ANTARCTIC

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A New Zealand/West German/American geological field party in Northern Victoria Land unloads equipment from a United States Navy ski-equipped Hercules at Crosscut Peak in the Millen Range.

Antarctic Division photo

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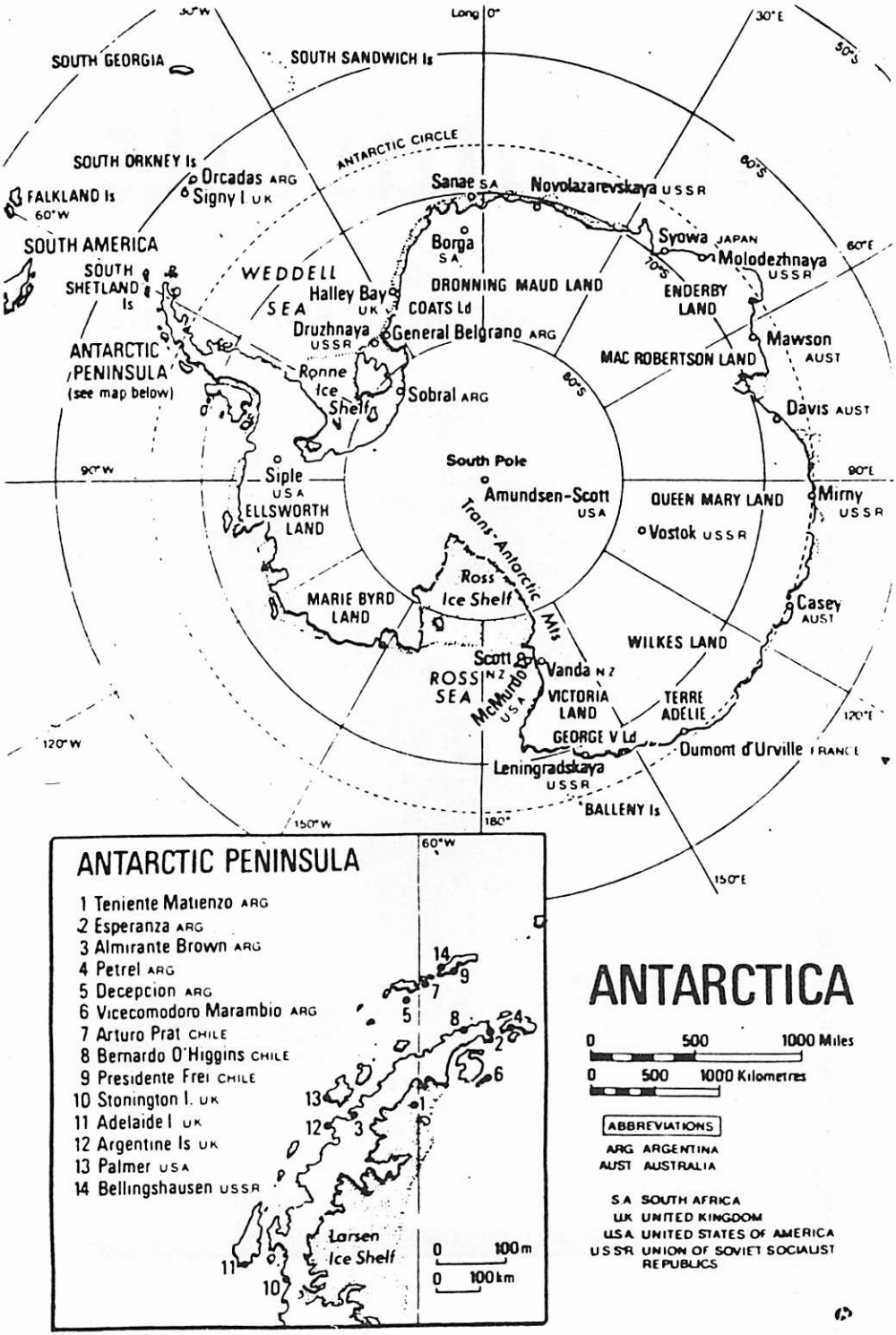
ANTARCTICA
0 500 1000 Miles
0 500 1000 Kilometres
ABBREVIATIONS
ARG ARGENTINA
AUST AUSTRALIA
SA SOUTH AFRICA
UK UNITED KINGDOM
USA UNITED STATES OF AMERICA
USSR UNION OF SOVIET SOCIALIST REPUBLICS
ANTARCTIC PENINSULA
1 Teniente Matienzo ARG
2 Esperanza ARG
3 Almirante Brown ARG
4 Petrel ARG
5 Decepcion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

ANTARCTIC

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Editor: Off The Ice

This is the first issue of "Antarctic" for 14 years not to carry my name at its masthead.

There is a simple reason for the omission. I have retired from the editorship of "Antarctic", which I have held for 11 years. Also I have ended an association with the bulletin which began in 1970.

Last year I advised the council of the New Zealand Antarctic Society that I wished to give up the editorship. The September issue was my last; until a new editor is appointed future issues will be the responsibility of an editorial team based in Wellington.

My retirement from the editorship, however, does not mean that I have ended my association with Antarctic affairs which began in 1934. Like my predecessors I have been glad to provide material for the December issue. It appears later than usual because of the changeover.

"Antarctic" has achieved its present standing in the Antarctic community and elsewhere because of the high standards set up the first editor, Leslie Quartermain. His successors, Arthur Helm, Trevor Hatherton, and Harold Griffiths, maintained those standards; I have been proud to follow in their footsteps and do the same.

Maintenance of the bulletin's accurate and authoritative coverage of Antarctic events for readers in many countries has always been a demanding task, and at times a lonely one. But the burden has been eased by the support editors past and present have received not only from the society but also from hundreds of men and women in other countries.

"Antarctic" has given me the opportunity to meet or correspond with explorers and scientists from early expeditions, to work with organisations responsible for today's research programmes, and to know the men and women who support or carry them out.

Many of these people have become my friends. I am grateful to them and so many others who have helped me in what one friend has called "my relentless pursuit of facts". I am sure they will be equally helpful to my successors.

Finally, my thanks must go to the men who first gave me the opportunity to share my regard for Antarctica and my abiding interest in its history, past, present, and future. They did this when they chose an assistant editor in 1970 and promoted him to editor in 1973.

J. M. CAFFIN

Jim Caffin's extremely wide knowledge of both ancient and modern aspects of New Zealand and international Antarctic affairs has been greatly appreciated by the Society's members and subscribers alike. His quarterly contribution to contemporary Antarctic literature will be sorely missed.

"Antarctic", which first appeared in 1956, is unique as it is the only privately published journal in the world specialising in international coverage of Antarctic affairs and over the years, under the editorship of Jim Caffin, its circulation has extended to 21 countries.

Jim's service to Antarctic journalism was recognised in 1983 when he was awarded the MBE.

On behalf of the membership I wish to sincerely thank Jim for the time, effort and expertise he has given to the Society and hope that he will still contribute to future issues of "Antarctic".

Bill Hopper, President, NZAS

Opinions

The Beardmore workshop

— a participants' view

Following more than a decade of quiet diplomatic effort to ease the potential for discord in Antarctica brought about by conflicting territorial claims on the Peninsula, or their possibility elsewhere, the Antarctic Treaty was signed in Washington by twelve nations in December 1959. The International Geophysical Year, which created unprecedented widespread activity on the continent, undoubtedly catalysed the accommodation between the nations and the core of the Treaty is Article IV which essentially "put into the frigidaire" (to use one participant's phrase) the claims position at the time of the signing of the Treaty. This has enabled the Treaty to ensure the objectives cited in the preamble including "the use of Antarctica for peaceful purposes only". Since then the consultative mechanism outlined in Article IX (1) has been the vehicle by which an Antarctic Treaty System has developed into a management tool resulting in Agreed Recommendations and Conventions spanning the range of possible human activities in Antarctica. Four other nations have joined the original twelve as consultative parties after meeting the activities criteria of Article IX (2) – and there are now 16 nations acceding to the Treaty but without consultative status.

Several developments have brought the Antarctic Treaty System under scrutiny. These include feelings that the consultative powers constitute an exclusive and undemocratic club and that the Antarctic should rightly be under a more representative aegis such as the U.N. Environmental organisations are concerned about the effects of current and future developments on ecosystems and other aspects of the region and are demanding a wider scrutiny of activities there. Debate in the United Nations tends to be anything but that, consisting usually of re-statements of well known positions. To give those currently engaged in discussing Antarctica an opportunity to have more informal meetings in the very place they were discussing the U.S. Polar Research Board, supported by the National Science Foundation and several private foundations, organised a "Workshop on the Antarctic Treaty System" at "Beardmore" Camp at about latitude 84°S. The camp of Jamesway or Quonset huts was actually on the Bowden Neve in the Transantarctic Mountains west of Beardmore Glacier itself.

Workshop participant Dr Trevor Hatherton is Director of Geophysics Division, Department of Scientific and Industrial Research and chairman of the Ross Dependency Research Committee. He was chief scientist for New Zealand Antarctic programmes during the International Geophysical Year (1957-58) and wintered at Scott Base in 1957.

PARTICIPANTS, TOPICS AND TREATMENT

Almost sixty participants, invited in their private capacity (whatever this means) and not as delegates, took part in the Workshop topics of Politics and Law, Institutions, Resources and Environment and, last but not least, Science. By my rough count about a quarter of the total participants were in each of the legal, diplomatic and

science professions though there was some overlapping of the legal-diplomatic credentials. I identified six people as earning their living on environmental policy though some of the scientists could be said to be heavily engaged on the technical side of environmental issues. Two participants were from the mineral (hydrocarbon) exploitation industry.

After relatively unarguable overviews on history, legal and political background and science the Workshop considered the Antarctic Treaty System as a Management Mechanism for

- The Environment
  (Martin Holdgate and John Heap)
- Living Resources
  (John Gulland)
- Non-Living Resources
  (Christopher Beeby)

A panel of three to four members gave their views following the lead papers and discussion was then thrown open to the floor.

The final long, long day began with views of the Antarctic Treaty System from the perspective of

- A Nation not Party to the Treaty System (Malaysia)
- An Acceding State (Denmark)
- A new Consultative Party (Brazil) and Interactions between the Antarctic Treaty System and the United Nations (Richard Woolcott, Australia).

The last talk was on "The Evolution of the Antarctic Treaty System – An Institutional Perspective" (Tucker Scully, U.S.A.). However all was not yet done, for the four panelists had to have their say; after them fourteen hands went up to speak from the floor – and finally the main speakers were allowed right of reply.

