zealand, and Australian aircraft will provide logistic support for three Antarctic research programmes again this season. Early next month United States Air Force Starlifters will begin the summer airlift of men and materials from Christchurch to McMurdo Station. They will be joined in mid-November and early December by Hercules aircraft of the Royal New Zealand Air Force and the Royal Australian Air Force.

New Zealand's contribution to the United States — New Zealand logistics pool has been reduced this year. No. 40 Squadron will make 10 flights in Operation Ice Cube, two less than last season. Additional flights were made in 1980 to transport building materials for the Scott Base reconstruction programme.

This year Australian aircraft will operate through Christchurch again and contribute to the pool under an agreement which provides for Australian scientists to be flown from McMurdo Station to Casey Station. The RAAF will make four flights from Christchurch to McMurdo Station, two less than last year.

In return for the RAAF Operation Snowflake flights United States Navy ski-equipped Hercules aircraft of VXE-6 Squadron will make two flights to Casey

Station with Australian National Antarctic Research Expeditions scientists and other staff. These flights of 2200km will be made in November and January.

Two RNZAF helicopter crews will be attached to VXE-6 Squadron and will fly on support missions as in past seasons. A pilot, loadmaster, and engineer will fly in the squadron's Hercules aircraft throughout the summer. RNZAF and New Zealand Army cargo handling teams will operate during the airlift. They will work in Christchurch and at Williams Field near McMurdo Station.

Representatives of the 14 consultative parties to the Antarctic Treaty have recommended to their governments that the site of the Air New Zealand DC10 crash on Mt Erebus on November 28, 1979, be declared a tomb, and that the governments should ensure the area on the northern slopes is left in peace. A commemorative resolution adopted by the consultative parties' meeting in Buenos Aires noted that some bodies had not been recovered, and no permanent material could be erected on the ice slopes at the site of the crash.

Winter team at Scott Base

A 36-year-old New Zealand Forest Service ranger, Mr A. E. Newton, of Hokitika, has been appointed officer-in-charge at Scott Base for the 1981-82 summer season of the New Zealand Antarctic research programme.

Mr Newton is deputy to the senior environment forest ranger for the Westland Conservancy. He has had 17 years' experience in all aspects of Forest Service mountain land management and animal control work. His experience also covers operations with aircraft and helicopters, and search and rescue units.

Vanda Station's leader next summer will be Mr R.E. Millington, of Wellington. He is a 32-year-old teacher. In the 1978-79 season he worked at Vanda as a field assistant.

Nine men have been selected to winter at Scott Base through 1982. The postmaster, Mr L.P. Slattery, wintered at Scott Base in 1980, and was there in the 1973-74 summer. Mr A.M. Babington, senior Post Office technician, was in the 1979 winter team. Most of the men are from the North Island. Their ages range from 38 to 26.

Members of the winter team are:

C.T. Choros (26), Wellington. Senior technical officer. He works for the Civil Aviation Division, Ministry of Transport.

K.J. Martin (31), Hastings. Base engineer. He is a power board engineer.

B.K. Greenwood (30), Ohakea. Chef. He is a chef with the Royal New Zealand Air Force at Ohakea.

R.B. Walshe (27), Wellington. Fitter-electrician. He is a construction supervisor.

P.R. Nelson (33), Whangarei. Fitter-mechanic. He is a senior mechanic with a local motor firm.

R.S. Mason (29), Wellington. Technician. He is a technician with the Physics and Engineering Laboratory, Department of Scientific and Industrial Research.



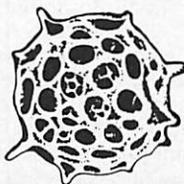
TONY NEWTON

P.R. Wheeler (38), Thames. Technician. He is a former flight sergeant in the Royal New Zealand Air Force.

L.P.B. Slattery (28), Christchurch. Postmaster. He is a supervisor in a central city post office.

A.M. Babington (27), Invercargill. Senior Post Office technician. He is a technician in the Post Office radio depot at Invercargill.

E.G. Bowcock (28), Northland. Field assistant and dog handler. He is a county council pest destruction officer.



SUMMER RESEARCH PROJECTS

New Zealand scientists will work in the mountains of Northern Victoria Land this summer with a United States sponsored international expedition, and also at Cape Adare. Others will work from icebreakers in the Ross Sea, in the dry valleys of Victoria Land, and at Cape Bird. They are all members of field parties in the Antarctic research programme for the 1981-82 season which, including support and construction activities, will call on the services of between 150 and 160 men and women.

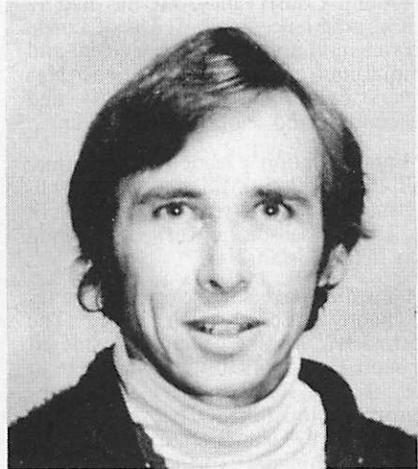
Research projects will be conducted by scientists from four New Zealand universities, and the programme will draw on staff from the Antarctic Division, Ministry of Works and Development, Geological Survey, Geophysics Division, Physics and Engineering Laboratory, Soil Bureau, Meteorological Service, Post Office, National Museum, Television New Zealand, New Zealand Army, and Royal New Zealand Air Force. The programme will also include guests scientists from Australia, United States, Japan, and the People's Republic of China, and a natural history team from the British Broadcasting Corporation.

Men and women in the programme will work at or from Scott Base, on the sea ice of McMurdo Sound, at Cape Bird, Cape Evans, and Cape Royds, and in the Taylor and Wright Valleys. They will work with Americans and Japanese at the summit of Mt Erebus, and with Japanese and Chinese on Ross Island and in the dry valleys.

Vanda Station in the Wright Valley, 130km from Scott Base, will be operated again this summer by a team of four men led by Mr Russell Millington. They will provide base support for New Zealand, American, and Japanese field parties, and also meteorological information.

This season there are six women in the programme. Barbara Ward will work on the sea ice of McMurdo Sound for her third summer. She is an American paleontologist who is completing doctoral studies at Victoria University of Wellington, and she will work on foraminifera in sediments collected from the floor of the sound by a VUW team.

Another woman, Sue Green, is a



RUSSELL MILLINGTON

technician from the University of Waikato. She will assist in botanical research on algae and lichens at Lake Fryxell in the Taylor Valley.

Members of the summer support staff at Scott Base are Anne Robertson and Donna Cook. Anne Robertson is an assistant cook, and her general duties will include running the base canteen. Last summer the Post Office had a woman clerk at the base for the first time. The second woman clerk is Donna Cook.

For the first time two of the three members of the youth group which will spend three weeks at Scott Base are women. Adele Fenn is a Venturer Scout from Westport, and Kathleen Smith is a St John Ambulance Brigade cadet from Wanganui. The third member of the group is Allan Senior, who is a Navy League sea cadet in Christchurch.

SCOTT BASE

A.E. Newton, Hokitika. Officer-in-charge.

R.J. Frost, Christchurch, Deputy officer-in-charge. He is a 42-year-old builder.

B.M. Warren, New Plymouth. Storekeeper.

H.J. Carter, Wellington. Assistant maintenance officer-carpenter.

P.G. Breen, Linton. Assistant maintenance officer-mechanic.

O.J. Druce, Wellington. Meteorological observer.

G. Halligan, Palmerston North. Information officer.

Anne M. Robertson, Wellington. General duties-assistant cook.

A.M. Thomas, Darfield. General duties-assistant cook.

M.R. Goldsmith, Hamilton. Post Office technician.

Donna J. Cook, Wellington. Post Office clerk.

P.M. Atwell, Wellington. Post Office clerk.

VANDA STATION

R.E. Millington, Wellington. Leader.

D. Allen, Meteorological technician.

D.R. Levick, Dunedin. Assistant maintenance officer-field assistant.

A.H.D. Woods, Christchurch. Technician.

Ministry of Works and Development. Glaciology and hydrology in the dry valley area. A. Woods and D. Levick (field assistant).

Lands and Survey Department. Two surveyors will work on a variety of projects at Scott Base, on the McMurdo Ice Shelf and Mt Erebus, and in the dry valleys. G. Neale, P. D. Tinnelly.

Soil Bureau. Analysis of the soil organic matter in the Cape Bird Adelie penguin rookery. Dr T. Speir, Jan Heine.

Physics and Engineering Laboratory. Continuation of upper atmosphere studies at Scott Base and Arrival Heights. Magnetic measurements and servicing of instruments at Scott Base,

Cape Evans, and Vanda Station. Drs R. Barr and I. Axford, C. Roper.

Meteorological Service. Observation programmes at Scott Base, and Vanda Station. O. Druce (Scott Base), D. Allen (Vanda).

Antarctic Division. Annual census by Scott Base staff and visiting scientists of small Adelie penguin rookery at Cape Royds.

Antarctic Division-Victoria University of Wellington. Psychological testing of Scott Base winter teams (1981 and 1982). Professor A. J. W. Taylor, professor of clinical psychology, and Martin Taylor.

International projects. Twenty New Zealanders, one now at an Australian university, will work with United States and Australian scientists in a major geological study of Northern Victoria Land, and with the West German GANOVEX II expedition.

Field parties are: (1) Paleomagnetic and structural studies, Drs G. W. Grindley, P. Oliver (Geological Survey); (2) Beacon Supergroup, New Zealander Dr B. McKelvey (University of New England, New South Wales), B. Walker (VUW); (3) Bowers Supergroup, Drs M. G. Laird (Geological Survey); J. Bradshaw (University of Canterbury), C. Adams (Institute of Nuclear Sciences), K. R. Sullivan (field leader); (4) Bowers Mountains, Drs R. Cooper (Geological Survey), J. Jago (South Australian Institute of Technology), Professor B. Rowell, (University of Kansas), P. Brad-dock (field leader); (5) Robertson Bay Group, Dr R. H. Findlay (Antarctic Division), B. Field (Geological Survey), W. Fowlie (field leader), W. Atkinson (field assistant).

Evans Neve base camp. E. J. Saxby, field leader and New Zealand co-ordinator, G. Morgan (assistant cook).

GANOVEX II. Guest scientist T. Stern (Geophysics Division), G. Ball, M. Conway, A. Brown (field safety).

Dr T. Torii will lead a team of Japanese scientists who, with New Zealand support, will conduct geological and geochemical studies in the Wright, Miers, and Victoria Valleys, and at Cape Bird. Drs Y. Yusa and G. Matsumoto, and H. Murayama.

University projects in Southern Ocean

Observations of seabirds in the Southern Ocean, and Adelie penguin rookeries in the Ross Sea region from Cape Adare to Cape Bird, will be one of the main projects to be carried out by university scientists during the New Zealand Antarctic research programme this season. Other university parties will work in the mountains of Northern Victoria Land, and examine mosses, algae, and fungi, thriving in the fumaroles and warm soil on Mt Erebus.

Four universities — Auckland, Waikato, Victoria, and Canterbury — will contribute teams to this summer's programme, and will work with scientists from United States, Australian, and Japanese universities. One team will attempt to estimate the level of floating pollutants in the surface waters of the Southern Ocean, and other scientists will study the relationship between the Antarctic ice-cap and world sea levels.

Waikato University's 12th expedition will continue botanical research begun at Lake Fryxell in the Taylor Valley and at the summit of Mt Erebus in the 1977-78 season. The project covers the ecology and physiology of endolithic and sub-lithic algae and lichens, the functioning of the "ice-bubble ecosystem," and the microbiology (mosses, algae, and fungi) of the fumaroles and hot ground on Erebus.

Leader of the botanical research team is Dr Keith Thompson, a plant ecologist. In 1977-78 he was one of the three scientists from the University of Waikato who discovered evidence of life near the summit of Erebus — a small, dark-coloured moss growing on geo-thermally warmed ground in an air temperature of minus 27deg Celsius. Other members of the team are Dudley Bell, a technician, Neville Rogers, a research student who worked at Lake Fryxell and on Erebus in the 1979-80 season, and Sue Green, a technician.

This team will go south in November and will work in the Taylor Valley and on Erebus until early January. It will use the hut at Lake Fryxell and set up equipment for continuing physiological stu-

dies on bryophytes and endolithic algae. Chemical analysis equipment will also be used to try to establish the nutrient status of the Fryxell stream in relation to the lichen and algal flora present in it.