As Jim Zumberge, chairman of the Organising Committee pointed out at the end the scientists had learned a new language from the lawyers and diplomats. "Lastly" means in another twenty minutes I should be getting ready to wind up. "finally" means only another ten minutes to go unless I have another brilliant idea; and "in conclusion" means I will now repeat all I have said before.

Apart from the original science overviews three well illustrated lectures were given by U.S. scientists currently working in the region. They were on the life habitats within the rocks, on the Antarctic as a giant collector and preserve of meteorites and on the life within the sea ice. The laymen were clearly enthralled and astonished by what they were shown (e.g. half the biomass of the southern ocean appears to develop in the brine pockets of the sea ice). On Thursday 10 January, the participants were flown to South Pole Station and were shown the forty or more science projects there and talked to the band of eager young scientists about their work.

LIFE STYLE

Participants were (over) clothed by N.S.F. They were (over) fed by a friendly support group at the camp which boasted flush toilets and unlimited showers. A (moderately) well equipped bar was eagerly sought after each nine hour gabfest (in the absence of corkscrews there was a search for Swiss Army knives on behalf of participants from the wine-drinking countries). All participants took walks to the nearby rock outcrops and probably the most international game of cricket ever held was enthusiastically enjoyed. The weather was excellent throughout, for the most part sunny and windless; a few hours of blizzard conditions would have added enormously to the education of many of the participants.

The decision to hold the Workshop in Antarctica, notwithstanding the high standards of comfort, was a stroke of genius. Probably 80 percent

of the participants had never been there before and the experience of flying over 1600 km of the Transantarctic Mountains and a further 500 km over featureless icecap to the Pole must have brought home to them the vastness of the place. Except in certain coastal areas the Antarctic environment is not fragile – at least to events on the continent. Nuclear pollution of the icecap has occurred – but arising from explosions far from Antarctica itself; and much the greatest change to the continent may well arise from the burning of fossil fuels in cars and planes carrying everyone (including environmental activists) to their work, pleasure and meetings.

RESULTS

The Treaty System itself appears to have worked remarkably well so far in the interests of the continent, and it would be difficult to make any improvement in the Articles even 25 years after the birth of the Treaty. The bone of contention appears to lie with the desire of those countries who cannot fulfil the activities criteria to take part in the management of Antarctica. A phrase "common heritage of mankind" recurred continuously and comparisons were drawn to the regimes for the Sea and Outer Space. The various interpretations which could be given to the phrase were well outlined by one participant but in the end the political realities embodied in Article IV appear to be the stumbling block to agreement by the consultative parties for widening national participation in the management of Antarctica except by conforming to the activities criteria.

Nevertheless the Treaty System is evolving and acceding members can, since 1983, participate as observers at Consultative Meetings and will also be invited to the next session of the Antarctic Mineral Resource negotiations. The consultative powers have long had working relationships with a number of international bodies (SCAR, WHO, ITU, OIC, ICAO) as well as U.N. Specialised Agencies, as provided under Article III (2). With the Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR) there has been created an institution which is distinct from the consultative mechanism itself.

Some discussion took place on methods by which the poorer states could fulfil the activities criteria. Whether joint occupation at a base could severally or jointly qualify a number of nations; or whether an international station could be run to allow scientists from the less developed nations to gain experience. This was one of the several stones dropped into the pool which may raise productive ripples.

It was emphasised by the scientists that the one and only product of Antarctica so far was knowledge. The advantages and problems of mineral (essentially hydrocarbon) exploitation which (to the cynical) have raised international interest were discussed in relatively low key. From the outset it was stated and accepted that there are no known economic minerals. It was quite clear that it will be several decades before the technology and vast investment needed is available to exploit any which may be found and by then enhanced retrieval of oil and gas from present, past and future fields should solve the shorter-term problem and biotechnology may solve the longer term problem. Thus all parties could realistically agree to a 20-year moratorium on mineral exploitation in Antarctica without any loss of face whatsoever – and bask in their own self-righteousness. What more can anyone ask?

Environmental policy making

The uniqueness of the Antarctic environment led to the use of the continent as an international laboratory for the sciences; it is becoming a laboratory of international policy in which the environmental component is increasingly important in the view of Mr Ken Piddington, Commissioner for the Environment. In these edited extracts from an address given to the Wellington Branch of the NZAS he outlines some of the critical factors to take into account in the development of an environmental policy for Antarctica.

Antarctica is an area where we cannot afford to make mistakes; when development is undertaken without rigorous environmental safeguards the results are attacks against ecosystems and the erosion of environmental quality. This has occurred so often elsewhere because the use of resources has been subject to the priorities of political economies; in environmental terms such priorities are always short term and biased against environmental integrity.

If Antarctica faces the same dangers environmental policies are unlikely to be effective; if Antarctica is different, then there is an opportunity for the development of environmental policy.

In Antarctica:

- The characteristics of the marine and terrestial systems and the climatic factors create a set of conditions which alter completely the cost structure of any classical development proposal for the continent. Communications, transport, support systems and periods when no work is possible are examples of this. The absence of a land bridge makes the Antarctic different from those areas of the Arctic where there is some knowledge about coping with the polar environment.
- The contingency factor; if an operator cannot see any reasonable security for the very large sums of investment required this will dissuade him from developmental activity. Calculations based on off-shore oil exploration may however not be relevant in a matter of decades when new technology will emerge.
- The absence of a permanent population may mean less pressure for development or that there is less oversight of major projects. The problem of effective monitoring must be listed as a major difficulty in developing environmental policy for Antarctica.
- The area is subject to international contract; everyone is watching each-others activities. The contract which represented an important commitment to peaceful co-operation for the purposes of science is now under internal and external pressure.

The key question is whether the international contract is to be slanted towards development or effective environmental protection. The minerals regime is the focus at present but it is important to secure some agreement before other activities arise such as the development of tourism.

From the environmental point of view it is immaterial whether damage is caused by an over-enthusiastic scientist, the builder of an airstrip or the activities of an oil company.

Within the minerals regime negotiations we are dealing with very specific ideas on how decisions may be made and any environmental safeguards implemented.

Historically development projects have transferred environmental costs either to public authorities or to future generations. The nations involved in Antarctica must therefore logically agree either to meet the external costs or ensure that all such costs are part of the project budget. The best environmental management is that which is built into project implementation and that is where the responsibility should lie. This will not

Continued on page 290.

Antarctic fisheries management

— the first steps

Sealers, whalers and Antarctic biologists in the early years of this century were greatly impressed by the abundance of sea life in Antarctic waters, especially with the red whale feed known as krill.

However, the Antarctic is a harsh place to go fishing. Only in the last 15 years has commercial fishing for krill and finfish been developed to a large scale.

With the increasing momentum of Antarctic fishing in the 1970s, Antarctic Treaty members agreed that resource management was vital. After several years of negotiation they established a working protocol known as the Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR).

New Zealand fisheries scientist Don Robertson was appointed to the position of Vice-Chairperson of the Scientific Committee of the Commission for the Conservation of Antarctic Marine Living Resources in 1982. This year he was re-elected to the position. Dr Robertson heads the Deep-Water Section of the Fisheries Research Division of New Zealand's Ministry of Agriculture and Fisheries. He is based in Wellington.

For "Antarctic", Dr Robertson contributed the accompanying background article on the deliberations of the Commission and its Scientific Committee.

This is served by a Commission made up of representatives of Antarctic Treaty nations (and other acceding nations), and the Commission is served in turn by a Scientific Committee. Both the Commission and the Scientific Committee meet annually in Hobart, where the permanent secretariat is established.

The Convention contains some of the finest of ecological ideals – so "fine" that their implementation will provide a serious challenge to members of the Commission.

For example, Article II of the Convention includes the following directives: the "prevention of decrease in size of any harvested population to levels below those which ensure its stable recruitment"; also that "ecological relationships between harvested, dependent and related populations" be maintained; and also the "prevention of changes or minimisation of the risk of changes in the marine ecosystem which are not potentially reversible in two or three decades . . . "

In September 1984 the third meeting of the Commission and Scientific Committee was historic. The previous two meetings had considered procedural matters. At the third meeting, these received minor attention, and emphasis was focussed on current fisheries issues in Antarctic seas.

Issues were identified prior to the meeting and related particularly to the heavy exploitation of Antarctic cod species and icefish in the Atlantic sector, especially around the islands of South Georgia. Catches of one of the Antarctic cods (Notothenia rossii) had peaked at 400,000 tonnes in an earlier season but had declined to 330 tonnes in 1983-84.

Population surveys and catch data

both showed serious levels of decline in spite of self-imposed mesh and fish size limits and avoidance of the waters within 12 miles of South Georgia by the main fishing nation, the Soviet Union.

COD REDUCTION

In one instance, the Antarctic cod (Notothenia rossii) was estimated to have been reduced to less than 10 percent of its original population size and was still declining. Three nations have been involved in targetting for finfish – the USSR, West Germany and Poland, with the Soviet Union taking more than 90 percent of the total catch.

After considerable discussion on this overfishing problem, the Scientific Committee recommended that the Commission apply to all fishing nations the minimum net mesh sizes, minimum fish sizes and closure of the area within 12 miles of South Georgia – measures which the Soviets had already imposed on themselves.

Further measures were recommended by the Scientific Committee, but on these agreement was not reached.

N.Z. EFFORTS

The New Zealand delegation felt that there was sufficient evidence to justify the closure of the entire South Georgia fishery for at least one season, and that the closure be reviewed at subsequent meetings. This was proposed in the Scientific Committee deliberations and again when the Commission met. Although many national representatives supported this proposal, it was blocked by the fishing nations under the consensus rule.

KRILL

Krill fishing was also discussed. Reported catches had increased dramatically in recent years to reach a peak at 500,000 tonnes. The decline in the last two seasons in krill catches by the Soviet Union was attributed by that nation to be a result of economic and technical factors and not due to a decline in krill abundance.

Because the current scale of fishing for krill – around 250,000 tonnes per season – is low relative to projected yields, no management strategies were considered necessary yet and none were recommended.

Further discussion centred on aspects of data collection from fishing vessels, fish stock analysis problems, krill biology, ecosystem studies and the means of avoiding mortality to Antarctic wildlife, caused by lost nets and other non-biodegradable junk.

Intersessional meetings of working groups are planned on some of these aspects which will bring world experts together in preparation for the 1985 CCAMLR meetings.

Multinational marine research programmes coordinated by the Treaty's Scientific Committee on Antarctic Research (SCAR) continue to seek answers to numerous questions on Antarctic marine resource issues. However, New Zealand's commitment to these programmes is minimal. With pressing resource questions in its own waters and with an ailing economy to contend with, New Zealand has made only a very small contribution by assigning higher priority to issues closer to home.

N.Z. research costs and priorities

New Zealand's Antarctic research programme costs about NZ$4 million a year. The major source of funds is the Department of Scientific and Industrial Research – about $2.5 million a year. There is also input from the Ministry of Defence, Post Office, and universities.

These figures were given in December by the Minister of Science and Technology (Mr R. J. Tizard) in comment on statements that the programme was believed to be underfunded. Mr Tizard says the programme is working particularly well within the limitations the Government has had to place on it.

Mr Tizard says also that it is important for the public to realise New Zealand is producing effective scientific research. The level of scientific publications on Antarctic subjects is third in the world.

A plan for New Zealand to acquire its own Antarctic research ship which would have to be ice-strenghtened, has a low priority, according to Mr Tizard. Departmental officials have recommended that the country will get a better deal by continuing the present co-operative agreement with the United States and using its logistic support rather than trying to go it alone with its own ship.

To reconcile the needs of several departments for a research and supply ship the last Government set up a joint committee which has been studying the needs of the Department of Scientific and Industrial Research, which is responsible for oceanographic and Antarctic research, the Ministries of Agriculture and Fisheries, and Transport, and the Department of Internal Affairs.

When the research vessel Tangaroa was declared unseaworthy the DSIR put oceanographic research at the top of its list of priorities. The committee was concerned specifically with a replacement for the Tangaroa. It would not normally be an ice-strengthened vessel, and the committee's inquiries showed that ice strengthening would be a very costly exercise.

Mr Tizard says there are 60 DSIR scientists and quite a lot of others in the Ministries of Agriculture and Fisheries, and Defence, who are interested in oceanographic work – deep-water research – who have no ship to go to sea in. He considers this of much greater immediate significance to New Zealand and its exclusive economic zone than the longer-range research in Antarctica.

New Zealand's budget for its Antarctic programme is small compared with those of other nations whose expenditure runs into millions. But the high quality of the research it achieves is recognised internationally.

Devaluation and the movement of exchange rates in New Zealand and overseas makes it difficult to ascertain how much other nations engaged on Antarctic research spend each year. In the 1984-85 season, however, the United States plans to spend US$110.1 million. Up to $69 million of this is to support the scientific programme – maintenance and support of three permanent stations, contract services, payment for aircraft, icebreakers, and

new chartered research and cargo vessels.

Australia's estimated expenditure for the season is about A$25.8 million. The budget will be required for science programmes at three Antarctic stations and one on sub-Antarctic Macquarie Island, the relief and support of these bases by two chartered ships, one of which will also be used for marine research, and the charter of aircraft and helicopters to support science projects on the continent.

With its annual budget increased by five million sterling to about 11 million this season the British Antarctic Survey will continue to maintain five permanent stations and carry out a wide range of geological and biological research. It will also operate two research ships and three Twin Otter aircraft.

Details of recent expenditure by the Soviet Union on its seven permanent stations and two to three summer stations plus marine research is difficult to obtain. An estimate made some seasons ago was US$35 million plus or minus $10 million. The Soviet Union relies mainly on ships to transport scientists and technicians and supplies to its bases. Some scientists are flown south from Leningrad by way of the Middle East and Mozambique, but half the budget is reported to be spent on support alone because of the long time ships are at sea.

India, which has been a consultative party to the Antarctic Treaty since 1983, is reported to have spent US$5.5 million on its first two expenditions to Queen Maud Land. Brazil, also admitted to consultative status in 1983, spent more than US$1.25 million on its second expedition in the 1983-84 season. It used two ships, one for marine research, and established a summer station on King George Island in the South Shetlands.

Continued from page 286.

remove the need for some funding and supervisory control by an independent environmental "watchdog" but should make the task more manageable.

No environmental policy can be developed without adequate scientific information. An impressive amount of background material has been collected over the last 20 years; there is a need now to shift towards areas which have not received much attention in the past but are crucial to scientific understanding of environmental systems and processes in the Antarctic context. Meteorological patterns and biological cycles within the marine environment are two examples.

In developing a policy framework we tend to concentrate on the environmental assessment process. We know some of the weaknesses and can define the criteria which will need to be satisfied in the Antarctic setting. These include:

- adequate base-line information and the resources to supplement it where necessary and carry out monitoring;
- an early dialogue with the operator so that the assessment process can be approached in the most positive way;
- appropriate expertise to be available to the operator and the environmental watchdog;
- published information together with a clear procedure for public comment and independent review. For Antarctica this needs to be international notification;
- impartial and competent review personnel with the resources necessary to do the job.

It is now clear that broad environmental principles will in no way substitute for proper procedures; the fact that the need for an impact assessment was recognised for this year's CIROS drilling project is a helpful example. We have a duty to avoid a weak environmental regime in an area which is of direct interest to New Zealand.

Polar activities: N.Z.'s Ciros project

Deep seabed drilling in McMurdo Sound

A violent storm with winds up to 100 knots brought a major event in New Zealand's Antarctic research programme for the 1984-85 season to a premature end on November 9. Only hours before the storm drillers engaged on the first stage of the Cenozoic Investigations in the Western Ross Sea (CIROS), a long-term, offshore drilling project in McMurdo Sound, had succeeded in drilling 168.9m below the seabed to reach granite bedrock. Drilling would have continued until early in December but for the storm.

Although the winds shifted the 2m thick ice platform supporting the drilling rig 200m above the seabed, moved the drill off station, and virtually destroyed the core processing and science laboratories, and the drill shack, the CIROS project achieved its purpose – to obtain core samples from below the seabed which will provide a stratigraphic record of the sediments in McMurdo Sound. Analysis of all the core samples obtained from the time drilling started early in October will provide more information on the early glaciation of Antarctica and the rise of its mountain backbone – the Transantarctic Mountains. The marine glacial sequence is known to go back 50 million years.

With a budget of around $2.5 million spread over three seasons CIROS is New Zealand's largest Antarctic research project. Planning has taken two years' work by the Antarctic Division, Department of Science and Industrial Research, the Antarctic Research Unit of Victoria University of Wellington, and the Geophysics Division, DSIR. The main purpose is to drill four holes in two seasons through the seabed of McMurdo Sound to depths between 280m and 500m.

This season two holes were planned to be drilled off Butter Point in New Harbour 80km from Scott Base. The first drill site was CIROS I which is 12km east of the base camp at Butter Point; CIROS II was in Ferrar Inlet near the snout of the Ferrar Glacier. Scientists from Victoria University of Wellington led by the CIROS scientific co-ordinator, Dr Peter Barrett, and the drilling team, flew south in the third week of August to help prepare for the project. But initial delays in moving men and equipment to the camp at Butter Point across the unseasonably thin sea ice of McMurdo Sound, and transport problems meant that the drilling rig was not in place on the CIROS I site until the end of September.

ABANDONED

CIROS I was abandoned on October 3 because the sea ice at the site was only just over a metre thick, well short of the required two metres for safe support of the drilling rig.

Therefore the rig was moved to the CIROS II site where the ice was estimated to be two metres thicker, and granite basement rock was expected at between 150m and 300m instead of some 500m at CIROS I.

By October 10 the drilling rig was in position. Drilling began at mid-day on October 14, and the drillers began working round the clock in 12-hour shifts. Among major problems they had to cope with were the imploding of floats used to support the sea casing of the drill when the water pressure under the ice became too great, and later a jammed core barrel with the barrel and outer casing of the drill locked together for a time.

DELAYS

But nearly two months of delays, problems, and work under most difficult conditions, ended happily on October 26 when a 1m core sample of glacially deposited sediment measuring 63.5mm by 50.8mm was raised to the surface from 9m below the seabed. Dr Barbara Ward, a paleontologist from Victoria University who worked at the drill site, described the first core sample as fairly soft sand and mud sediment of a type known as a diamicton, said to be lake sediment and glacially deposited.

TARGET DEPTHS

Four days later the drillers had reached 25m towards the planned target depth of 500m below the sea-bed. In spite of mechanical problems, the team continued to make good progress in the first week of November, and when Dr Barrett returned to New Zealand on November 7 the drill was down to 91m, and he was hopeful that the target depth would be achieved.

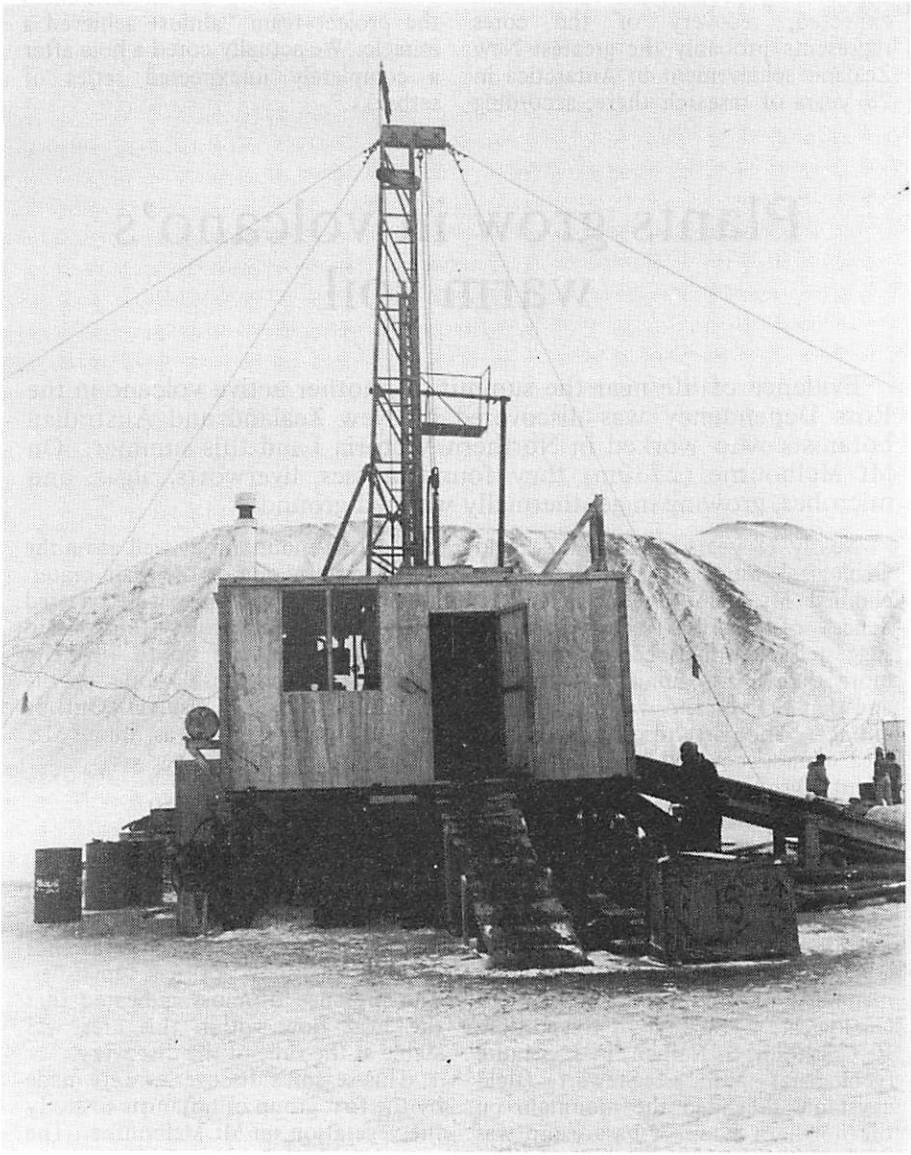
On the evening of November 8 the drill reached granite bedrock 168.9m below the seabed. Core samples were brought to the surface and carefully packed with others in special sealed drill boxes. Eleven hours later early on the morning of November 9 the full fury of the storm hit the drill site, destroying most of the buildings, and shifting the ice shelf on which the drilling rig was sitting.