PLANTS ON EREBUS

Later in the season Dr Thompson and Neville Rogers will spend up to two weeks on Erebus carrying out pattern sampling from the fumaroles and hot ground. If possible they will make a full ecological survey to gain a clearer idea of what plants are there.

Five physiologists from the University of Auckland will continue their research into the neuro-muscular physiology, parasitology, and demography of Ross Sea fishes. They will catch fish for study through three holes in the sea ice of McMurdo Sound near Scott Base, and will also spend about two weeks at Cape Royds in December.

Leader of the team is Dr John MacDonald, who has worked on the project since the 1977-78 season. With him will be Dr John Montgomery, who was in the 1979-80 team, and Messrs D. McCarthy, A. Stephenson, and M. Taler.

Objectives of the team's studies will be: (1) temperature sensitivity of neuro-muscular post-synoptic processes in the extra-ocular muscle of *Trematomus borchgrevinki*; (2) host-parasite relationships of isopod ecto-parasites on Ross Sea fishes; (3) demography of the Cape Royds population of *Trematomus bernacchii*; (4) screening of fish blood samples for micro-filaroid haemo-parasites.

OIL SPILLS

An attempt to gauge an "oil spill vulnerability index" in the region of the Northern Victoria Land coast of the Ross Sea will be made by Dr Murray Gregory, of the geology department, University of Auckland. He will also attempt to make an estimation of the level of pelagic plastics and tar in the surface waters of the Southern Ocean. This will have a bearing on work already done on New Zealand waters.

During the voyage of the United States Coast Guard icebreaker Glacier from New Zealand to McMurdo Sound Dr Gregory and Dr Robert Kirk, of the geography department, University of Canterbury, will sample the waters by towing a "neuston" net and barge beyond the icebreaker's bow wave for up to one hour a day. When the Glacier reaches McMurdo Sound the team will be flown by United States Navy helicopter to continue their sampling at more beaches like Cape Royds and Cape Bird.

Towards the end of January the team will join the Coast Guard icebreaker Polar Sea on a six-day science cruise. Where possible the icebreaker's helicopter will be used to allow Drs Gregory and Kirk to sample selected breaches along the coast of Northern Victoria Land in an attempt to gauge an "oil spill vulnerability index."

A University of Auckland geography lecturer, Dr Mark Mabin, who studied glacial land forms at the University of Canterbury, will work far to the north at Cape Adare. He will be landed there by the Glacier and will study the relationship of the Antarctic ice-cap to world sea levels by analysing beach ridges built up over thousands of years. This study is part of a project initiated by Dr Kirk, who will continue his research during his association with Dr Gregory.

SEABIRD SURVEY

This season University of Canterbury scientists will work at Cape Bird, Cape Royds, and Cape Adare, in Northern Victoria Land, along the shores of Victoria Land to the south, and in the Southern Ocean waters between New

Zealand and McMurdo Sound. Their studies of penguins and seabirds will be part of New Zealand's contribution to the three-year International Survey of Antarctic Seabirds (ISAS) programme, and the 10-year BIOMASS programme.

Early next year Dr Peter Harper, of the University of Canterbury extension department, who is the New Zealand coordinator of ISAS, will join the Glacier for her voyage from Wellington to McMurdo Sound. He will continue ISAS seabird observations begun on several cruises last season during his voyages between New Zealand and Antarctica.

On her voyage south the Glacier is expected to visit Cape Adare, Cape Hallett, and Inexpressible, Franklin, and Beaufort islands. If short landings can be made Dr Harper will carry out routine ISAS observations and census recording at penguin rookeries.

Dr Harper, who is an authority on Antarctic seabirds, made eight Antarctic cruises aboard the United States National Science Foundation's research ship *Eltanin* between 1965 and 1967. His main purpose this summer will be to observe, collate, and record all information on seabirds obtained during his cruises. All this data will be assembled with that from previous ornithological observations in the region into a detailed distributional paper to be published in 1982.

PENGUIN CENSUS

For his own research into the biochemical systematics of penguins and petrels Dr Harper will take blood samples from these marine bird groups. He will also obtain photographs to update the next edition of the guide to Antarctic seabirds.

In late-November and early December at the time of the peak Adelie penguin population in the Cape Bird rookery two University of Canterbury scientists, Graham Wilson, of the zoology department, and Dr Laurence Greenfield, of the botany department, will conduct the annual census. This work is part of a population monitoring programme

which began in 1965, and also part of New Zealand's contribution to ISAS.

This will be the eighth consecutive year the rookery population has been counted, and the 14th since the programme began in 1965. Graham Wilson will be carrying out his fifth census at Cape Bird, and Dr Greenfield will be taking part for the second time.

While the team is at the Cape Bird hut Graham Wilson will continue other long-term studies on penguins and skuas, and make general observations of birds and mammals in the area. Dr Greenfield will continue last season's studies on plants and micro-organisms. He will measure the levels of nitrogen present in soils, sediments, plants, and animal and faecal matter.

Before they return to Scott Base Graham Wilson and Dr Greenfield will take part in the annual census of the small Adelie rookery at Cape Royds for the New Zealand Antarctic research programme. This will be done with staff from Scott Base and other visiting scientists.

CAPE ADARE

In the New Year Graham Wilson will travel to Cape Adare aboard the Glacier. There he will have the daunting task of carrying out a census of Antarctica's largest penguin rookery. When the last census was made in 1961 there were about 289,500 breeding pairs of Adelie penguins in the area. Other birds will also be studied, and systematic observations will be made of seabirds on the voyage from New Zealand to Cape Adare.

There are estimated to be between 750,000 and 800,000 breeding pairs of Adelie penguins in the Ross Sea, which is one of the priority regions for the International Survey of Antarctic Seabirds. The census of the Cape Adare rookery, and Dr Harper's visit to other rookeries on the coast of Victoria Land, will enable New Zealand to make a substantial contribution to the ISAS programme.

A University of Canterbury geologist, Dr John Bradshaw, will work in Nor-

thern Victoria Land this summer. He will be one of the team of four which will sledge into the Bower Mountains.

Dr Andrew von Biel and three technicians from the physics department, Ray Borrell, Graham Lees, and Wayne Smith, will go south in November to complete the installation and testing of the equipment at Scott Base and Arrival Heights which has been designed for the study of the normal and disturbed ionospheric D-region. They will be assisted by base laboratory staff.

SEDIMENT STUDIES

This summer members of the 26th Victory University of Wellington Antarctic Expedition (VUWAE 26) will work in Northern Victoria Land, on the sea ice of McMurdo Sound, and in the dry valleys. They will take part in four separate projects ranging from seafloor studies to the seismicity of Mt Erebus, and will collaborate with scientists from Australian universities.

A six-week survey of the floor of McMurdo Sound, the waters of which reach depths of more than 800m, will begin next month. Alex Pyne, field leader of the project, and a veteran of four previous expeditions, will be the first to go south to set up oceanographic equipment for sampling sediments in McMurdo Sound.

To do the sampling a heated caravan on a heavy duty sledge will be towed by a tractor into position over a series of 30cm holes drilled in the sea ice which is 2cm thick. A bottom sampler and camera will be lowered through holes at more than 30 stations over an area of 7000 square kilometres. At six stations 24-hour measurements will be made of salinity, temperatures, currents, and tides.

This will be the second year of the sea floor study which is to explain the distribution of modern micro-organisms in terms of bathymetry, bottom sediment texture, and oceanographic factors. Barbara Ward will continue her study of the factors controlling the diversity and abundance of the foraminifera population for her Ph.D thesis.

An honours student, Brent Alloway, will study radiolaria in the sediments.

FUTURE DRILLING

Dr Peter Barrett, director of the university's Antarctic research unit, will collect data for a study of sediment transport paths in McMurdo Sound. The team, which will be assisted by Mike Cattley, an Antarctic Division field assistant, will also collect oceanographic data near Butter Point and Granite Harbour to help assess potential drill sites for further scientific drilling offshore.

A Ph.D geology student, Barry Walker, will begin a two-year study of Triassic alluvial plain strata in Victoria Land. His task will be to find out what Victoria Land was like in the Triassic period between 195 and 225 million years ago, the character of the river system, local and regional flow directions, and climate, and to discover new ways of obtaining paleohydraulic data.

This project will be carried out at Horseshore Mountain and Mt Bastion at the head of the Barwick Valley. An honours student, Paul Fitzgerald, will assist Barry Walker, and will study a 200m-thick sequence of river gravel and sand at the head of the Barwick Valley.

In late November Barry Walker will join Dr Barrie McKelvey, University of New England, New South Wales, to spend six weeks examining and collecting from Triassic (and Permian) strata in Northern Victoria Land as part of the international expedition of United States, New Zealand, and Australian scientists. Dr McKelvey, who will work under the auspices of Australian National Antarctic Research Expeditions (ANARE) is an old VUWAE member of several summers, and has extensive field experience of these strata both in the McMurdo Sound region and Australia.

UPLIFT HISTORY

To investigate the detailed uplift history of the Trans-antarctic Mountains in the dry valleys Dr Andrew Gleadow, a research fellow in geology from the University of Melbourne, will work in the Wright Valley, and along the

east between Gneiss Point and Dunlop Island, and will be assisted by Paul Fitzgerald. He will use fission tracking dating of apatites to determine the rate of uplift of the rock for particular times in the past.

Dr Gleadow, who is a guest of VUW and the Antarctic Division, has already established from samples collected 18 months ago that the Trans-antarctic Mountains rose at the rate of only 13m/million years from 130 to 70 million years ago, but must have come up faster since. This year's collection will be to obtain samples covering a younger period of time.

After the completion of the seafloor survey in McMurdo Sound Paul Fitzgerald will join Alex Pyne and Brent Alloway to do further work on the Weller coal measures and the Feather conglomerates. The three men will visit Mt Feather and Tabular Mountain at the head of the Taylor Valley.

Seismic and magnetic studies will be conducted on Erebus again this summer by a VUW seismologist, Dr Ray Dibble. The work he begun last season is an integral part of Dr Philip Kyle's International Mt Erebus Science Study (IMESS), which is a joint three-year project of the United States, New Zealand, and Japanese scientists.



“Antarctic” Index

Completion and printing of the index to Volume 8 of “Antarctic,” which covers the years 1977 to 1979, took longer than expected, and subscribers could not be advised of the cost in the June issue. Copies are now available from the treasurer of the New Zealand Antarctic Society, P.O. Box 1223, Christchurch. The price is \$1.25.

BBC documentary on Shackleton

Background material for a BBC dramatised documentary on Sir Ernest Shackleton's expeditions will be obtained by a combined Television New Zealand-BBC natural history film crew in Antarctica this summer. The film will be used in the four-episode production, which will cost \$1.2 million, and be the major BBC documentary for 1982.

Executive producer of the series is Christopher Rallings, who visited New Zealand earlier this year. He is well-known in New Zealand as the producer of three notable documentaries, "The Voyage of Charles Darwin", "Fight Against Slavery", and "Search for the Nile".

Originally the series was planned to begin with Shackleton's 1907-09 expedition in the Nimrod. Now the first episode will cover Shackleton's experiences as third officer with Scott's 1901-04 expedition in the Discovery. The main emphasis, however, will be on the 1914-17 expedition when the *Endurance* was trapped in the ice of the Weddell Sea, and Shackleton made his historic boat voyage from Elephant Island to South Georgia.

Most of the documentary, which will have a central group of eight to 10 actors, will probably be shot in Greenland because the BBC can get a ship there more easily. A Norwegian ship will be chartered, and will double as the *Nimrod* and the *Endurance*.

Recreating the realism of the *Endurance* party's experiences in the Weddell Sea poses some problems for the film-makers because the BBC cannot put actors in small boats in Antarctic conditions. But a film unit will go to South Georgia in November aboard H.M.S. *Endurance*, the Royal Navy's ice patrol ship. It will film around Gryt-viken, the old whaling station which Shackleton, Worsley, and Crean reached after their journey over the mountains of South Georgia, and will also go to the Antarctic Peninsula, and Elephant Island.

To obtain material about the

Discovery and *Nimrod* expeditions, and the experiences of the Ross Sea Party of the 1914-17 expedition the TVNZ-BBC film crew will film Shackleton's hut at Cape Royds and its surroundings, and take a series of "establishing shots" of features such as Mt Erebus and the Ross Ice Shelf. But its main objective is to obtain material for a BBC natural history programme.

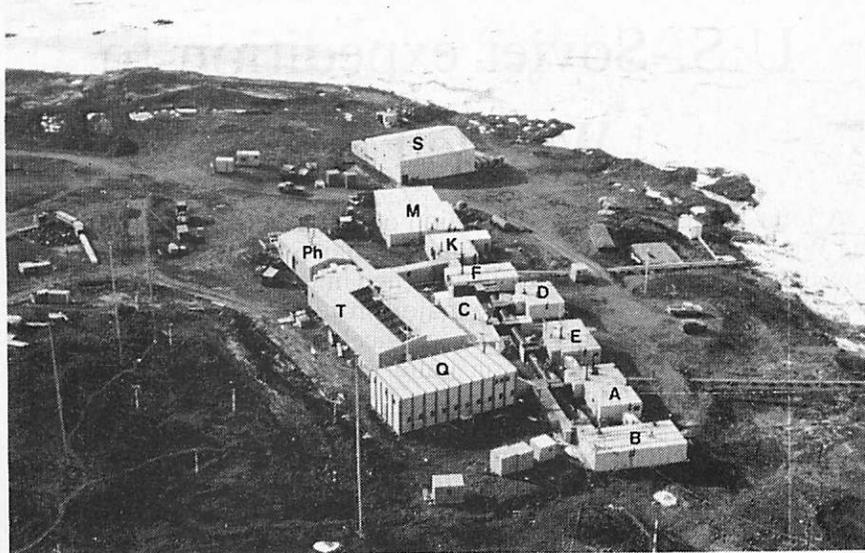
Between November 15 and December 20 the film crew, which is part of the New Zealand research programme this summer, will work at various locations around Ross Island, and in the dry valleys of Victoria Land. It will film Adelie and Emperor penguins at Cape Bird and Cape Royds, and in the dry valleys will film some of the unique features, and their relationship to science projects. This material will be used for David Attenborough's series "Planet Earth".

Heading the BBC section of the film crew are Dr John Sparks, of the BBC natural history unit at Bristol, and Robert Brown, a TVNZ cameraman on loan to the BBC. The other New Zealanders are Neil Harraway, director of the TVNZ natural history unit, Dunedin, and Ian Masterton, a TVNZ sound technician.

Mawson documentary

A 50-minute documentary film on the life and times of Australia's greatest Antarctic explorer, Sir Douglas Mawson, has been planned to mark the centenary of his birth in May, 1982. The film will be made by the Australian Broadcasting Commission's natural history unit with the collaboration of the Australian Antarctic Division.

In addition to his Antarctic experiences the film will cover Mawson's geological work in the Flinders Range. The makers hope also to present a reconstruction of his sledging journey with Mertz and Ninnis during his 1911-14 Australasian Antarctic Expedition.



Twenty-five years ago a construction unit of eight men from the Ministry of Works, the Royal New Zealand Navy, and the New Zealand Army, was working against time and Antarctic weather to complete Scott Base for occupation by New Zealand's first polar expedition. This summer when the formal opening of Scott Base on January 20, 1957, is celebrated, men from the Ministry of Works and the Army will be back at Pram Point engaged on another stage of the base rebuilding programme which began in the 1976-77 season.

In the photograph of Scott Base above — taken in January this year — the old buildings are: B (science), A (mess), E (post office), D and C (accommodation), F (recreation), K (carport and auxiliary generator), N (garage), S (old hangar, now store). New buildings since 1976-77 are Q (bio-laboratory), T (accommodation and ablutions), PH (powerhouse).

Last season a construction team from the Antarctic Division and the Ministry of Works and Development erected the new accommodation block and ablutions facilities for 42 people to the shell stage. The roofing was still unfinished when the photograph was taken.

Completion date for the accommodation block is planned for December 30.

A team of nine Army carpenters, MOWD building services staff, and an electrician, flew south on August 24 to make an early start on the interior work before the main team arrives in October.

Early in November the old C hut accommodation block will be removed so the site can be prepared for the building of the new galley, mess, and bar block by another MOWD and Army team. This building is planned to be finished to the shell stage by the end of the season, but the freezers inside it will be operational.

One of the three Army men in the 1957 construction unit was a 23-year-old electrician, Lance-Corporal Ernie Becconsall, who wired all the new base, including C hut. He will be back in November as an MOWD electrician.

Members of this season's construction team are: MOWD, E. Becconsall, P. Birt, G. G. Chalken, B. R. Clements, B. M. Davey, R. Dunnachie, R. P. Hitche, S. C. Little, C. J. Lynch, A. M. Richardson, A. Rossiter, A. R. Sands, T. Wall; Army, R. Broome, B. Buckingham, M. Dimond, G. J. Fenton, S. Flaws, N. Gattsche, W. Henderson, H. M. Kaa, T. Shaw, I. L. Stobie, S. Trodd, T. Uriarvau, M. J. Vincent, S. Wells. P. V. Winter.

U.S.-Soviet expedition to Weddell Sea

A joint United States-Soviet Union oceanographic expedition into the Weddell Sea Polynya aboard the Mikhail Somov, flagship of the Soviet Antarctic fleet, is included in the United States research programme for 1981-82. One of the major projects will be the establishment of a helicopter-supported geological field camp in the Evans Neve area of Northern Victoria Land from which research will be undertaken by the United States, New Zealand, and Australian scientists in petrology, stratigraphy, paleontology, glacial geology, geochemistry, paleomagnetism, and resource evaluation.

Siple Station in Ellsworth Land, which was closed this winter because of economic restraints, will be opened again this summer, and will be manned next winter. It will be a centre for upper atmosphere physics research during the season.

Satellite images of the Southern Ocean sea ice during the 1970s revealed near the Greenwich meridian and 65deg South in the South Atlantic sector that the winter sea ice there is incomplete, perhaps absent, in an area of about 3km by 10km. The area has been called the Weddell Sea Polynya.

United States scientists from the Lamont-Doherty Geological Observatory and Oregon State University will carry out a co-operative programme of physical and chemical oceanography, air-sea interaction studies, and nutrient chemistry, from the Mikhail Somov. The ship will attempt to reach the Weddell Sea Polynya to obtain a series of late winter measurements.

This feature may have a significant climatic and biological impact on the Southern Ocean, primarily related to suspected increased activity of vertical transfer processes believed to be associated with the polynya. Late winter observations are needed to study the active condition, and there is a specific

need for data within and below the Southern Ocean sea ice in such regions as the Weddell Sea Polynya at the end of the growth period when the cumulative effects of sea ice formation develop the seasonal maximum in surface water density.

WORK AT DOME C

In addition to the major geological project in Northern Victoria Land, the summer research programme will include geological studies supported by the research vessel Hero in the Falkland Islands (Islas Malvinas). Investigations of the glaciological geology, paleontology, stratigraphy, and structure of the Scotia Arc-Antarctic Peninsula area will be continued, and also the search for meteorites on the East Antarctic ice sheet.

United States and French glaciologists will work again at the Dome C summer camp in Wilkes Land. Their activities will be part of the International Antarctic Glaciological Project for investigation of the East Antarctic ice-cap. Drilling to intermediate depths through the ice will be undertaken at the Amundsen-Scott South Pole Station.

Meteorological research studies will be continued at the South Pole Station to investigate the nature of the polar heat sink, its effectiveness in driving the

katabatic-thermal inversion winds, and its possible effect on global circulation. Four new automatic weather stations will be installed in the Antarctic Peninsula-Weddell Sea area for a study of barrier winds, and the chain of automatic weather stations deployed between Dome C and Dumont d'Urville for the study of katabatic winds will continue in operation.

PENGUIN ECOLOGY

Biological research in the McMurdo Sound area will include studies of sea-ice

diatoms, Antarctic fishes, benthic foraminifera, and Weddell seals. Research will be initiated on the feeding of Weddell seals, and on egg formation in Antarctic seabirds.

In the region of Palmer Station and the nearby Antarctic Peninsula studies will continue on the population ecology of penguins, the thermo-regulation of Antarctic birds, and the ecology of benthic communities. Research will be initiated on the physiology, development, ecology, and behaviour of krill, and on the rates of protein synthesis in Antarctic fishes.

Four women winter at stations

An American scientist, Cynthia McFee, the third of her sex to winter at the Amundsen-Scott South Pole Station, has not been deprived entirely of feminine company in Antarctica as "Antarctic" reported in June. She has three women neighbours this year, but they all live a long way from the Pole — 1352km to the north on Ross Island.

Two of the women, Maria Davis and Jeanne Williams Honea, are scientists at McMurdo Station. Both are with their husbands. The third, Sandra Ackley, works for Antarctic Services as manager of the Eklund Biological Centre.

David and Jeanne Honea have worked this winter at the McMurdo Station geodetic satellite observatory for the University of Texas Applied Research Laboratory. They have collected dual-frequency doppler data from polar orbiting satellites which transmit similar data to the South Pole Station on specific orbits. The data collected from both stations helps to determine the spatial and time variations of the ionosphere and provides geodetic positioning controls.

To study the winter behaviour of Weddell seals Maria Davis and her husband have worked during the winter for various periods at a camp established on White Island, about 26km from McMurdo Station, last summer. Her husband is

leader of a field team from the Scripps Institution of Oceanography, University of California.

Spring releases icebreaker

Spring in the Arctic brought release from the ice of the Chukchi Sea to the United States Coast Guard icebreaker Polar Sea in mid-May. She had been trapped in ice up to 6m thick since February 20. ("Antarctic", June, 1981).

On January 20 the Polar Sea sailed from Seattle on her first winter cruise to Point Barrow. She arrived there on February 10—11, but damaged her rudder on the way home, and remained locked in a 965km icefield off the Alaskan coast for nearly three months.

Forty-two members of the Polar Sea's crew, not 50 as originally reported, were flown out by Coast Guard helicopters, and 108 men remained aboard to await the spring break-up of the ice. Several scientists also remained aboard to continue biological, glaciological, and polar communications studies.

First winter mail drop to South Pole Station

A winter mail and supply drop to 17 Americans at the Amundsen-Scott South Pole Station was made for the first time ever by a United States Air Force Starlifter on June 22. The Starlifter, which was refuelled by three Stratotankers on its mission from Christchurch, also dropped mail and supplies into the total darkness of Williams Field on the Ross Ice Shelf for the men and women wintering on Ross Island at McMurdo Station and Scott Base.

This was the third winter mail and supply drop in seven years, but the first to the South Pole where 16 men and one woman have been isolated for more than four months. To complete the mission in which the United States Navy and Army, New Zealand Army, and Royal New Zealand Air Force co-operated the Starlifter made the longest non-stop flight to the Pole and back to Christchurch — 5694 nautical miles — in Antarctic aviation history. It was also the first time an aircraft had been refuelled in flight over Antarctic waters.

A C141B "stretched" Starlifter was flown from Norton Air Force Base, California, to Christchurch for the mission. When it took off at 4 a.m. it carried 5.9 tonnes of mail and cargo, including 2 tonnes of fresh fruit and vegetables, packed in 32 bundles, 26 for McMurdo Station and Scott Base, and six for the South Pole Station.

Three Stratotankers flew from Guam and Okinawa to Auckland for the refuelling operation. They took off at 3 a.m. and rendezvoused with the Starlifter at 68deg S. The first tanker delivered 30,000lbs of fuel to the Starlifter, the second 20,000lbs, and the third 15,000lbs.

By 9.21 a.m. the Starlifter was over the Williams Field drop zone, which was in total darkness except for identification lights on the ice. The temperature was minus 36deg Celsius, but the weather was fine with a clear sky and light winds.

ONE PASS

For the first time the drop was made through the rear cargo ramp doors in-

stead of the side parachute doors. Only one pass over the zone at 3.04.8m was needed and all the bundles cleared the aircraft in six seconds.

Battery-powered stroboscopic lights were attached to the containers to make them easier to retrieve in the darkness, and they kept blinking on the ice despite the low temperature. All the containers landed in the drop zone within a spread of 304.8m, and the maximum distance between each one was 9.1m.

By 9.40 a.m. the drop was completed and the Starlifter headed for the South Pole, following the Beardmore Glacier route. When the aircraft arrived at 11.40 a.m. the weather had deteriorated. A whiteout and blowing snow reduced visibility, and the temperature was minus 68 C.

Two passes over the drop zone were needed, but the operation was completed by noon. To avoid the risk of the cargo ramp doors' hydraulic system being affected by the extreme cold the six bundles were dropped from the side parachute doors, four on the first pass, and two on the second.

LONG FLIGHT

When the Starlifter returned to Christchurch at 7.5 p.m. its crew of 32, headed by the mission commander, Lieutenant-Colonel J. Galyen, had been in the air for more than 15 hours. Colonel Galyen and three members of the crew also took part in last year's supply drop to the winter teams on Ross Island. They were the navigator, Major C. Slaton, Chief Warrant Officer IV R. Langstraat, United States Army and Corporal K. Peru, New Zealand Army.