SHELTER IN HUT

Five men at the site were able to shelter in the one remaining hut until a rescue team was able to go out and bring them back to the safety of the base camp at Butter Point 18km away. No further work was possible, and the movement of the rig's ice platform put an end to the next stage of the project – down-hole logging to obtain additional geophysical data on the sedimentary layers and rock through the 168.5m drill hole.

But all the core samples were intact although the storm had scattered the special drill boxes around the site. The samples were protected by grooves in the boxes and special packing. They have been brought back to New Zealand for further analysis at Victoria University. A preliminary study indicated that the samples were about four million years old and represented a considerable number of glacial episodes.

After the storm came the cleaning up of the drill site. The five men caught by the storm returned from the Butter Point camp, recovered all the drill casings from the seabed, collected what remained of the devastated buildings, and dismantled the drill rig. Almost all the equipment in the science laboratory was damaged in the storm and has been returned to New Zealand for repair. The rig, other equipment, and the building materials, have been removed from the drill site



Before the storm. The drilling rig on the sea ice in New Harbour before the storm struck on November 9.

Antarctic Division photo.

and stored at Butter Point.

Although the storm put an end to the drilling programme earlier than expected, recovery of the cores represents probably the greatest New Zealand achievement in Antarctica in 28 years of research there, according to Mr R. B. Thomson, director of the Antarctic Division. Dr Barrett considers that given the circumstances the project team "almost achieved a miracle. We actually cored a hole after a completely unexpected series of setbacks."

Plants grow in volcano's warm soil

Evidence of life near the summit of another active volcano in the Ross Dependency was discovered by New Zealand and Australian botanists who worked in Northern Victoria Land this summer. On Mt Melbourne (2730m) they found mosses, liverworts, algae, and microbes, growing in geothermally warmed ground.

Nearly 18 years ago a New Zealand Geological Survey expedition which climbed Mt Melbourne obtained evidence of thermal activity which suggested there had been eruptions no more than a few hundred years ago, and that the volcano was still far from extinct. The party also discovered an area of moss-covered steaming ground about 30 square metres in extent.

Mt Melbourne (74° 21 min S/164° 42 min E) is a large volcanic cone 40km north-west of Cape Washington in Wood Bay. It surmounts the projection of the coast between Wood Bay and Terra Nova Bay.

On January 7, 1967, the four members of the 1966-67 Southern Geological Survey Expedition, R. Chisholm, S. Nathan, F. J. Schulte (geologists) and I. Stewart (field assistant) ascended the mountain on the northern side. A base camp was established at 1200m and from there three motor toboggans were taken to within 300m of the summit.

Many small areas of hot steaming ground were found on the northern side of the mountain as well as on the south-western side of the main crater. Most of these hot areas were covered by hollow ice fumaroles from one to 6m in diameter and up to 4m high. The temperature inside one of the fumaroles was 7° Celsius. Outside the air temperature was minus 18° with a cool breeze.

HEAT FLOW

On the south-western side of the crater was an area of moss-covered steaming ground about 30 square metres in extent, which was not covered by snow or ice fumaroles. The presence of moss indicated that the heat flow within this area was stable at the time of the discovery.

This season's discoveries were made by the first group of botanists to study the vegetation on Mt Melbourne. The party was led by Dr Laurence Greenfield, of the botany department, University of Canterbury. With him were Dr Keith Thompson (University of Waikato), Dr Paul Broady

(University of Melbourne), and Dr David Given (Botany Division, DSIR).

In the 1977-78 season Dr Thompson obtained evidence of life near the summit of Mt Erebus (3794m), the other active volcano in the Ross Dependency. He discovered a patch of small dark-coloured moss growing in geothermally heated ground. The air temperature was minus 27° C. His discovery marked the beginning of taxonomic-botanic studies of vegetation on Erebus by University of Waikato botanists.

Dr Broady, who is a phycologist, also worked on Erebus in the 1981-82 season. He continued the original studies of the fungi and blue-green algae in the warm soils and fumaroles of the summit area. This season he made his fifth visit to Antarctica.

HARDY PLANTS

On Erebus Dr Broady and his colleagues studied an extensive exposed terraced area of warm soil from which thin clouds of steam arise. There hardy forms of plant life – moss and microscopic algae form coloured surface crusts. There are green patches of moss where the soil temperature may be as high as 30°C and the algae grow as reddish and blue-green coatings at temperatures of up to 60°. In summer the air temperature a few centimetres above the surface can be 90° cooler than the soil.

Biological and biochemical studies in the Terra Nova Bay region and on Mt Melbourne were made in association with the operations of GANOVEX IV, the geophysical and geological programme conducted by the West German Federal Bureau of Geosciences and Natural Resources (BGR). In November Dr Greenfield's team was flown to the West German Gondwana Station in Gerlache Inlet, Terra Nova Bay, and landed at the summit of Mt Melbourne by one of the GANOVEX IV expedition's three Aerospatiale Squirrel helicopters.

From reports by geologists the botanists knew that fumarolic vegetation was present on Mt Melbourne. Studies on the volcano were designed to draw parallels with similar vegetation on Erebus, and also to complement New Zealand research on Ross Island and further north in Northern Victoria Land.

In an area of about 100 square metres heated by steam from the volcano the botanists found the mosses, liverworts, algae, and soil microbes. They were growing in a temperature of about 30°C despite an air temperature of minus 15° to 20°C. Samples were taken from the area for detailed study in New Zealand. The moss samples have gone to the Botany Division, DSIR, and the soil microbes to the University of Canterbury.

LAST ERUPTION

Mt Melbourne is known to have erupted last between 150 and 200 years ago so the plants have established themselves on the side of the mountain since then. The seeds must have blown in, possibly from New Zealand, South America or South Africa. Similar organisms are found growing around hot pools in New Zealand's geothermal area at Rotorua and Wairakei.

One problem for the botanists still to study is how the plants, microbes, and algae, which all need sunlight, cope with the Antarctic winter which leaves them in total darkness for about a month and in very low light for about four months of each year. The algae and microbes can fix nitrogen which is unusual at that altitude; all the vegetation must be capable of growing in the dark yet is unable to photosynthesise.

Guidelines for the environmental

protection of the site were drawn up by the party during their stay on the volcano. Because there are only two or three similar areas on the Antarctic Continent a request will be made through the New Zealand National Committee for Antarctic Research for the Scientific Committee on Antarctic Research (SCAR) to declare the Mt Melbourne site a specially protected area under the terms of the Antarctic Treaty.

Lava bombs thrown high from Erebus

Mount Erebus, the largest and most studied of Antarctica's five active volcanoes, has been unusually active this summer. From mid-September to early October several major – and unexpected – eruptions were recorded, one throwing incandescent lava as high as 609m above the rim of the main crater of the 3794m mountain.

Late in October between six and 27 major eruptions were being recorded daily. Large numbers of lava bombs were ejected from the lava lake in the inner crater. Many landed outside the main crater near the Erebus observation hut used by United States, New Zealand, and Japanese scientists for seismological studies.

After a helicopter reconnaissance of Erebus on October 21 changes were made in the United States and New Zealand research programmes on the mountain. As it was unsafe to camp permanently at the Erebus hut a new camp was established on the north-west side 500m lower down near the United States Coast Guard helicopter which crashed on January 9, 1971. Later scientists were able to travel up to the observation hut and the main crater rim by motorised toboggan.

Helicopters were unable to fly and land near the Erebus hut and landings were restricted to altitudes 304m below the crater rim. To avoid being hit by lava bombs likely to be ejected at least 304m above the crater helicopters had to fly 804m to 1609m clear of the rim.

New Zealand scientist, Dr Philip Kyle, now of the New Mexico Institute of Mining and Technology, who is the co-ordinator of the International Mt Erebus Seismic Study (IMESS), the United States-New Zealand-Japanese project to monitor eruptions, and lava movements within the volcano, made the reconnaissance of Erebus with Mr David Bresnahan, the National Science Foundation representative at McMurdo Station for the first part of the season. Later he explained why the volcano entered on September 13 a new phase of activity significantly different from that experienced between 1972 and 1983.

According to Dr Kyle, who has worked on Erebus since the 1971-72 season, a new batch of lava had increased the level of the lava lake in the inner crater. This had resulted in an increase in the size and frequency of small degassing eruptions from the

lake and adjacent vents. In the past the eruptions only rarely ejected a few bombs out of the inner crater. Now many were landing outside the crater.

Since the 1980-81 season the New Zealand Geological Survey has monitored small earth movements on Erebus by geodetic surveys of a network of survey markers installed around the summit caldera, and recorded changes in the size of the main crater. This summer Brad Scott (leader), Peter Otway, and Graeme Block worked on Erebus for three weeks from mid-November.

Before being taken to the new camp site the team, which was accompanied by Paul O'Dowd, an Antarctic Division field assistant from the snowcraft and survival training team, spent three days on the Fang Glacier at an altitude of 2900m to acclimatise. Daily eruptions continued, although on a smaller scale, while the New Zealanders worked on the mountain, and they saw one lava bomb 11m x 7m and many more smaller ones typically about 2m in diameter. Some of the survey markers placed around the crater rim were buried or flattened by lava bombs but only one was lost.

Preliminary results from one part of this season's work indicate the crater is tilting inwards slightly. This supports the New Zealand scientists' theory that the early eruptions and subsequent increased activity indicate the volcano is cooling down rather than heating up. Results of their studies will have to be analysed by computer before any definite conclusions can be reached.