Nothing was damaged in the drops to Williams Field and the Pole Station. Lieutenant A. Brunhart, U.S.N., officer-in-charge at McMurdo Station, reported later that no fresh fruit or vegetables had been lost, and a \$15,000 amplifier urgently needed for the com-

munications system was working perfectly.

Lieutenant Brunhart was also able to report with special pleasure the safe arrival of a box of biscuits sent to him by children at a Californian school. Not one biscuit was broken.

Chill prelude to spring on Ross Island

With temperatures in the minus 50s spring was well around the corner on August 24 when 93 Americans and 10 New Zealanders on Ross Island welcomed the arrival of three ski-equipped Hercules aircraft from New Zealand which brought them their first direct contact with the outside world for six months. But the arrival of 1.5 tonnes of mail, and fresh fruit and vegetables on the six flights made last month more than compensated for the lack of any signs of spring.

Three United States Navy VXE-6 Squadron Hercules aircraft made the six flights to prepare for the United States and New Zealand scientific programmes of the 1981-82 season. Again this year all the flights of the operation known to the United States naval support force as Winfly (winter flights) were completed before the southern spring began officially on September 1. Three flights were made on August 24, two on August 25, and the last on August 26.

Although the winter on Ross Island has been relatively mild, and warmer than last year's August 24 was a fine but really cold day. Visibility was 20 miles, there was a light wind, and the temperature was minus 50deg Celsius at Williams Field on the Ross Ice Shelf. It was minus 56deg on August 26 when the last aircraft returned to Christchurch.

In spite of the cold weather the Ross Island winter community, which received an air drop of mail and fresh food on June 22, had a warm welcome for the new arrivals. When Winfly ended the spring population of Ross Island had grown to 269 men and three women at McMurdo Station, and 19 men at Scott Base.

On their six flights south the Hercules aircraft carried 18.5 tonnes of cargo. This included 1.6 tonnes of personal and official mail, 2.5 tonnes of fresh food, and 10.9 tonnes of general cargo. The aircraft brought back 4.7 tonnes of cargo and six passengers on the return flights.

Among the 194 passengers on the flights south were technicians, construction workers, and others, who will prepare for the major airlift by Hercules and Starlifter aircraft which begins early next month. One task they will have is to prepare the airfield on the sea ice in McMurdo Sound, which is 2m to 3.6m thick.

Captain J. M. Pearigen, the support force commander, flew in the first aircraft to meet the McMurdo Station winter party, and to initiate preparations for the new season. Also on the aircraft, which was flown by VXE-6 Squadron's commanding officer, Commander P. Dykeman, were 10 New Zealanders, Mr R. B. Thomson, superintendent, Antarctic Division, who was making his 58th flight to Antarctica, and nine men from the Ministry of Works and

Development and the New Zealand Army, who will make an early start on construction work at Scott Base.

Sixty-four of the American passengers on Winfly will prepare for the United States National Science Foundation's research programme this summer. They were Mr Price Lewis, jnr., an NSF

representative, Mr A. Brown, resident manager at McMurdo Station, representing Antarctic Services, contractors to NSF for support services, 61 members of the contractors' staff, and one scientist, Mr R. Maue. He will join the team which has been studying Weddell seals on White Island this winter.

Shergottites might be Martian

Four unusual meteorites, two of them found in Victoria land in 1977 and 1979 may have originated on Mars. Scientists from the United States National Aeronautics and Space Administration, who have analysed and dated the Antarctic meteorites, believe they are material ejected into space when a giant meteor smashed into Mars at a time when it was volcanically active.

Those meteorites are known as shergottites from the name of an Indian town, Shergotty, where the first of the four meteorites was found in 1805. The second shergottite was found in Zagima, Nigeria, in 1962.

Scientists who have put forward the theory of Martian origin say that the Antarctic shergottites appear to have crystallised from molten lava no more than 1200 million years ago, and perhaps as recently as 600 million years ago. The shergottites are composed mainly of feldspars and pyroxenes much like basalt rocks found on Earth from cooling volcanic lava.

John O. Annexstad, of the Johnson Space Centre, Houston, has collected meteorites in Victoria Land since the 1978—79 season. He says the Antarctic shergottites probably came from Mars because the planet is known to have been volcanically active within the last 1200 million years.

Other scientists claim that the explosive force of the giant meteor could have propelled pieces from the new surface of Mars fast enough to escape the gravitational pull of the small planet, and sent them into space. Some pieces could have fallen to Earth later.

Not all lunar and planetary scientists are prepared to accept the Martian theory. One in particular is Dr William A. Cassidy, of the department of geology and planetary science, University of Pittsburgh. He has headed five expeditions to collect Antarctic meteorites since the 1976—77 season.

Dr Cassidy says that since rocks knocked off the Moon have never been found on Earth he finds it hard to believe material could escape the much stronger gravitational pull of Mars. He prefers the idea that one or more moons or planet-sized bodies large enough to have volcanic activity might have existed in the asteroid belt until relatively recently and could have been destroyed by a catastrophic collision.

Asteroids, the belt of rocks concentrated in space between Mars and Jupiter, are thought to be the source of most meteorites hitting Earth. But there is no generally acceptable theory to explain how an asteroid body could become hot enough to create volcanic material so late in the history of the solar system.

In the 1977—78 season a United States-Japanese team led by Dr Cassidy collected 310 meteorites in the area of the Allan Nunatak about 200km north-west of MrMurdo Station. One of these was a shergottite.

Dr Cassidy's team found 28 meteorites during its search in Victoria Land during the 1979—80 season. It worked on a large patch of bare ice that extends westward from Reckling Peak (76deg 16min S/159 15min E) and recovered 14 meteorites at one location, and 14 at another nearby. Relatively rare types were found at both locations.

ANARE REPORTS

Offshore marine geology project

Investigations of one of the geologically least-known areas of the world — the seabed between David Station and Heard Island — will be part of the main Australian National Antarctic Research Expeditions (ANARE) programme for the 1981—82 summer. Marine geological studies will be carried out from the Nella Dan in the Prydz Bay-Lambert Glacier region between Mawson and Davis Stations, and the undersea Gaussberg-Kerguelen Ridge north-east of Davis. The Prydz Bay—Lambert Glacier region is considered to be a prime hydrocarbon exploration area.

This will be the first time Australia has conducted offshore marine geology in Antarctica. Dr Pat Quilty, the Antarctic Division's deputy director (research), who will lead the expedition, has described the Nella Dan's voyage early next year as important to Australia's Antarctic research programme as the FIBEX marine biological programme last summer.

Two studies approved by the Antarctic Research Policy Advisory Committee are at the centre of the marine geology programme. The major research will be conducted by scientists and technicians of the Bureau of Mineral Resources (geology and geophysics). Scientists from the University of Melbourne's geology department will also make an important contribution to the programme.

On her third voyage south after resupply visits to Mawson and Davis the Nella Dan will conduct the marine geology programme for six weeks from mid-January to early March. Then she will return to Mawson to embark staff for return to Australia.

Last summer the Nella Dan was modified by the Australian Government at a cost of \$1.2 million to take part in the First International BIOMASS Experiment (FIBEX) which studied the distribution and abundance of krill. It was fitted with a wide range of sophisticated research equipment which will be used in the forthcoming marine geology programme.

THICK SEDIMENT

The Lambert Glacier-Prydz Bay area is one of the major geological features of Antarctica. The Lambert Glacier, the largest glacier in the world, flows from the interior of Eastern Antarctica down a major structural depression, in the earth's crust. That depression (or "graben") is known to continue out to sea beneath Prydz Bay, and is thought to be filled with sediment many kilometres thick.

Running beneath the ocean for some 1,500 km between the Antarctic coastline north-east of Davis and the island of Kerguelen is the huge Gaussberg-Kerguelen Ridge — one of the world's major oceanographic features. To the west and east of the ridge the floor of the Southern Ocean is relatively flat, averaging 4,000 to 5,000 metres in depth. The Gaussberg-Kerguelen ridge stands on the sea-bed as a massive mountain range 3,000 to 4,000 metres high.

Geologists are interested in both of these areas because their formation and evolution are thought to be closely connected with the splitting up of the "super-continent" Gondwanaland. Gondwanaland consisted of the present-day land masses of Australia, India, Africa, South America, New Zealand, and Antarctica. Before its disintegration millions of years ago, the north-east coast of India lay against what is now Prydz Bay, while the south-west coast of

Western Australia, near Perth, lay alongside the Casey region.

As India was moved away from Antarctica by the processes of continental drift, the Indian Ocean was formed. Very little is known about how the Gaussberg-Kerguelen Ridge was formed during the drift of India northwards.

The research to be carried out next summer is expected to throw some light on Gondwanaland's break-up.

SEABED PROBE

Studies of Prydz Bay will include seismic surveys to probe the sediment to depths of two to three kilometres beneath the bed of the bay. A device known as a "seismic streamer" will be towed behind the Nella Dan as she criss-crosses the region. Electro-magnetic waves will be generated by equipment on board the ship and reflected by structures beneath the seabed. The returning pulse will be detected by the streamer which will relay the data to equipment housed in the vessel's laboratories.

Analysis of the returned signals will give information on the geology of the region. Some of the sediments expected to be found in the Prydz Bay region should be related to the break-up of Gondwanaland, and as such are basic to understanding how the earth evolved.

Samples of the bed of the bay will also be collected with equipment supplied by the University of Melbourne. These bottom samples are important for they are expected to return material which has been removed by the Lambert Glacier from the trench beneath the glacier, then carried into Prydz Bay. Because of the thickness of the ice in that region such samples could otherwise only be obtained by a massive drilling program inland.

It is hoped that the samples obtained from the seabed will provide information on the geology of the Lambert Glacier basin which can be compared with the findings in Prydz Bay. In addition, the bottom samples will also provide samples of living organisms for study by biologists from the Antarctic Division, and other samples of interest to the geologists.

On this voyage the main areas of in-

terest along the Gaussberg-Kerguelen Ridge area are a number of seamounts which are only 1,500 to 2,000 m below sea level close to the southern end of the ridge. One theory is that they are old volcanoes, related to the extinct volcano Gaussberg on the coast of the Antarctic Continent north-east of Davis.

Dredging will be carried out along the side of the seamounts to obtain sediment and rock samples, and also some of the organisms that live there. Irrespective of how they were formed, a knowledge of their evolution is vital to finding out more about the ridge system.

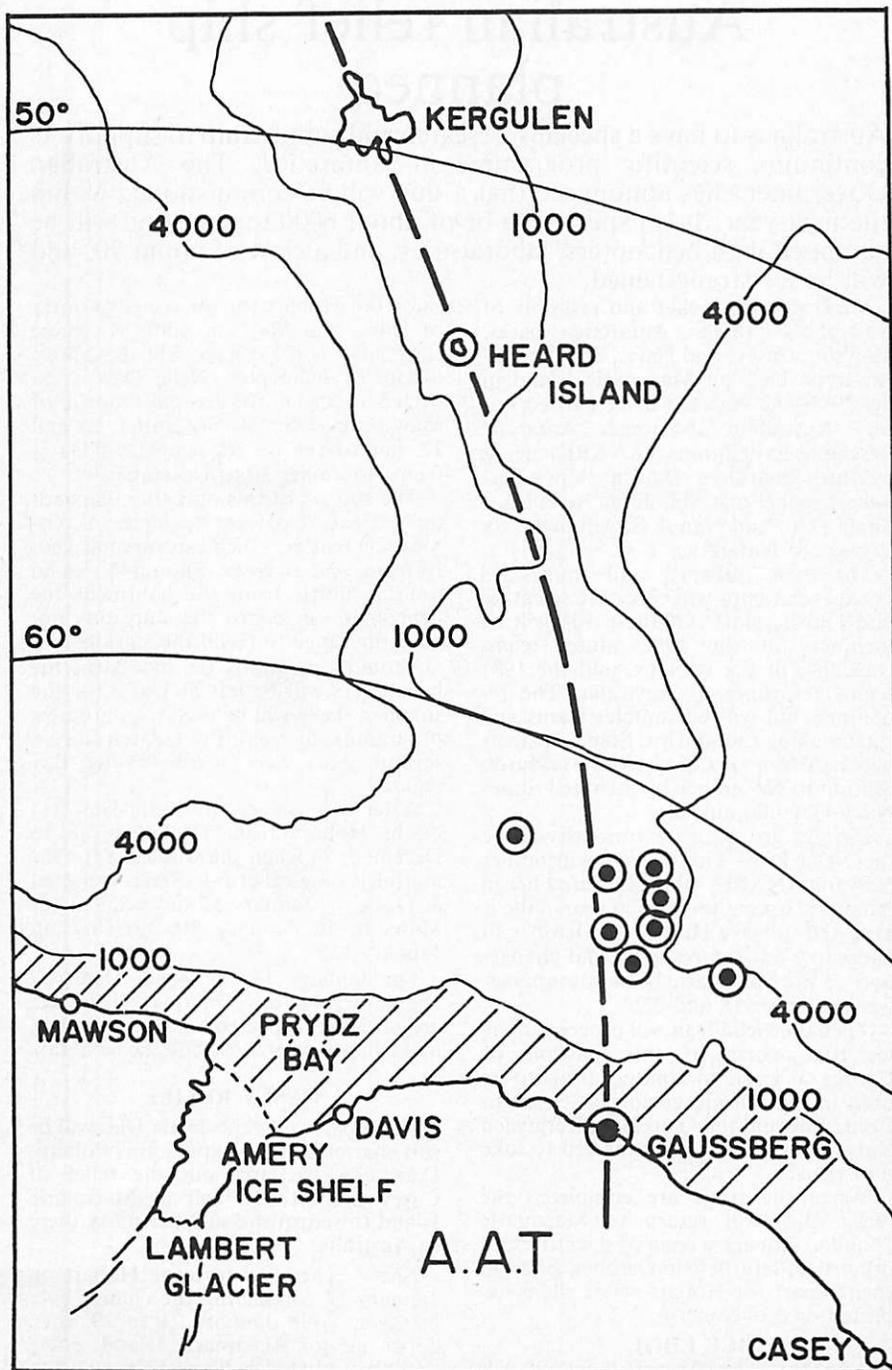
Two volcanoes are known along the ridge complex. One is Gaussberg, and the other is Heard Island, whose near-perfect 2,745 m volcanic cone is the highest point in the Gaussberg-Kerguelen "mountain range". From 1947 to 1955, when the ANARE station operated on the island, smoke was seen issuing from the peak on numerous occasions.