Mr Scott believes that the amount of heat flow through the volcano was decreasing before the early eruptions. This caused the lava lake to cool down, congeal on the surface, and form a crust. When the crust was broken by the released of pressure from heat and gases underneath it lava was thrown out by an eruption. If the heat flow remained the same the lava lake would have stayed molten, and gases would have bubbled off continuously instead of bursting their way through a lava crust.

Reference: "Antarctic", September, 1984, Page 240.

Hercules retrieved from Starshot Glacier crevasse

A United States geological field party, which included two New Zealanders, spent the night of December 28 in a survival camp on the Starshot Glacier when a United States Navy ski-equipped Hercules became stuck in a crevasse 3m wide and 45m deep while taxi-ing towards a better area for takeoff. The accident occurred at 2 p.m. local time and the downed aircraft was sighted at 81° 53 min S/158° 24 min E by another Hercules flying in the area. Rescue operations began in the late afternoon and by 3 a.m. on December 29 11 men and one woman aboard the aircraft had been ferried back from their survival camp to McMurdo Station 386km away.

When the accident occurred the University of Kansas field party – Peter Braddock (Picton), Margaret N. Rees (Canada), Brian R. Pratt (U.S.), and Raymond H. Waters (Blenheim) which had been working near the head of the Starshot Glacier was being transferred to another camp to continue its studies in the southern

Churchill Mountains, north of the Nimrod Glacier. The aircraft had made an open field landing in an area where there was a heavily crevassed section extending about 1.6km to pick up the party.

Nobody was hurt in the accident, and the crew of eight and the field party were able to leave the aircraft safely and set up a survival camp. Two of the aircraft's propellers were damaged in the accident. It stopped with the rear portions of both main skis drooping into the crevasse, the rear portion of the fuselage resting on the snow on the south edge, and the left wing down with the wing tip about .6m off the ice.

Starshot Glacier is 32km long. It flows from the Polar Plateau eastward through the Churchill Mountains (81° 30 min S/158° 30 min E). These border the west side of the Ross Ice Shelf between the Byrd and Nimrod Glaciers.

Command of the search and rescue operations was assumed by the airborne Hercules which circled the area for nearly nine hours. A helicopter arrived from McMurdo Station at 6 p.m. and was followed by another Hercules with pumps and fuel for a helicopter refuelling station. The first five people from the downed aircraft were lifted out of the area at 8.40 p.m.

An hour later members of the New Zealand-United States search and rescue team, Paul O'Dowd, Peter Sampson (N.Z.), David Lasorsa (U.S.) and the Scott Base dog handler, Kevin Conoglen, arrived to assist in the rescue and aircraft retrieval operations. They helped to choose a safe area for the repair camp and also rigged safety lines round crevasses. The last of seven shuttle missions by a Hercules aircraft was completed at 1.15 a.m. on December 29. Helicopter flights continued, and the rescue operation ended at 3 a.m.

Pumps and air lifting bags were flown from Christchurch to McMurdo Station on December 31 and then to the Starshot Glacier repair camp/skiway for use in lifting the Hercules out of the crevasse. With the aid of two tracked vehicles and the lifting equipment the aircraft was out of the crevasse by mid-day on January 6. The area ahead of it was clear of crevasses and it was able to taxi on two engines to the repair camp 2.5km away.

Two engines and propellers were replaced at the repair camp, and on January 11 the Hercules was flown to Williams Field near McMurdo Station. It returned to Christchurch on the night of January 14, and after checks and maintenance is expected to be back in service towards the end of the month.

TO READERS

Perceptive readers will observe that this, the December issue of Antarctic contains some January material. The editors considered that this was justified because of the lateness of the issue attributable to the temporary transfer of production from Christchurch to Wellington. We hope to return to normal in March and sincerely apologise for the delay.

Arrival Heights laboratory and Mt Newall repeater

New Zealand scientific field parties will have better radio communications with Scott Base in future as a result of the installation this summer of a VHF repeater station on Mt Newall (1920m) at the north-east extremity of the Asgard Range overlooking the Wright Valley and McMurdo Sound area. New Zealand's second base in Antarctica, Vanda Station, is in the Wright Valley, and the repeater will relay radio communications from the station back to Scott Base.

Field parties communicate with Vanda and Scott Base on an HF link. But quite often Vanda can hear field parties when Scott Base cannot so this traffic will now be relayed to Scott Base through the VHF repeater which is on the highest mountain in the area. VHF radio communications work on a line of sight signal and are not susceptible to ionospheric storms which can cause blackouts in HF communications.

Housed in a 1.8m by 1.2m insulated hut weighing .78 of a tonne, the repeater station was assembled at Scott Base, tested, and then taken by vehicle 50km across the sea ice of McMurdo Sound to Butter Point. There it was slung under a United States Navy helicopter and lifted to the mountain site. The installation was completed by a party of four from Scott Base. Four holes were drilled into the permafrost on the site and the hut was secured with metal stays as it will be subject to high winds.

New facilities for upper atmosphere research at Arrival Heights 3km north of Scott Base have also been completed this season. Under the Antarctic Treaty Arrival Heights is designated a Site of Special Scientific Interest (SSSI) and provides an electrically quiet area for recording upper atmosphere changes which is used by United States and New Zealand scientists.

A new science laboratory to house atmospheric recording equipment was built on the site by two Scott Base carpenters, Peter Walton (Dunedin) and Daryl Callaghan (Nelson). An emergency accommodation hut with two bunks was built at the base and taken to Arrival Heights by bulldozer.

Scott Base science technicians monitor and maintain the laboratory's receiving and recording equipment on behalf of the owners. Two radio pulse receivers and owned by the University of Canterbury and are used to gather data for research in the D-region of the ionosphere. Another radio receiver is owned by the Physics and Engineering Laboratory, Department of Scientific and Industrial Research, and has been used this summer to obtain data from strain meters on the Erebus Glacier Tongue.

Equipment for an upper atmosphere trace gas experiment by the PEL atmospherics station is also housed in the new laboratory. It is being used to measure the amount of stratospheric nitrogen dioxide and ozone. Both of these gases may contribute to the "greenhouse" effect on world climate, and also may control some of the interactive effects of ozone and oxygen. In January a moon tracker was installed so the experiment can be continued this winter using moonlight instead of sunlight to establish how the light spectrum is refracted by the two gases.

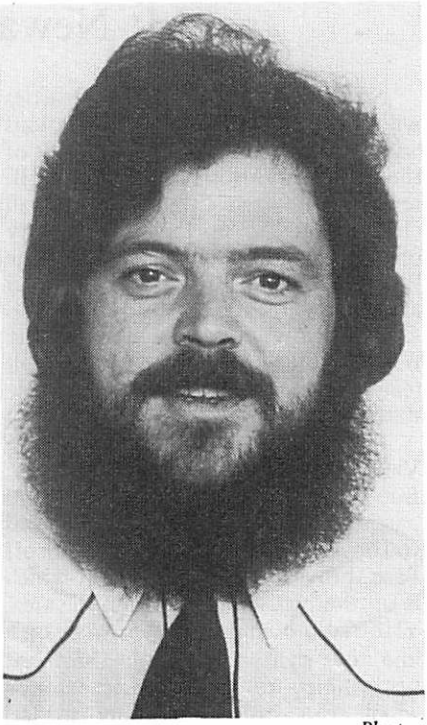
Scott Base winter leader

After three months in Antarctica Mr Peter Cresswell, officer-in-charge of the New Zealand summer research programme, will not return to Scott Base to lead the winter team. He was flown back to Christchurch on January 3 after suffering severe chest pains.

Mr Cresswell spent a week in Princess Margaret Hospital for tests, and after his discharge the Antarctic Division, Department of Scientific and Industrial Research, decided not to send him south again. Mr R. B. Thomson, director of the division, said that doctors had not been able to determine precisely what the problem was or the likelihood of it recurring, but Mr Cresswell would not necessarily be precluded from spending another season in Antarctica in the future.

This winter the officer-in-charge will be the postmaster, Mr Leo Slattery. It will be his third winter at Scott Base. His first trip south was in 1973-74. In 1980 he wintered at Scott Base as postmaster, and for the 1982 winter he was officer-in-charge and postmaster.

A member of the summer support team at Scott Base is expected to remain for the winter. This will maintain the strength of the winter team at 11.



MR LEO SLATTERY *Photo: Christchurch Press*

Old man Onyx still rolling along

Rising temperatures in Antarctica and the flow of the Onyx, the continent's only real river, on its way to Lake Vanda near Vanda Station, are part of New Zealand's monitoring of weather changes each summer. Hydrologists from the Ministry of Works and Development, assisted by the summer staff at Vanda Station, measure and record the river's flow which begins normally early in December.

Frozen for most of the year the Onyx runs for only a few weeks in the summer. It rises at the eastern end of the Wright Valley, then, fed by melt water from the Lower Wright Glacier, flows 40km inland from Lake Brownworth to Lake Vanda. Last season the river did not begin its flow until December 16, which is later in the year than normal. By December 17 it had become a torrent, reaching its highest level since the 1970-71 summer.

This season the waters of the Onyx reached the permanent weir near Vanda Station and flowed over it at 8.46 a.m. on December 12. The time on December 16 last season was 6 a.m., and in the 1982-83 season it was 1.30 p.m. on December 11. In the 1981-82 season the water arrived at the weir on December 9 at 11.15 a.m.

Since December 12 the river has overtopped the weir on a number of occasions, the level of Lake Vanda has risen about 0.8m to the end of December.

New laboratory dropped to Vanda

Vanda Station in the Wright Valley 130km west of Scott Base, now has a new science laboratory. A prefabricated 7½m by 4m building weighing 7000kg was dropped on November 17 by parachute from a Royal New Zealand Air Force Hercules on to the frozen surface of Lake Vanda. In addition the Hercules made a second drop of 2112 gallons of Antarctic diesel fuel in 48 drums.

Scientific equipment and instrumentation were installed within a few days of the drop. The old laboratory building has been dismantled and the timber moved to Marble Point. It will be taken to Scott Base at the end of the season.

In that year a Hercules dropped 18,144kg of building materials, fuel, and supplies on the frozen surface of Lake Vanda. Mr R. B. Thomson, director of the Antarctic Division, Department of Scientific and Industrial Research, was aboard the Hercules when it made the first of vie drops on October 16. This year he was unable to take part in the operation as intended.

On the first drop from a height of 335m the laboratory building was parachuted into the middle of the dropping zone. Only one building panel was slightly damaged. Forty-eight drums of diesel fuel were then landed on the second drop but a tangled parachute resulted in damage to three drums and a minor fuel spillage on to the 4m ice cover within the zone over Lake Vanda.