Areas where the main Australian research programme will be carried out are shown on the map on the opposite page. These are Prydz Bay and the underseas Gaussberg-Kerguelen Ridge. The dots surrounded by circles indicate where samples will be dredged from seamounts that may be old volcanoes north of Gaussberg.

"Heat wave" at Mawson

Australia's oldest Antarctic station, Mawson, experienced its highest July temperature since records were first kept in 1954, when the mercury reached 5 deg Celsius on July 14. Over the last 27 years the average temperature at Mawson for July has been minus 20 deg C, while the average daily maximum temperature is minus 15 deg C.

To celebrate the occasion a barbeque was held outside the base. Many of the Mawson party wore tee-shirts, shorts and thongs. Unfortunately the "heat wave" made it difficult to sleep. Inside the sleeping quarters the temperature reached 30 deg C.



Australian relief ship planned

Australia is to have a specialist research and supply ship to support its continuing scientific programme in Antarctica. The Australian Government has announced that a ship will be commissioned within the next year. It is expected to be of about 6000 tonnes, and will be equipped with helicopters, laboratories, and a crew of about 70, and will be ice-strengthened.

Meanwhile the relief and resupply of Australia's three Antarctic bases, Mawson, Casey, and Davis, and the sub-Antarctic base on Macquarie Island in the 1981-82 season will be carried out for Australian National Antarctic Research Expeditions (ANARE) again by three chartered Danish ships. Between October and March the Nella Dan, Thala Dan, and Nanok S, will make six voyages to Antarctica.

On their outward and homeward voyages the ships will carry 276 scientific and logistic staff. Of these 104 will be members of the 1982 winter teams travelling to the stations, and the 1981 teams returning to Australia. The remaining 172 will be summer teams and staff making round trips. Some scientists will be flown to Casey from McMurdo Station in November by a United States Navy Hercules aircraft.

First to go south next month will be the Nella Dan. This voyage will be her 60th for ANARE, which has used her in Antarctic operations for 20 years. She is expected to leave Hobart on October 14 and carry out the resupply and change-over of the Macquarie Island station between October 18 and 22.

Then the Nella Dan will proceed to the ice edge north of the coastline of George V Land to conduct trials to be used in the marine geological cruise to Prydz Bay and the Gaussberg-Kerguelen Ridge. These trials are expected to take nine days.

When the trials are completed the Nella Dan will return to Macquarie Island to embark a team of scientific and other staff left there in October. She will then depart for Hobart where she is expected on November 6.

ICE EDGE

After three days in port the vessel will

sail from Hobart for the ice edge north of Davis and Mawson Stations, where staff and some cargo will be flown ashore by helicopter. Nella Dan is expected to be at the ice edge north of Mawson between 30 November, 25 and 27, and at the ice edge north of Davis from November 30 to December 3.

The success of this operation depends on the extent of sea ice in the Davis-Mawson region, which can vary markedly from year to year. Should it extend too far north from the continent the helicopters on board the ship may not have the range to reach the stations.

Should operations be successful the helicopters will be left at Davis for the summer. They will be used to continue a programme of scientific research started several years ago in the Prydz Bay region.

After this voyage the Nella Dan will be in Hobart from December 18 to December 24 when she will leave for the marine geological cruise. She is expected at Davis on January 5, and will sail for Mawson on January 10, arriving on January 13.

On January 18 the Nella Dan will begin her 42-day marine geological cruise. She is expected back on March 1, and will leave for Australia the next day.

CASEY RELIEF

As in past years the Thala Dan will be sub-chartered from Expeditions Polaires Francaises to carry out the relief of Casey Station and call at Macquarie Island to return the summer party there to Australia.

She is scheduled to leave Hobart on January 12 conducting the change-over at Casey from January 21 to 29, then departing for Macquarie Island where she is expected to be from February 4 to

6. She is scheduled to arrive in Hobart on February 10.

This summer the Nanok S will be used on two voyages. On the first she will depart Hobart on December 18, calling at Casey (December 27 — January 1), and Davis (January 6 — 13), before

returning to Melbourne where she is expected on January 25.

After loading in Melbourne she is to depart on the last day of January, calling at Hobart (February 2 — 5), Davis (February 17 — 22), and Mawson (February 24 to March 3). The Nanok S is expected back in Hobart on March 16.

Winter traverses from Casey

Two glaciological traverses were carried out from Casey during June and July. They were part of the continuing study of the local ice-cap in the area of Law Dome and north-east to Cape Folger.

Twelve men took part in each traverse, and research activities were co-ordinated by the 1981 glaciologist, Martin Hendy. The activities included measurements of snow accumulation, snow isotope sampling, ice density and gravity recording, ice radar investigation of the rock topography beneath the ice-cap, and measurement of the horizontal movement of the ice-cap using satellite doppler techniques.

Both traverse parties used self-contained tractor trains hauled by D5 tractors. These consisted of living vans, instrument vans, combined workshop and generator vans, and fuel sledges. On the first traverse a Nodwell tracked personnel carrier was used for reconnaissance.

Weather conditions on both traverses were difficult. Blizzards caused long delays and temperatures were down to minus 41deg Celsius. Visibility was bad most of the time, and because of the short daylight hours navigation was based on radar navigation techniques.

Snow surfaces varied from extremely soft to firm, and the tractor drivers faced a constant challenge to keep their trains moving. Digging the trains out after blizzards presented further problems, and often took up to half a day to complete.

The first traverse spent the fortnight before midwinter in the Cape Folger, S2, Dome Summit area, and the second, away for more than three weeks in July, operated on the north-east side of Law Dome. Both were able to visit the abandoned under-ice research station at S2 built by the United States as part of its glaciological programme during the International Geophysical Year (1957-58).

West German and New Zealand Agreement

Provision for scientific co-operation in Antarctica between New Zealand and West Germany is made in a bilateral agreement concluded by the governments of the two countries. The agreement, proposed by the New Zealand Government, places the previous informal arrangement between the two countries on a more permanent footing.

Under the agreement New Zealand formally undertakes to allow West Germans engaged in their country's Antarctic research programme to pass through New Zealand on their way to and from Antarctica. West German ships and aircraft engaged in the programme will have access to and use of

agreed ports, airports, and other necessary services in accordance with New Zealand law, and subject to the payment of normal dues and fees. In return the West German Government has agreed to provide logistic support requested by the New Zealand Antarctic research programme whenever it is able.

In recent years West Germany has shown an increasing interest in conducting scientific research in Antarctica. It has sent several expeditions south, and earlier this year established its first permanent scientific station. In March West Germany became a consultative party of the Antarctic Treaty, a move which was fully supported by the New Zealand Government.



Antarctic Division's new complex

After more than 33 years in Melbourne the Antarctic Division of the Department of Science and Technology is now established at Kingston, 12km south of Hobart. The division occupies four buildings in a complex built at a cost of \$9 million. Its headquarters, which were opened officially by the Prince of Wales on April 22, are shown in the photograph above.

Built after nine years of reports, recommendations, political disagreements, and delays, the Kingston complex is the headquarters of Australian national Antarctic research programmes. All the Antarctic Division's activities are concentrated there and in future all expeditions to the three Antarctic bases and the sub-Antarctic base on Macquarie Island will leave from Hobart.

For the first time the various sections of the division are close to one another. Each of the four large two-storey buildings they occupy is connected by

enclosed overhead walkways. In Melbourne sections were scattered at five locations up to 6km apart.

An L-shaped scientific block and a display-conference building are at the front of the complex. The latter houses a display area, conference room, and library and offices for the division's information and welfare services.

In the scientific block are offices and laboratories for research into the Antarctic environment and the development and testing of equipment used in scientific programmes. These include zoological, botanical, micro-biological, physics, electronic, and photographic laboratories.

Behind the display-conference building is the administration and operations building. It contains offices for executive staff, the various sections, and logistics, communications, mechanical, and construction staff. There is a communications room linked by telex to the stations in Antarctica, and a gymnasium and cafeteria on the ground floor.

BAS PROGRAMME

Geophysical project on Ronne Ice Shelf

Investigation of the boundary and structural relationships between East and West Antarctica in the Weddell Sea area will be one of the major projects in the British Antarctic Survey programme this season. Geophysical ground and air parties will work on the Ronne Ice Shelf during the summer, using motor toboggans and a Twin Otter aircraft fitted with remote sensing equipment.

Marine biologists from BAS and the West German Wegener Polar Research Institute will co-operate in oceanographic research around South Georgia from the Royal Research Ship John Biscoe. Part of the John Biscoe's cruise from December to February will be a continuation of the BAS long-term Offshore Biological Programme (OBP).

This season the John Biscoe will leave Southampton in mid-September. The earlier sailing is to help compensate for her being out of action most of last season because of a damaged propeller.

Her first call will be at Bird Island, just off the north-western tip of South Georgia, to disembark biologists who will be continuing work on the enormous colonies of birds and fur seals there. The biologists will be accompanied by a team of builders who will construct a prefabricated hut, replacing the present one which was put up nearly 20 years ago.

A small field party will also be established at Schlieper Bay, a few miles away to the south-east on the coast of South Georgia, to study another colony of fur seals. The fur seals on and around South Georgia were almost exterminated during the 19th century by sealers hunting them for their pelts, but they have recovered very well. Now their numbers have reached about half a million.

The Schlieper Bay colony was established comparatively recently, and has not yet reached the density of those on Bird Island. Differences in behaviour

and pup mortality between the crowded and less dense colonies are being investigated, and may have relevance to other mammals living in crowded conditions.

FELDFIELD PROJECT

Next the John Biscoe will visit Signy in the South Orkney Islands where a wide range of programmes continues. One newly-established programme concerns Antarctic fellfields. These are barren stony areas comprising most of the tiny fraction of Antarctica that for some part of the year is clear of snow and ice.

Processes of colonisation by and survival of mosses, lichens and minute invertebrates in an extremely harsh environment are of considerable biological interest. There is also a strong conservation interest, since the Antarctic fellfields could be severely affected by any future oil or mineral exploitation. An understanding of their dynamics at this stage might aid future management.

Other programmes being continued include work on the Signy freshwater lakes which are frozen for most of the year. Knowledge of the cycling of nutrients in these comparatively simple

water bodies will aid understanding of processes in lakes in temperate regions.

SEDIMENTARY ROCKS

Sea ice permitting, the John Biscoe will then proceed to James Ross Island, south of Trinity Peninsula at the north-western tip of the Antarctic Peninsula. The island consists of sedimentary rocks 70 to 100 million years old, pierced by a recently extinct volcano. Geologists will study their structure, formation and fossil content. The sedimentaries contain an abundance of superbly preserved marine fossils which should enable comparison with similar sequences in South America.