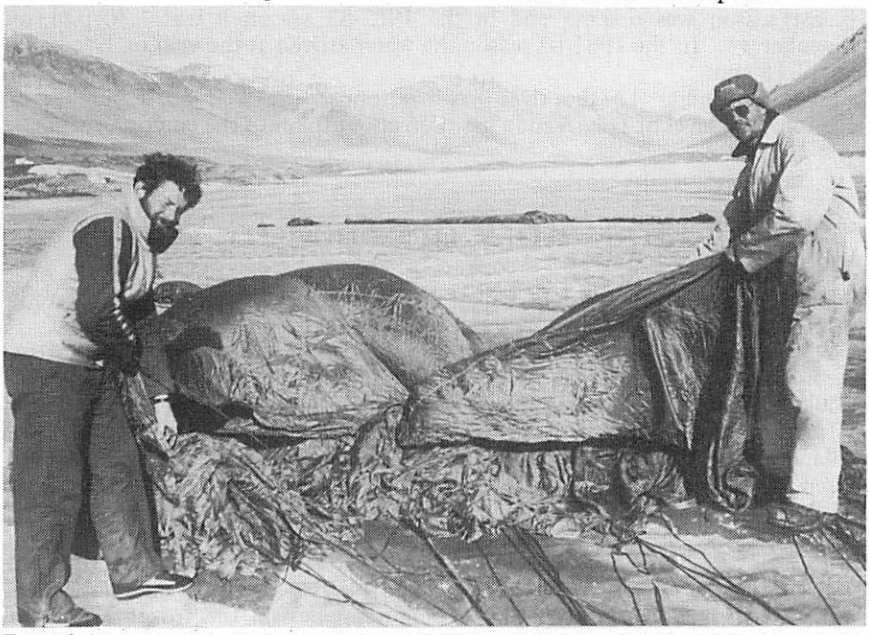
Remedial action was taken immediately. The fuel spillage was successfully confined to a small area of surface ice and none penetrated the waters of Lake Vanda. The removal of all traces of oil was completed on

PHOTOGRAPH PRESENTED

Scott Base now has a framed photograph of Scott's birthday dinner in the hut at Cape Evans on June 6, 1911. The photograph, presented by the nextdoor neighbour, McMurdo Station, hangs in the base mess. With Scott, who was 43, the photograph shows 14 men around the officers' table: Atkinson, Oates, Meares, Cherry-Garrard, Taylor, Nelson, Evans, Wilson, Simpson, Bowers, Gran, Wright, Debenham, and Day. The absentees, Campbell, Priestley, and Levick, were at Cape Adare.

This was the second airdrop by the RNZAF since the summer of 1967.

November 21 by staff from Vanda and Scott Base. All ice suspected of contamination was dug out by hand and sent to Scott Base for disposal.



Two of the summer team at Vanda station folding a parachute after the air drops on to the ice of Lake Vanda. On the left is Ian Laird (Meteorologist) and Don Reid (Field Assistant).
Antarctic Division photo.

Putting on ice

Scott Base golfers went round two courses this summer and played the game for two seasons. The first season began on August 26, and the second ended early in December.

Both seasons were closed because of ice trouble. New pressure ridges in the McMurdo Sound sea ice caused problems on half the fairways of the first nine-hole course. The fourth green or "white" turned into a melt pool; the ninth had a one-in-four gradient.

On October 1 the course was closed and another course was laid out on the ice not so close to the pressure ridge area. The length of its fairways ranged from 100m to 200m, most of the holes were par three or four, and the longest was par five.

This course, which started with a hole named "Skua Dive" and ended with "Dog Run", close to the base dog lines, served its purpose until early December. Then the summer sun began to melt the ice and both fairways and "whites" (greens) became too soft for play.

Newcomers to Scott Base who used the communal set of clubs found that golf in Antarctica has some novel hazards. Marauding skuas swooped over the course and flew away with balls, probably mistaking them for penguin eggs.

White balls were lost more easily on the ice. The old hands chose orange balls which could be sighted quickly on the white fairways.

International:

BAS news

Delays to ship and air operations

Bad weather over Drake Passage, and thick fog and dense pack ice off the Antarctic Peninsula caused long delays to the start of the British Antarctic Survey's summer operations by ship and air this season. The three Twin Otter aircraft were held up for two weeks at Punta Arenas, and the Royal Research Ship John Biscoe's efforts to land men and cargo at Damoy Point, Wiencke Island, for air transport to Rothera were also interrupted.

This season, for the first time, BAS is also using helicopters to support field research and its stations. Limited helicopter support has been provided for many years by HMS Endurance the Royal Navy's ice patrol ship and her predecessor, HMS Protector, but this summer two chartered Bell Jet Rangers will operate from the RRS Bransfield.

Since Rothera was opened on Adelaide Island in 1977 it has become the major BAS centre for summer air operations, and is used also on staging flights by Chilean and West German aircraft, and Canadian Twin Otter aircraft chartered for United States research projects. This summer 44 men are travelling to field work sites by way of the station.

HARD RUNWAY INVESTIGATION

A Canadian expert is investigating this summer the possibility of constructing a hard runway near the station. The present snow airstrip is 5km from the station at a height of 280m.

On their flight from Britain the Twin Otter aircraft did not arrive at Rothera until October 25, having been held up for two weeks at Punta Arenas, Southern Chile, by bad weather over the Drake Passage. (On one attempt to fly south the aircraft were forced to turn back within 120km of the Antarctic Peninsula.) However, two were able to fly from Rothera to Fossil Bluff on the 26th, and the field station was then reoccupied for the summer.

Chilean Air Force Twin Otters had already flown supplies of fuel to Fossil Bluff in preparation for seven flights by their aircraft to Siple Station and possibly the South Pole. Two of the aircraft had visited Rothera in early October, after reopening their station on Adelaide Island (the old BAS Adelaide station now renamed Teniente Carvajal). Meanwhile, at Rothera, vehicles and equipment had been prepared for BAS summer field work, the snow airstrip marked out, and the two airstrip cabooses (mobile huts) raised above the accumulating snow.

In mid-September the John Biscoe left Southampton and sailed south via Rio de Janeiro and the Falkland

Islands. She called first at Hope Bay at the north-eastern tip of the Antarctic Peninsula. Two men were landed there on November 2, to work on the fore-arc and subduction complex rocks. They will spend some time at the old BAS Hope Bay station (closed in 1964) and will work on the northern part of the Trinity Peninsula before being picked up from Cape Legoupil (near the Chilean Barnardo O'Higgins Station) in mid-January.

THICK FOG

On November 3, the ship visited the Joint Services Expedition base camp on Brabant Island before proceeding in thick fog and dense pack ice to the nearby BAS summer air facility (hut and snow airstrip) at Damoy Point, Wiencke Island. It was not safe to anchor until the next day. Twelve men and cargo to be airlifted to Rothera were then landed, while others remained on board to await later flights.

Poor visibility and intermittent high winds exacerbated by dense pack ice forced the ship to retreat to the Gerlache Strait for a week. As there was no sign of an improvement, the 12 field workers still on board were taken to the Chilean Marsh Station, King George Island, to await BAS flights south from there when the weather improved. Seven were picked up the next day.

Then the ship turned north to call briefly at Punta Arenas to collect more men and stores. They, too, were to be flown south from Marsh as dense pack ice still blocked access to Damoy.

Flights to Damoy were not possible until November 10, but eight men were then ferried to Rothera. A week later when the weather again improved one aircraft managed to land to collect the remaining four, but was unable to take off again for two days because of soft snow surfaces. Meanwhile, the other two aircraft ferried fuel to Fossil Bluff and established a field party in central Alexander Island.

HELICOPTER SUPPORT

For helicopter operations the two chartered Bell Jet Rangers were taken south on the Bransfield, which sailed from Southampton at the beginning of November. A helicopter deck was provided when the ship was built and fitted out in 1970, as it was hoped that helicopter operations would be possible eventually.

This season the helicopters will have a vital role in establishing large field depots on the Ronne Ice Shelf and in the Ronne Entrance area south of Alexander Island, where ship operations are very difficult. It proved impossible for the Bransfield to reach a suitable landing site in the Ronne Entrance area last year, and the ship sustained considerable damage in the attempt. In addition, the helicopters will carry out sea ice reconnaissance for the ships and provide general support for the stations which will include the establishment of two more field huts on Signy Island, and the transport of materials for carrying out modifications to the Halley buildings.

SCIENTIFIC PROGRAMAMES

All stations have continued their routine scientific programmes. Short journeys, chiefly for recreation, have been undertaken in several areas in the brief periods of good weather. Visits to the mainland were made from Faraday Station, Argentine Islands, and journeys to the ice front and "hinge zone" of the Brunt Ice Shelf from Halley, the "hinge zone" party tried to reach the inland ice but their route was blocked by ice cliffs.

A West German depot of aviation fuel was transferred from the old

Halley station to the new and BAS stores dumps raised. A new snow airstrip was also marked out.

A Canadian Twin Otter aircraft refuelled at Rothera in early November, and was grounded there for a week by bad weather before being able to continue on to McMurdo Station by way of Siple and Byrd Stations. A few days later, a West German Dornier 228 aircraft called at Rothera and Fossil Bluff en route for the Filchner summer station on the Filchner-Ronne Ice Shelf.

Weather halts Brabant Island team

Because of the rugged mountainous terrain of Brabant Island, the largest unexplored island in Antarctica off the west coast of the Antarctic Peninsula the winter team of the 1983-85 Joint Services Expedition led by Commander Chris Furse, RN, was unable to move to the southern half of the island in September as planned. Establishment of a motor toboggan route from north to south by way of the 2300m Harvey Heights took longer than expected, and one major setback was the loss of a substantial depot from a site 90m inland and 10m above sea level near Astrolabe Point; it had apparently been swept seaward in storms and lost.

Severe weather continued until October. One party then reached Mount Parry (2,522m) in the centre of the island and, after two weeks' hard labour establishing camps at about 1,940m and 2,400m, completed the first ascent on October 30. It reported seeing "stupendous ridges rising from a sea of cloud".

Another party worked along the northern ridge of the Harvey Heights at an altitude of 1,750m, part of the route being poised above a 600m ice fall. The team had back-packed 238 man/days supplies 26km from Astrolabe Point in relays, and each man had climbed 7,400m in the process. Five men later explored the ridge to the east.

All parties are due to return to the base camp at Metchnikoff Point early this month. Some will be picked up by HMS Endurance in January and the rest will be joined by a 16-man summer team.

In Shackleton's footsteps

Twelve men of the Royal Greenjackets stationed in South Georgia have repeated something that was done 20 years ago – retracing the route followed by Shackleton, Worsley and Crean across the island to obtain help from the whaling stations for their companions left on Elephant Island in 1916.