Finally the John Biscoe will take summer field workers to Damoy air facility, Wiencke Island, off the west coast of the Antarctic Peninsula. From there they will be flown to southern work sites.

From December to February, the John Biscoe will continue the Offshore Biological Programme (OBP) around South Georgia. This is aimed at the study of krill and its relations with its environment and principal predators which can contribute to rational management of the stocks.

BAS is co-operating with West Germany in this venture and, for the last month of the cruise, a number of German marine biologists will be on board, making observations for their own programme.

ICE SHELF TRAVERSE

For most of the season the R.R.S. Bransfield, which is due to sail from Southampton on October 28, will be chiefly engaged in relief activities. At the end of February she is scheduled to pick up the James Ross Island party and then give support to geologists working around the the Antarctic Peninsula.

These geologists will be examining the oldest rocks in the area to determine their structure and metamorphic history in relation to the adjacent volcanic arc. The constituent minerals of these rocks are related to subduction of the Pacific Ocean floor beneath the Antarctic Peninsula and to ancient volcanoes.

Meanwhile, geophysicists employing gravity, magnetic, radio-echo sounding and seismic techniques will investigate the boundary and structural relationships between East and West Antarctica in the Weddell Sea area. Ground parties using motor toboggans, and an air party using one of the two BAS Twin Otter aircraft fitted with remote-sensing equipment will traverse the Ronne Ice Shelf.

Information collected will be interpreted in the light of geological and palaeomagnetic evidence. The objective this season is to locate a geological boundary in this ice-covered area where there are few rock outcrops. The remote-sensing equipment will include a new synthetic-aperture radar set designed at BAS for mapping the bottom topography of the ice.

Oceanographic studies will be continued from sites adjacent to George VI Ice Shelf to determine the ways in which Antarctica's ice shelves melt in the sea. It is hoped that two current meters suspended below the floating ice sheet since January, 1981 will yield data for the entire winter period. Measurements of seawater salinity, temperature, currents, turbulence, and dissolved oxygen, will be made during the summer to determine the circulation under the ice shelf and the rate of melting of its bottom surface.

WINTER ACTIVITIES

Dog training trips were undertaken at Rothera, the Adelaide Island station, shortly after Mid-winter's Day. Although most of the BAS dogs were replaced by motor-toboggans a number of years ago, about 40 dogs are maintained at Rothera so that they can be brought back into use if necessary.

Geophysical observatory, modernisation and re-organisation of the buildings have continued at Faraday (Argentine Islands). Part of the main hut was rebuilt last season. Several parties have made short journeys to neighbouring islands or the mainland.

A French yacht Kim which sailed from New Zealand last summer spent mid-winter a few miles to the north at

Petermann Island, where there is a refuge hut, and the four-man crew joined in Faraday's mid-winter festivities. The yacht departed southwards at the beginning of July.

On June 20, the station recorded its first thunderstorm in 34 years. Records were first kept at the beginning of 1947.

Sea ice which formed early and persisted late in the 1980 winter at Signy was late in arriving this year. It was not until the end of June that it was possible to resume biological diving at fixed positions through the ice or travel across Normanna Strait to the neighbouring Coronation Island. On one day in mid-July the temperature fluctuated from minus 18deg Celsius to 11deg and the ice disappeared but soon re-formed.

As usual, formation of the ice in Factory Cove, where the station is situated, was celebrated by holding the main sporting event of the year — the annual Signy Thin Ice Race. This is a 350m dash over the ice in divers' wet suits, the competitors generally breaking through at intervals, ostensibly to test its thickness.

RAT PROBLEM

Further north on South Georgia, fohn winds in July raised temperatures to more than 16deg Celsius. Advantage was taken of the brief good weather to undertake a number of short journeys, training for summer field work, and visiting one field hut to repair rat damage. The rats were accidentally introduced by the whalers, and their depredations on the mainland of South Georgia are now a serious problem.

Field huts, left unattended throughout the winter, and the old whaling stations, are overrun by them, and emergency supplies have to be kept in metal containers. The rats scavenge where they can but subsist mainly on tussock grass, locally causing severe damage.

They have now increased to alarming numbers around Grytviken, and as most of the buildings are of wood it is impossible to keep them out. A cat may have to be added to the station's complement to combat them. Fortunately the rats appear to be free of transmittable disease.

So far the rats have not spread to Bird Island and other off-lying islands and islets, and their bird populations continue to breed unmolested. Near Grytviken, the South Georgia pipit breeds prolifically on Right Whale Rocks and the whole of Bird Island is teeming with birds (including four species of penguins, four of albatrosses, two of giant petrels, two of diving petrels, blue petrels, dove prions, shags and cape pigeons) as well as fur seals and a few elephant seals.

WILDLIFE RESERVE

Bird Island is now a wildlife reserve protected by Falkland Islands Dependencies regulations. It was made a seal reserve by the Government as long ago as 1921, and a number of other protective measures were introduced in subsequent years, culminating in the Conservation Ordinance of 1975.

Now the whole of South Georgia is also protected, and Bird Island has been designated a "Site of Special Scientific Interest" (as has another small island — Annenkov). Cooper Island at the south-eastern tip of South Georgia is now a specially protected area where only scientists may land, and then only with the prior permission of the Governor of the Falklands or the director of BAS.

This legislation became particularly necessary with the growth of tourism. Several tourist ships now visit the area each year and their passengers are allowed ashore at Grytviken and the peninsula between Cumberland East and West Bays where Cooper Island is situated.



SOVIET NEWS

Compacted snow runway at Vostok

Construction of a compacted snow runway at Vostok for use by heavier aircraft, and increased use of a long-range Ilyushin-18D turbo-prop aircraft for research and transport work, are among planned Soviet Antarctic air operations. For a start two flights will be made this season on the new air route from the Soviet Union, and in the future an Il-18D will remain in Antarctica for the whole summer.

When the trial flight on the new route was made in February last year the Il-18D flew by way of Moscow-Odessa-Cairo-Aden-Maputo-Molodezhnaya. This year the aircraft flew first from Moscow to Leningrad, headquarters of the Arctic and Antarctic Research Institute.

After refuelling and taking on passengers at Polkovo the Il-18D took off on February 10 for Molodezhnaya. From Odessa it followed the usual route — a distance of 17,190km, including the Moscow-Leningrad section. On the 5000km ocean crossing from Maputo to Enderby Land radio communications were handled by Molodezhnaya, and the research ship Professor Vize was not used again as a radio beacon and relay station.

Last season's scheduled flight carried 40 members of the winter teams to Antarctica. This season the first flight is planned for November. The passengers will be scientists who will arrive sooner than by ship. In November ice conditions limit the approach of ships to certain stations.

In the future the Il-18 will be used for transport work on the continent itself. Freight will be flown from Moldezhnaya to other stations, and especially to the continental station, Vostok, when the new airfield is completed. Since Vostok was established in 1957 fuel and supplies have been delivered by tractor trains from Mirny along a 1410km route.

More extensive research will be carried out in the future from the Il-18D in regions of difficult access. This means that eventually the aircraft will be used

in Antarctica for the entire summer season. After the trial flight last year the Il-18D flew to the South Pole and the Pole of Inaccessibility, and was used as a scientific laboratory by geophysicists and meteorologists.

Some of the scientific results of geological and geophysical investigations by scientists of the 26th Soviet Antarctic Expedition, who worked on the Weddell Sea coast and in adjacent mountain regions from the summer stations Druzhnaya I and II, were reported in the Soviet weekly, "New Times." Plant and animal fossils, and samples of rocks and minerals were collected from mountain ridges in West Antarctica.

During the summer a geological and geophysical unit headed by Dr Evgeny Kameniev investigated an area of 750,000 square miles, using aircraft and snow vehicles to link Druzhnaya I and the so-called Pacific Ocean belt which includes the Kuriles-Kamchatka reigon of the Soviet Union. Dr Kameniev described the research as vital in the study of the inter-relationship of the geological history, structure, and mineral resources, of Earth.

Important data about Antarctica's underwater structure was obtained by scientists who made seismic probes of the seabed of the Weddell Sea from the Kapitan Markov. They used sound pulses from a pneumatic gun to determine the thickness of a sedimentary cover on Antarctica's crystalline foundation. The thickness proved to be more than 7km.

TRANSGLOBE

Ice team in North-West Passage

After a hazardous landing in inflatable rubber boats at the mouth of the Yukon River off the west coast of Alaska the British Transglobe Expedition is now in the Canadian Arctic. The leader, Sir Ranulph Fiennes, and Charles Burton, are navigating the North-West Passage on their way to the north-eastern tip of Ellesmere Island, which is 901km from the North Pole. By the middle of last month they were reported to have reached Spence Bay on the Boothia Peninsula.

On the last stage of its planned polar circumnavigation of the world, using the Greenwich meridian as a basic route, the expedition will attempt to cross the Arctic Ocean from Alert on Ellesmere Island by way of the North Pole to the Spitsbergen area. It is now likely that the Arctic section of the journey will be completed by two men, Fiennes and Burton. Oliver Shepard, who shared with them the crossing of Antarctica in 1980-81 had to withdraw from the ice group for personal reasons.

Before they reached the Arctic port of Inuvik at the mouth of the Mackenzie River Fiennes and Burton took their rubber boats, equipped with outboard motors, 2000km up the Yukon River to the Klondike town of Dawson. There they were transferred to utility vehicles for crossing the watershed to the Mackenzie River. Then they returned to the rubber boats for the journey down the Mackenzie to Inuvik.

Because of the bad weather encountered earlier a faster boat was needed for the sea journey through the North-West Passage to Ellesmere Island before the route was completely covered by ice. There was a delay of several days until the boat, fitted with two 60 h.p. outboard motors, was freighted to Inuvik. Then Fiennes and Burton carried on to

Tuktoyaktuk, a Polar Continental Shelf Project research station, to begin the North-West Passage journey.

No serious pack ice was encountered on the way south from Tuktoyaktuk, and last month Fiennes and Burton were at Spence Bay, a Distant Early Warning Line station on the Boothia Peninsula. Earlier a base had been established at Resolute (74deg 42min N/94deg 54min W), a Canadian military and research station on Cornwallis Island with the support of the expedition's Twin Otter aircraft which had been flown out from England by Captain Giles Kershaw and Sergeant Gerry Nicholson, flight engineer.

AIR DROP

Two members of the expedition at Resolute have supported the North-West Passage team. Lady Virginia Fiennes has maintained radio communications, and with her is Simon Grimes, one of the support group for the Antarctic crossing during the last southern summer.

Another expedition base will be set up on Ellesmere Island in Tanquary Fiord about 482km from Alert. From there the other members of the crossing team will provide air and radio support for Fiennes and Burton.

Fiennes and Burton expect to reach Alert (82deg 31min N/62deg 05min W) late in October. They will winter there, and Ginnie Fiennes will remain with them to handle communications. The Twin Otter crew and Simon Grimes will fly back to England. They will return in February next year to support the ice team on its crossing of the Arctic Ocean to Spitsbergen.

ALERT STATION

Alert is completely unlike the Trans-globe Expedition's Antarctic base, Ryvingen, where Ran Fiennes, his wife, Burton, and Shepard, spent the southern winter of 1980. Its polar darkness lasts from October 12 to March 3 and tem-

peratures in winter drop to minus 50deg Celsius. A permanent population of some 200 Canadian servicemen is supplied entirely by air, and has a weekly mail delivery, closed circuit colour television, washing machines and clothes dryers, and a family radio and telephone link almost every day.

Canadian Forces Station (CFS) Alert began in 1950 as a joint Canadian-American meteorological station. In 1956 the Royal Canadian Air Force set up a post near the meteorological station for communications research. Two years later the Army took over, and since then has made major changes to provide all the services of modern society. Alert also maintains a field station for the Polar Continental Shelf Project.

Japan's icebreaker named Shirase

Japan's new icebreaker for use in Antarctica will be launched in December and commissioned in November next year. She has been named Shirase, and after commissioning tests and training exercises have been carried out, she is expected to make her first trip to the Antarctic with the 25th Japanese Antarctic Research Expedition in November, 1983.

Chosen from the results of a national poll last year the name Shirase commemorates Lieutenant Choku Shirase, of the Imperial Japanese Navy, who led

Japan's first expedition to Antarctica in 1910-12. His ship was a three-masted wooden schooner of only 235 tonnes with an 18 h.p. auxiliary steam engine.

With a displacement of about 11,700 tonnes the icebreaker Shirase is a far cry from the tiny Kainan Maru which reached the Bay of Whales from Sydney in January, 1912. The Shirase has a power output of 30,000 h.p. and can handle ice up to 1.5m thick. She will carry 1000 tonnes of exploration equipment and will have accommodation for 60 in addition to the crew.

Smaller Polish research teams

Because of present economic restrictions Polish research in Antarctica will be concentrated on very precise objectives concerning science and the economy. The new policy, according to Dr S.M. Zalewski, secretary of the Committee on Polar Research of the Polish Academy of Science, will mean the suspension of large and expensive summer expeditions.

Future research will be restricted to small scientific teams which will work on precise and strategic subjects like fishing

and the BIOMASS programme. In the first period of the new plan the accent will be on marine biology programmes and the study of whales.

This season a Polish expedition led by Professor K. Birkenmajer, of the Institute of Geology, will work at Arcowski Station on King George Island in the South Shetlands. Dobrowolski Station in the Bunger Hills of Queen Mary Land will not be occupied this season. It was operated in the 1978-79 and 1979-80 seasons.

Sperm whaling banned by commission

Sperm whaling in the Northern and Southern Hemisphere was banned by the International Whaling Commission at its 33rd annual meeting in Brighton, England, from July 20 to 26 this year. Twenty-five member nations voted in favour of the ban, which was opposed only by Japan. Four members abstained from voting.

Other proposals to ban or reduce all commercial whaling failed to obtain the necessary 75 per cent majority of votes in the plenary session. For the sixth successive year the commission rejected a proposal for a world-wide moratorium on all commercial whaling. Proposals for a moratorium on commercial whaling in the North Atlantic, and a moratorium on the pelagic catch of minke whales after the 1983-84 season were also not accepted.

Although the commission banned sperm whaling in both hemispheres for the 1981-82 pelagic seasons and the 1982 coastal season, the ban on the North Pacific quota of 890 whales taken by Japanese coastal whalers is provisional. No sperm whales can be taken this season until the commission meets to consider evidence for the ban from the scientific committee which will meet in March or April next year.

Iceland, one of four whaling nations which had agreed earlier to cease sperm whaling, has been permitted to take its 1981 quota of 130 male sperm whales in the North Atlantic during 1982 also. The 1980-81 sperm whale quota has been reduced from 1320 to zero for both hemispheres by the IWC ban, but the net results is that only 300 will be saved this coming season in the Southern Hemisphere.

Another 1030 minke whales will be caught in the Northern and Southern Hemispheres in the 1981-82 season. The commission increased the total quota from 10,987 to 12,017. Last season the quotas were: North Atlantic, 2554;

North Pacific, 1361; Southern Hemisphere, 7072. Most of the southern minke whales are caught in the Antarctic by Japanese whalers. This year the IWC gave Japan the equivalent of its 1980 quota.

COLD HARPOON

As from November next year the commission has banned the use of the cold harpoon method (use of unarmed grenades) for killing all species of whales. The cold harpoon will be replaced by an explosive device, considered to be more humane. Cold harpoons have been used mainly to take the small minke whales.

Last year a working group of the IWC and its technical committee studies humane killing of whales, and particularly the cold harpooning method. As a result the commission imposed a ban to take effect this year on the use of unarmed grenades for all species except minke. A proposal to include minke did not obtain the necessary 75 per cent majority.

This year use of the cold harpoon from the end of the 1982 season was banned by consensus. Japan, Norway, and the Soviet Union reserved their positions but did not insist on a vote.

When quotas were fixed for the 1981-82 season the quota for fin whales was reduced from 701 to 561. The Bryde's whale quota was increased from 1415 to 1460.

As a result of New Zealand's initiative last year the IWC decided to establish a

working group to examine whaling operations outside the International Whaling Convention by private "pirate" whalers and countries which are not members of the commission. This group met before this year's annual meeting and agreed to the collection of more information so that private whaling and operations by non-members would be apparent more quickly in future.

BOWHEAD WHALES

For the least four years, and again this year, the IWC scientific committee has recommended that subsistence whaling of bowhead whales by Alaskan Eskimos should cease. Last year the IWC fixed the take at 45 whales landed or 65 struck with a maximum of 17 landed in any one year between 1981-83.

This year the bowhead quota was not discussed, and the catch limit was unchanged. The commission did accept the scientific committee's advice that only immature, adolescent bowheads should be taken, and that the numbers struck but not landed should be reduced to zero as soon as possible.

Quotas for whale stocks of all species in the Northern and Southern Hemispheres set by consensus show a reduction by the commission from 14,729 for the 1980-81 season to 14,352 for the 1981-82 season. Stocks not hunted amount to 604, leaving 13,748 available to be taken compared with 14,125 in the previous season.

Total catch limits by species set for the 1981-82 season compared with the 1980-81 figures (in brackets) are: Sperm 0, subject to scientific committee meeting (1320); Bryde's, 1460 (1415); minke, 12,017 (10,987); fins, 561 (701); gray 179 (179); sei, 100 (100); humpback, 10 (10); bowhead, 17 (17), part of three-year quota. Totals, 14,352 (14,729). Stocks not hunted, 604. Numbers available to be taken, 13,748 (14,125).

New Zealand was represented at the IWC meeting by Mr I. L. G. Stewart, Deputy Secretary, Ministry of Foreign Affairs, in his capacity as New Zealand Whaling Commissioner, Mr M. Donoghue, of the Greenpeace organisation, and Mr F. Wong, New Zealand High Commission, London.

Large krill concentrations seen by FIBEX ships

Large concentrations of krill in their study areas were reported by several of the research ships which took part in the First International BIOMASS Experiment (FIBEX) last season. A "super swarm" estimated at 10 million metric tons was recorded in March north of Elephant Island in the eastern Scotia Sea by scientists aboard the United States research *Melville*, and large swarms were also sighted by ships from West Germany, Argentina, Chile, and Poland.

In their investigations of krill stocks and the density of swarms FIBEX scientists made acoustic surveys and carried out krill patch studies, following and observing the krill for several days. The programme began in December and ended in March, and was supported by ships from 11 member countries of the Scientific Committee on Antarctic Research.

During the first leg of its two months' cruise in the South Atlantic the West German research ship *Walther Herwig* encountered very good concentrations of krill. The acoustic survey began on January 26 north of Elephant Island, covered 5200 nautical miles, and was followed by a krill patch study, beginning on February 22 near the island.

On the second leg of the cruise the Walther Herwig made a transect from 62deg 09min S/67deg 30min W to the southern tip of Anvers Island to investigate krill distribution and development west of the Antarctic Peninsula after spawning. When the transect was continued through Gerlache Strait and the southern Bransfield Strait on March 12 and 13 large krill concentrations were detected in the middle of Gerlache Strait. Twenty tons were collected in 35 minutes, using a commercial-sized krill trawl. Echo sounder records showed only small and scattered krill aggregations in the southern Bransfield Strait.

Scientists on the Argentine research ship Eduardo L. Holmberg led by Dr Aldo P. Tomo sighted in the Scotia Sea on January 26 a krill swarm approximately 7 by 7.5 nautical miles at a depth of 40 to 60 metres. Its central position was 61deg 24.4min S/47deg 16.1min W.

On February 13 large luminescent patches of krill were observed on the surface where other fish and birds were preying. Dr Tomo reported that the water was almost boiling with krill.

Chilean scientists who took part in both the acoustic survey and the krill swarm study aboard the Itsumi concentrated on Bransfield Strait and Drake Passage. Covering 857 nautical miles in Bransfield Strait they initially detected great concentrations of krill south of the Piloto Pardo Islands, penetrating westward to Bransfield Strait and following the contours of the continental shelf.

In the Drake Passage area the survey covered 283 nautical miles with special coverage on the continental shelf of the South Shetland Islands. However, no krill swarms were detected.

Polish FIBEX activities were carried out from February 15 to March 2 aboard the Professor Siedlecki, and the scientific team was headed by Dr S. Rakusa-Suszczewski, who worked at McMurdo Station in the winter of 1974. Heavy krill concentrations were encountered in and to the west of Bransfield Strait. High concentrations of krill larvae were also encountered in several areas.



Puma helicopters for SANAE field work

To support field operations from SANAE III, the South African base in Queen Maud Land, the South African National Antarctic Expedition (SANAE) has acquired two new Super-Puma helicopters. These were taken south by the relief and research ship *Agulhas* last season.

In April last year two South African Air Force Puma SA330 helicopters made a rescue flight to Sanae III to bring out a member of the winter team who had contracted tuberculosis. The helicopters operated from the *Agulhas* and flew 45 nautical miles to Sanae III. Flight crews were able to gain some experience of Antarctic conditions for future South African operations.

When the *Agulhas* left Cape Town on December 30 with the members of SANAE 22, Public Works Department staff, and scientists from various institu-

tions, she also had some unusual passengers on board — five women and two children. They were the wife and two daughters of the ship's master, Captain W. Leith, and the wives of four government officials.

As well as the two helicopters, which have been specially adapted for work on the ice, the *Agulhas* brought muskeg tracked snow vehicles, 4000 drums of diesel fuel, and other equipment for the base. During her stay Public Works Department staff checked base equipment and did necessary maintenance.

OBITUARIES

Roy Carlyon was surveyor with TAE

One of the men who were the first to winter at Scott Base in 1957 died last year. He was R.A. Carlyon, a surveyor with the winter party of the New Zealand section of the Commonwealth Trans-Antarctic Expedition. His death follows those of R.H. Orr, a technical officer in the International Geophysical Year party, in 1978, and P.M. Mulgrew, the chief radio operator, in 1979.

Roy Carlyon, who was 48, was selected as assistant surveyor-navigator with the TAE field party. He was born in Wellington, worked with the Ministry of Works and the New Zealand Railways, and held a civil engineering degree from Canterbury University College.

In Antarctica Carlyon became a skill ed dog driver. Early in 1957 he and the deputy-leader, J.H. Miller, made a 288 km journey — their first driving dog teams — across the Ross Ice Shelf to establish the route from Scott Glacier to the Skelton Depot. They then surveyed the lower part of the Skelton Glacier.

Before the winter ended Carlyon took part in other sledging journeys to Cape Evans and Cape Royds. His most notable journey was made in the spring of 1957 with the mountaineer and dog driver, H.H. Ayres. They were in the field for 75 days with their two dog teams from October 29 to January 21 and carried out 10,000 square miles of new survey in unknown country.

With their dogs Carlyon and Ayres were flown from Scott Base to the Plateau Depot. They made a 321km journey to Depot 480, one of the depots on the New Zealand tractor party's route to the South Pole.

On December 7 the two men headed east towards the Darwin Glacier and the Ross Ice Shelf. Their purpose was to explore and map the large area between the Darwin Glacier and the Mulock Glacier. They completed their project by January 13, and then made the first descent of the Darwin Glacier to the Ross Ice Shelf with Flying Officer W.J. Cranfield and S. Bucknell, pioneering a fourth route from the Polar Plateau.

When he returned to New Zealand in 1958 Carlyon worked with the New Zealand Railways. Then he joined a construction firm and was engaged on contracts in New Zealand and Fiji. Later he became a director of a concrete products firm in Auckland.

A few days before Christmas, 1957, Carlyon and Ayres were on the Polar Plateau north of Mt Longhurst. They climbed Mill Mountain (2560 m) 12.8 km to the east.

Carlyon was able to survey the whole area at the head of the Darwin and Mulock Glaciers, including a previously unmapped glacier flowing 32 km south-east to merge with the ice shelf at 79 deg 30 min S/ 159 deg 10 min E. That glacier now bears his name.

Graham Land expedition veterans

Two members of the British Graham Land Expedition (1934-37) led by John Rymill died in England late last year. They were Quintin Riley, aged 75, who was meteorologist and commissariat officer, and Norman Gurney, aged 68, one of the crew of the expedition's ship Penola.

Riley, who was killed in a motor acci-

dent, was one of a handful of polar explorers awarded the Polar Medal with both Arctic and Antarctic clasps. He was meteorologist of the British Arctic Air Route Expedition (1931-32) led by Gino Watkins, and with his second expedition to Greenland.

In the Second World War Riley served as a naval officer in Norway, Iceland,

Italy, Yugoslavia, Ceylon, France, and Germany. He maintained his polar interests after the war, and spent six months as an adviser to the makers of the film "Scott of the Antarctic."

Gurney had completed his first year at Cambridge when he applied to join the ship's party of the *Penola*. After the expedition he resumed his theological

studies, and was ordained after war service in the Royal Navy. Except for seven years teaching he was a parish priest for the rest of his life.



Graham McCallum, mountaineer and nuclear physicist

One of New Zealand's leading mountaineers, Mr Graham John McCallum, who trained United States scientists in snowcraft and survival techniques on Ross Island, died in an avalanche on Mt Ruaphehu on July 11. Mr McCallum, who was 53, had been with the Department of Scientific and Industrial Research since 1949, and was internationally known for his work in experimental nuclear physics.