The first to repeat the historic journey were members of a British combined services expedition in November 1964. Led by Lieutenant Commander M. K. Burley, RN, the expedition whose principal object was mountaineering made the crossing from King Haakon Bay to the abandoned Stromness Whaling station to verify the exact route followed by Shackleton, Worsley and Crean which had been the subject of dispute for sometime.

Two men from the Royal Navy, two from the Royal Marines, three from the army and three from the Royal Airforce established the route beyond doubt. Captain Roger Morgan-Grenville lead the Royal Greenjackets team which made the crossing in the teeth of high winds, rain, sleet and poor visibility. In one stretch of little more than 2 km they had to negotiate 300 crevasses.

Swedish and Dutch plans in Antarctica

Swedish and Dutch scientists are expected to return to Antarctica in the near future. As a result of preliminary talks on an agreement for co-operative polar research Sweden may have two scientists working with the New Zealand Antarctic research programme next summer. In the Netherlands the Ministry of Education and Science has allocated one million guilders for young Dutch scientists to take part in Antarctic research, and there are plans for oceanographic research in the Southern Ocean.

Sweden, which has been engaged in Arctic research for many years, was one of the first countries to send an expedition to Antarctica in the Heroic Age of exploration. It co-operated with Britain and Norway in an expedition which worked in Queen Maud Land from 1949 to 1952 but since then it has not been active in Antarctica, and did not accede to the Antarctic Treaty until April 24, 1984.

HISTORIC LINK

Otto Nordenskjold's Swedish Antarctic Expedition (1901-03) was one of five to winter in Antarctica during the first 10 years of the century. It went south at the same time as Scott's Discovery expedition (1901-04) and was the first to land on the South American side of the continent.

Forty-six years after Nordenskjold's expedition ended Swedish scientists and airmen were in Antarctica as members of the Norwegian-British-Swedish Expedition in Queen Maud Land. The project was the first large-scale international expedition and was inspired by the noted Swedish glaciologist, Professor Hans Ahlmann. A Swedish scientist, Valter Schytt, was chief glaciologist and second-in-command of the expedition.

Sweden was one of the many nations which took part in the International Geophysical Year (1957-58) but not in Antarctica. Its scientists worked in the Arctic which had been designated a special area in the worldwide network of observatories which made concurrent measurements of geophysical phenomena in both hemispheres. Since then Sweden has concentrated on Arctic research, although there is one Swedish scientist with the present Norwegian expedition in Queen Maud Land.

Prospects of co-operation between Sweden and New Zealand were discussed in Christchurch early this year by Mr R. B. Thomson, director of New Zealand's Antarctic Division, and Dr Bo Johnson Theutenberg, legal adviser to the Swedish Ministry of Foreign Affairs, and professor of international law at Stockholm University, who has ambassadórial status. They met after their return from the Antarctic Treaty workshop on the Beardmore Glacier.

After the discussions, which will be continued at government level when the Swedish Minister of Foreign Affairs visits New Zealand in April, Mr Thomson said he expected that if

Sweden sent two scientists to work with the New Zealand programme next summer it would be the beginning of a formal agreement like those with the United States and West Germany. Such an agreement would entail Swedish and New Zealand scientists working together in the Arctic and Antarctica.

Sweden's co-operation is most likely to be in the areas of glaciology and science relating to global climatic studies, according to Dr Theutenberg. He said that his country's concern with the Law of the Sea Convention, the sciences of sea resources, the hydrocarbons that were rich in the Arctic, and environmental preservation, had drawn its interest back to Antarctica. Many Swedish scientists were interested again in comparative polar research, and the Antarctic was open to research while Arctic areas were not.

DUTCH INVOLVEMENT

Although the Netherlands acceded to the Antarctic Treaty on March 30, 1967, and shared in four expeditions with the Belgians in Queen Maud Land, it has not engaged in Antarctic research for nearly 20 years. But interest has been maintained through the Netherlands Academy of Science, scientists with Antarctic experience, and the Dutch committee of the Internaitonal Union for the Conservation of Nature (IUCN).

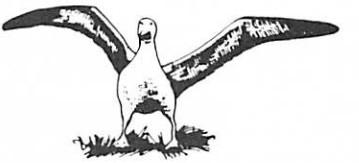
Four Belgian-Dutch expeditions worked from the Belgian base Roi Baudouin in Queen Maud Land between 1964 and 1966, and Dutch scientists wintered there for three years. The expeditions were organised by a Belgian-Dutch Antarctic Committee headed by Baron Gaston de Gerlache, leader of Belgium's IGY expedition in 1957-58.

Belgium contributed 17 million francs to the cost of the first expedition in the 1963-64 season and the Netherlands share was eight million. The Dutch Government ended its co-operation for financial reasons when the 1966-67 expedition ended.

Four Dutch scientists and technicians wintered at Roi Baudouin on the first expedition and there were six in the next two winters. The expeditions used the Danish ice-strengthened ship Magga Dan for each expedition.

In 1963-64 the combined expedition built a new base to replace the original Roi Baudouin Station built in January, 1958 and closed in February, 1961. Belgium has done no Antarctic research since the base was closed early in 1967 although it is still a consultative member of the Antarctic Treaty and a member of the Scientific Committee on Antarctic Research (SCAR).

Dutch interest in Antarctic research was renewed at the end of 1984 when the Ministry of Education and Science decided to allocate one million guilders for young scientists to participate in Antarctic research. The Netherlands was represented at the Antarctic Treaty workshop early this year by Mr Adrian Bos, of its Ministry of Foreign Affairs, there are plans to obtain a ship for oceanographic research in the South Atlantic and the Southern Ocean, and the Dutch committee of IUCN intends to publish an Antarctic newsletter in 1985.



Chinare 1

First base named Great Wall Station

China's first national Antarctic research expedition (CHINARE) established a summer research station on King George Island in the South Shetlands this season. A team of 53 led by Dr Guo Kung director of the office of the Chinese National Committee for Antarctic Research, was responsible for the establishment of the base, named the Great Wall Station of China, and worked on the island for about seven weeks.

CHINARE used two ships for the expedition – the 12,469 tonne research ship Xiang Yang Hong No. 10, owned by the National Bureau of Oceanography, and the Chinese Navy's salvage ship J121, also of 12,469 tonnes, which served as the logistic support ship, carrying vehicles and equipment for the establishment of the station, and a French Aerospatiale Super Hornet helicopter. The Xiang Yang Hong No. 10 carried a crew of 154 and there were 308, including trainees abourd the J121.

PROGRAMME

A programme of mapping, meteorology, geology, and geomorphology, and biology, was carried out by sicentists on King George Island, and others on the Xiang Yang Hong No. 10 worked in the ice-free area of the Bellingshausen Sea, studying marine living resources, particularly krill and their environment. Two Argentine scientists, one from the Argentine Navy, took part in the Southern Ocean investigations.

Commander-in-chief of CHINARE was Chen Dehong, deputy director-general of the National Bureau of Oceanography. Officers in charge of the ships were Zhang Zhiting (Xiang Yang Hong No. 10) and Yu Deqing (J121). Dr Guo Kung was in charge of the station, and the officer in charge of the Southern Ocean investigations was Jin Qingming, deputy-director of the Second Institute of Oceanography attached to the National Bureau of Oceanography.

SUPPLIES

With the station team of 53 and 75 scientists on the research ship the expedition sailed from Shanghai on November 20. The ships called at Ushuaia, the Argentine port of Tierra del Fuego, for supplies of fuel, food, and water. They left port in the last week of December and sailed through Drake Passage to King George Island.

During the establishment of the station the Xiang Yang Hong No. 10 headed for the Bellinghausen Sea to investigate marine living resources. The J121 remained at anchor off the island to provide logistic support.

After completion of the programme the expedition planned to spend five days at Punta Arenas, the Chilean port of Tierra del Fuego. Then the ships were to sail through Magellan Strait into the South Pacific, and were expected to return to Shanghai early in April.

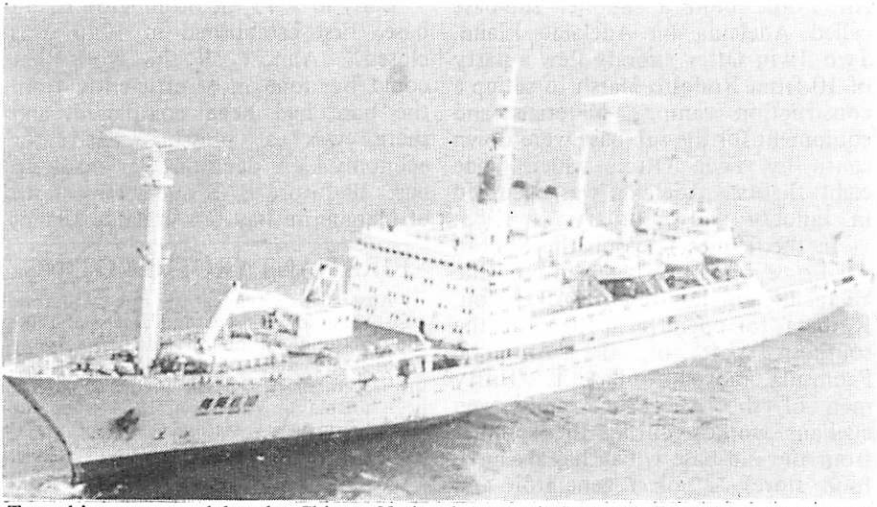
1980-81 FIRST SEASON

Since the People's Republic of China began active work in Antarctica in the 1980-81 season 32 scientists have carried out research projects on the continent and in the Southern Ocean, primarily with the Australian, New Zealand, Argentinean, Chilean, and Japanese programmes. In 1984 three wintered with the Australians, one doing glaciological research at Casey, and two doing marine biology and upper atmosphere physics at Davis.

A fourth scientist did upper air meteorology at the Argentine Air Force base, Vicecomodoro Marambio, on Seymour Island. This season two geologist, Zhang Fuyuan and Chin Tingyu were guest scientists with the New Zealand programme. They worked with a field party in the dry valleys, and then did independent research in the Lower Wright Valley.

POLAR RESEARCH INSTITUTE

In the near future the People's Republic of China plans to set up a polar research institute in Shanghai under the direction of the National Committee for Antarctic Research. An Antarctic training centre in the north-eastern part of China will be used for survival training, fire protection courses, and to give scientists and support staff experience in a cold environment.



Two ships were used by the Chinese National Antarctic Research Expedition to establish its first base in Antarctica. The Xiang Yang Hong No. 10 is owned by the National Bureau of Oceanography.

U.S. Navy Photo.