Mr McCallum was a founder-member of his department's Institute of Nuclear Sciences. He designed and installed the institute's nuclear physics laboratory, and was in charge of the accelerator physics section.

A highly-experienced mountaineer, Mr McCallum had been climbing for 36 years, and was a member of the Tararua Tramping Club for 21 years. He was president of the New Zealand Alpine Club for the last two years. His experience included ascents of every New Zealand peak over 3000m, and climbing in Nepal, South America, and India.

In 1963 Mr McCallum was one of seven New Zealand mountaineers who went to Antarctica to instruct members of the United States research programme. He worked from Scott Base for two weeks under the leadership of the late Captain L. D. Bridge.

New base snow vehicle

A new wide-tracked snow vehicle for general transport and search and rescue operations will be shipped to Scott Base this summer. The vehicle, which cost \$30,000, is a Swedish-built Snow Master. It weighs 1250kg and is powered by a 1584cc Volkswagen industrial engine.

Built to carry six passengers in a heated cab, the Snow Master will replace a smaller vehicle which has been in use at the base since 1964. It has been designed with 800mm-wide tracks, which make it ideal for soft snow. In the event of a field emergency the vehicle can be taken by helicopter into any area within 185km of Scott Base. With its wide tracks it is expected to be ideal for use in steep mountainous terrain.

New treaty members

Twenty-six nations have now signed the Antarctic Treaty. Italy, which began its association with the New Zealand Antarctic research programme in 1958 when a naval scientist, Lieutenant Franco Faggioni, wintered at Scott Base, became an acceding party this year as did Peru, and Papua New Guinea.

There are nine other acceding parties — Brazil, Bulgaria, Czechoslovakia, Denmark, East Germany, Netherlands, South Korea, Rumania, and Uruguay. The consultative parties are the original 12 signatories — Argentina, Australia, Belgium, Chile, France, Japan, New Zealand, Norway, South Africa, United Kingdom, United States, Soviet Union — and Poland and West Germany.

ANTARCTIC BOOKSHELF



Sledging Into History

By

David L. Harrowfield

Macmillan Co. of N.Z. Ltd, 1981. 119 pp, 86 illustrations in colour, 42 in black and white, 25 pen and ink drawings, 11 diagrams. N.Z. price \$29.50.

It is now 18 years since publication of "Two Huts in the Antarctic" by L.B. Quartermain. Then the huts at Cape Royds and Cape Evans had just been restored, after five decades of exposure to the elements. In 1964, the ice-filled "Discovery" hut at Hut Point was excavated.

Since 1969, the restoration and maintenance programme has continued, and has included nine seasons' work by "caretakers" from the New Zealand Antarctic Society. The caretakers in 1978-79 were D.L. Harrowfield and C.C. Buckley.

"Sledging into History" is based on David Harrowfield's experiences during those few weeks, and a life-long interest in the subject. It is a sequel to Quartermain's volume, albeit on a grander and more extensive scale. It is not a comprehensive history of the restoration and maintenance of these "museums". Perhaps this could have been achieved with detailed appendices (rather than some of the marginally relevant appendices used) to supplement the text of general interest.

Like several recent quality Antarctic books designed to appeal to a wide audience "Sledging into History" is visually exciting. Most of the coloured photographs are Mr Harrowfield's own, and generally are excellent. Good use has been made of reproductions from expedition books now free of copyright (although some are old favourites which over the years have been used too often) and also photographs taken by the restoration parties in the early 1960's. The generous quantity of illustrations is supplemented by effective diagrams, and pen and ink illustrations by Mr Harrowfield.

Perhaps comparative photographs could have been used to effect. For instance, the photograph of Scott's cubicle at Cape Evans now when compared to earlier photographs, shows alarming evidence that artefacts have disappeared.

A chapter heading with nostalgic appeal is "They Passed This Way: Hut Point". One of those who passed "this way" was R.W. Richards, that hardy veteran of the Ross Sea Shore Party (1914-17). Not only has he set the tone of the book with an eloquent foreword, but also he is often quoted by David Harrowfield. He is an important ingredient in the success of "Sledging into History."

Mr Harrowfield is curator of Antarctic relics at the Canterbury Museum. He brought this expertise to bear in the compilation of an extensive inventory of historical items at Cape Royds and Cape Evans. In this process, important new material was discovered, and in some cases, rediscovered. A photograph of the only remaining pony harness at Cape Royds is a most important item. The discovery of a tent used by Shackleton's Imperial Trans-Antarctic Expedition is a vital and unique link with history. This is truly sledging into history.

The narrative of "Sledging into History" is loosely linked to a sledge journey made by Archdeacon Michael Brown, the Antarctic Division chaplain, and Messrs Harrowfield and Buckley from Scott Base to the huts. "Compared with many journeys New Zealanders have made with dog teams in Antarctica, ours was a mere stroll. "Nevertheless the device is an effective framework within which the past merges with the present.

ANTARCTIC BOOKSHELF



Evidence of the historical accuracy of the text appears in two passing references to Granite Harbour, on the west side of McMurdo Sound. A detailed account is given of a hut intended for meteorological observations at this location, which was shipped back to New Zealand, and later became "The Cabin" on Kinsey's property at Clifton Hill. Second, an appendix lists a "granite hut" constructed during Griffith Taylor's second geological expedition in December,

1911. This important site is not listed in the historic monuments identified by the Antarctic Treaty nations in 1972.

Mr Harrowfield concludes that Antarctica is not the perfect storage facility for artefacts. He details deterioration in these which must be countered. His approach to preservation is benevolent, not hard-hitting but generous in its appreciation of work done to date.

R.G. McELREA

Book series on Polar research

A new series of books to be called "Studies in Polar Research" is planned by the Cambridge University Press. The plan reflects the growth of research activity in and about polar regions, and was formalised after full discussion with the Scott Polar Research Institute and the British Antarctic Survey.

The series will be international and, where appropriate, inter-disciplinary. Its scope will include studies in the biological, physical, and social sciences. The aim is to produce fairly short books (about 200 pages in standard 228 x 152mm format) with all necessary illustrative material. They should be appropriate for use by research students as well as professional scientists.

Intending authors are invited to get in touch with any members of the editorial board, whose names and addresses are as follows:

Dr R. J. Adie, British Antarctic Survey, Madingley Road, Cambridge, CB3 0ET.

Dr T. E. Armstrong (chairman), Scott Polar Research Institute, Cambridge, CB2 1ER.

Dr S. W. Greene, Institute of Terrestrial Ecology, Bush Estate, Penicuik, Edinburgh, EH26 0QB.

Dr B. Stonehouse, Postgraduate School of Studies in Environmental Science, University of Bradford, West Yorkshire BD7 1DP.

Dr P. Wadhams, Scott Polar Research Institute, Cambridge, CB2 1ER.

Dr P. N. Webb, Department of Geology and Mineralogy, Ohio State University, Columbus, Ohio 43210, USA.

Dr I. Whitaker, Department of Sociology and Anthropology, Simon Fraser University, Burnaby, British Columbia, Canada V5A 1S6.

Tussock-eating rats

Brown rats, now widespread amongst the coastal tussock grass of the northern coasts of South Georgia, have adapted successfully to the rigorous climate since they came ashore from ships many years ago. British Antarctic scientists have found that the tussock grass where they make nest-burrows forms the main part of their diet throughout the year. They also eat beetles regularly and forage on the sea shore.



Polar research community changes

A distinguished Soviet polar scientist, Dr Alexander Treshnikov, who has been director of the Arctic and Antarctic Research Institute in Leningrad for more than 20 years, and led two expeditions to Antarctica, has relinquished his post. He has been appointed to the chair of oceanography in the geography department at Leningrad University. His successor is Boris A. Krutskikh.

Dr Treshnikov began his polar career in the Arctic where he worked on North Pole III, one of the Soviet floating ice stations in the Arctic Ocean. He was leader of the second Soviet Antarctic Expedition from 1956 to 1968, and in charge of Mirny and Vostok I. In December, 1957, he led the tractor train while established Vostok.

In the summer of 1963 Dr Treshnikov led 67 scientists, construction workers, and journalists who flew to Mirny in two Ilyushin-18 turbo-prop aircraft by way of Christchurch and McMurdo Station. This contingent was part of the ninth Soviet Antarctic Expedition, and the leader for the summer was the late Professor Mikhail Somov. On his third journey to Antarctica Dr Treshnikov led the 13th Soviet Antarctic Expedition. He was in charge at Mirny from 1967 to 1969.

West Germany now has a polar research institute which was established at Bremerhaven last year. The institute, named after the noted geophysicist Alfred Wegener, will be devoted to basic research in northern and southern polar regions.

Dr Gotthilf Hempel, who is a professor at the Institute of Marine Science, Kiel University, has been appointed director of the new research institute. He is chairman of the West German National Committee for Antarctic Research, and played a leading part in the planning of FIBEX (First International BIOMASS Experiment), and a biological oceanography project last season in the programme of BIOMASS (Biological Investigations of Marine Antarctic Systems and Stocks).

In New Zealand there has been one change in the membership of the National Committee for Antarctic Research. The new member is Professor

E. C. Young, head of the zoology department, University of Auckland, who has made seven summer visits to Antarctica. He replaces Dr M. G. Laird, of the New Zealand Geological Survey, who has completed his term.

Professor G. A. Knox, president of the Scientific Committee on Antarctic Research (SCAR) is chairman of the committee. Other members are Mr R. B. Thomson, superintendent, Antarctic Division, Department of Scientific and Industrial Research, Dr P. J. Barrett, director of the Antarctic research unit, Victoria University of Wellington, Mr I. Campbell, Soil Bureau, D.S.I.R., and Mr J. S. Hickman, director, Meteorological Service.

Professor Young went to Cape Royds first in the 1959-60 summer when he was a lecturer in biology at the University of Canterbury. Then between 1964 and 1970 he worked with the University of Canterbury Antarctic biological research unit at Cape Bird. In the 1964-65 season he worked at Cape Crozier.

No Antarctic flights

Qantas and the Australian Department of Transport have decided to halt tourist flights over Antarctica because of the Air New Zealand DC10 crash on Mt Erebus on November, 1979. Sightseeing flights have been suspended indefinitely pending a review by the department.

After the Erebus disaster Qantas, which pioneered tourist flights to Antarctica in February, 1977, completed its programme for 1979-80 with flights on December 2 and 9. The Department of Transport then decided there would be no new programme of flights.

Recently Qantas refused a request by a wealthy Sydney businessman, Mr Dick Smith, for a charter flight in February next year. Mr Smith, who initiated the first charter flights to Antarctica, wanted to use a long-range Boeing 747 to fly from Sydney to the South Pole or a standard 747 for a flight to Commonwealth Bay.

ANTARCTIC

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

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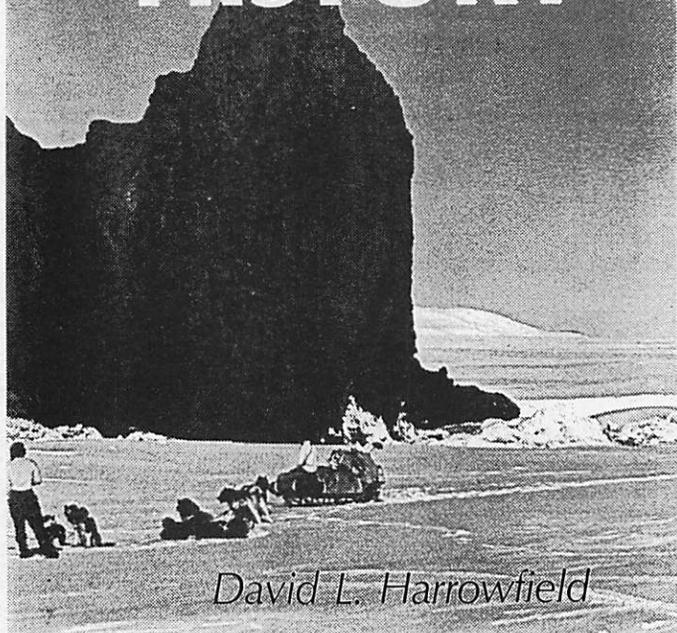
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SLEDGING INTO HISTORY



David L. Harrowfield

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caretaking work and a tribute to the achievements of the pioneers of Antarctic exploration.

David Harrowfield, now Curator of New Zealand's National Antarctic Centre at the Canterbury Museum, Christchurch, is well fitted to compile such a book. He is an enthusiast for his subject and has made two lengthy trips to Antarctica for study and research.

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