New Chilean permanent station

Chile now has four permanent stations in Antarctica, all in the Antarctic Peninsula area. The new station, Teniente Carvajal (67° 34 min S/68° 08 min W) is Base T, the old British Antarctic Survey base on Adelaide Island, established in 1961 and closed in 1977. It was used by the Chilean Air Force in the 1983-84 season as a summer facility with the future option of establishing it as a permanent station.

Britain transferred the base by agreement with Chile early last year. The other three permanent Chilean bases are Capitan Arturo Prat (62° 30 min S/59° 41 min W) on Greenwich Island in the South Shetlands, Rodolfo Marsh (62° 12 min S/58° 54 min W) in Maxwell Bay, King George Island, also in the South Shetlands, and General Bernardo O'Higgins (63° 19 min S/57° 54 min W) on the Trinity Peninsula of Graham Land.

In the 1981-82 season the Chilean Air Force built a summer sub-base called Adelaida on Adelaide Island. Two Twin Otter aircraft flew a party of 10 from Rodolfo Marsh to set up a construction camp. Materials and equipment for the sub-base were flown south by Twin Otters which made eight flights. Adelaida was occupied in January and February of 1983.

In the 1983-84 season the Chilean Air Force which, earlier, had used the air facility of the present BAS station, Rothera, for operational flights to the southern part of the Antarctic Peninsula, moved to Base T. Thirty men of the Air Force and seven civilians worked during the summer from the old base which has six huts, food stores, a power generator, and fuel storage facilities.

Rothera (67° 34 min S/68° 07 min W) is 64km to the north-east of Base T. It has an ice runway nearly 5km inland at a height of 280m.

Closed on March 1, 1977, after 16 years of continuous occupation Base T was established on February 3, 1961 as a meteorological station. It became the main centre for BAS summer air operations from an ice runway marked out on the piermont. The move was made because snow landing strips on Adelaide Island deteriorated seriously over several seasons, and numerous crevasses appeared on the runway, drastically reducing its length.

Early in 1975 the Stonington Island base, first established in 1946, was closed. Almost all the work that could be done most efficiently from the base had been completed, and there was a pressing need for economy. A decision was made to base all future BAS operations south of Marguerite Bay on Adelaide Island.

FIRST ANTARCTIC VOTING

Australians serving at the three Antarctic bases, Mawson, Casey, and Davis, and the sub-Antarctic station on Macquarie Island voted in a Federal election for the first time on December 1. Their predecessors had been unable to vote from 1954 when the first permanent station, Mawson, was established because communications with all bases is by ship only, and results could not be brought back by air.

Amendments to the electoral laws in 1983 gave the vote to winter teams and others on voyages south on summer expeditions. On the historic day the results were radioed to Australia in code by the electoral officers at each base.

Sub-Antarctic

Third expedition to Snares Group

A third University of Canterbury expedition to the sub-Antarctic Snares Islands 209km south-west of Bluff, supported by the Lands and Survey Department, with a grant of $11,170, began biological and entomological research on the islands early this month. Seven scientists from the university and the National Museum, Wellington, will spend two months studying fish, birds, invertebrates, and plants which live on and around the islands.

Leader of the group is Mr Peter Johns, a senior lecturer in zoology, who will take over in January when he returns from Antarctica. Mr Johns, who is an entomologist, will continue the studies he has made for the last two summers of the effects of exotic aphids on the island vegetation.

Interim leader of the group is Dr Bill Davison. He and Dr Graham Hardy, of the National Museum, are both ichthyologists, and will study inter-tidal fish and algae. They will be assisted by Andrew Stewart (National Museum), and Gary Scrimgeour and Heather Cameron (University of Canterbury).

For the third summer Mr Colin Miskelly will study the breeding of the Snares Island snipe, and will take soil samples to discover more about the small invertebrate animals on which the snipe feeds. The results will be compared with data obtained from studies of the Chatham Island snipe, a related sub-species, in the 1983-84 summer.

To reach the remote Snares group the scientists have sailed in fishing boats from Stewart Island. They are expected to return to New Zealand in late January or early February.

N.Z. expedition to South Georgia

A privately-organised New Zealand expedition to South Georgia, which was cancelled in the 1983-84 season, is now on the island carrying out a two-month programme of geological and biological research. The expedition, led by Dr Ian Turnbull, of the New Zealand Geological Survey, Dunedin, left London on November 4 and will return in January.

After more than four years of planning the expedition had to be cancelled in 1983 because of the high cost and inconvenience of transport available at the time. This time the team of four were flown to the Falklands by the British Ministry of Defence and then taken to South Georgia in the Royal Navy vessel Sir Lancelot. Two members of a film team from Dunedin accompanied the expedition to South Georgia.

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

Objectives of the expedition, which is expected to cost NZ$80,000, are to carry out geological mapping and sampling, comparing the geology of the island with similar rock formations in Antarctica and New Zealand. This work will help unravel the history of the ancient land mass of Gondwanaland.

In addition the expedition will make inter-tidal surveys of flora and fauna and collect plants, spiders, and seaweeds for international scientific investigations. South Georgia is heavily glaciated and its rugged mountain spine rises to 2932m at its highest point, Mt Paget. Therefore the expedition will also explore areas of the Twitcher and Glaciers and the Salvesen Range.

Reference: "Antarctic", December 1983, Page 140.

Polar history

Scientists find relics of Scott's men

Relics from Scott's last expedition (1910-13) were found by New Zealand, Australian, and United States scientists this summer – several on Inexpressible Island in Terra Nova Bay, and one 20m below the ice in McMurdo Sound off Cape Evans. The Inexpressible Island relics were left there by the six men of Scott's Northern Party led by Lieutenant Victor Campbell who spent the winter of 1912 in a snow cave on the island.

Four biologists led by Dr Laurence Greenfield, of the University of Canterbury botany department, found items of clothing scattered around after a day of extremely strong katabatic winds in which they lost a dome tent and a microscope. They combed the area for a day but failed to find the tent or the microscope.

Dr Greenfield and his companions, Dr Paul Broady, University of Melbourne, Dr David Given, Botany Division, DSIR, and Dr Keith Thompson, University of Waikato, found a woollen helmet, an anorak, a pair of torn and badly wind blown trousers, two leather-backed woollen gloves, and a puttee, which had been blown up against rocks or into small crevasses.

Other finds were a cooking stove, a blubber stove, a few candle holders, and small tins. A large tin which looked like an old cocoa tin was heavily rusted.

As the snow cave disintegrated over the years the katabatic winds have carried the clothing towards the Northern Foothills south of the island. Dr Greenfield believes that some of the clothing was blown over the edge and lost to the sea which is half a kilometre from the snow cave site.

All the items were packed up and left at Gondwana Station, the West German summer base in Gerlache Inlet, Terra Nova Bay, where the party was based. Later the collection was brought back to Scott Base for return to New Zealand.

Biologists from the University of Southern California, who have been studying the growth and development of the sea ice microbial communities in McMurdo Sound collected an unusual sample while diving through holes cut in the sea ice off Cape Evans. One of the team, Michael Miller, was 100m offshore when he brought up from a depth of 20m a leather boot.

Mr Miller passed the boot over to the Canterbury Museum where it has been treated for preservation. It was identified as a general work boot issued to the men of Scott's expedition.

Mr David Harrowfield, who has worked at Cape Evans for the museum as one of the New Zealand Antarctic Society's historic huts caretakers, has done extensive research on Shackleton's Ross Party which occupied the Cape Evans hut from 1915 until early 1917. He says that the cutting down of the boot to resemble a shoe was probably done by one of the 10 members of the party.

Three Polar Medals sold this year

Three Polar Medals awarded to men who died with Scott on the way back from the South Pole in 1912 have been sold at auction by Sotheby's in London this year for more than £72,000. The medals awarded posthumously to Captain Lawrence Oates, 6th (Inskilling) Dragoons, was bought by his old regiment, now the 5th Royal Inskilling Dragoon Guards, for £55,000, and a London medal dealer and collector paid £13,200 for the medal awarded to Lieutenant Henry Bowers, Royal Indian Marine.

Last month the duplicate of the Polar Medal awarded to Petty Officer Edgar Evans for his service with Scott's Discovery expedition (1901-04) was sold to a London chartered accountant, Mr John Drew, for £4,114. He has announced that he will give to to his brother-in-law, Robert Swan, one of two Englishmen who plan to haul two sledges from Cape Evans to the Pole next summer, following Scott's route.

Evans is believed to have taken his 1901-04 medal with him on the last expedition, and it may have been in his clothing when he died. The official duplicate with the clasp for the second expedition was issued to his widow when Polar Medals were awarded to the surviving members of the expedition on their return home. It was sold by her grandson, Mr John Evans.

Captain Scott's Polar Medal for his first expedition has been held in New Zealand since 1948 when it was presented to the Canterbury Museum by his son, Sir Peter Scott. Dr Edward Wilson's medal for the same expedition is held by the Scott Polar Research Institute in Cambridge. The white ribbon of both medals should bear the clasp for the 1910-13 expedition.

But not until Mr David Yelverton, an English authority on the Polar Medal, wanted a photograph of Scott's medal for a book he is writing on the subject did the museum discover that the clasp for the 1910-13 expedition was missing. It had never been received by his relatives.

After nearly nine months of negotiations the clasp is now on the ribbon. The cost of striking it in England was met by Mr Yelverton.

Obituaries

Harold Griffiths: Devoted to Antarctica

One of the leaders in the long and hard fight by the New Zealand Antarctic Society to persuade New Zealand to establish a presence in Antarctica was Harold Francis Griffiths, who died in a Dunedin hospital on December 6, last year, aged 76. His abiding passion for Antarctic exploration and research began when he was a schoolboy and lasted more than 60 years. He worked strenuously and enthusiastically in the interests of the society, founded two branches, served as national vice-president and president, and in his retirement edited the society's quarterly, "Antarctic" for more than three years.

As a small boy Griffiths, who grew up in Dunedin, discovered Antarctica in 1917 when he read articles about Scott and Shackleton in the "School Journal". They captured his imagination, and his interest in what lay south of New Zealand was quickened when the first Norwegian whaling expeditions entered the Ross Sea.

In his high school days Griffiths went down to Port Chalmers, the port from which Scott's last expedition departed, walking aboard the Norwegian whaling ships, and talked with their crews. At the same time, although his means were limited, he began to build up a library of books about Antarctica, travel, and early voyages of exploration, particularly in high northern latitudes.

Then in 1928 the ships of Byrd's first expedition, City of New York and Eleanor Bolling, arrived in Dunedin. Griffiths, now a 20-year-old, spent a great deal of time on both ships, and met Byrd, Bernt Blachen, Paul Siple, and other men about to return to Antarctica more than 80 years after Wilkes. He met Byrd again in 1933, and Lincoln Ellsworth and Sir Hubert Wilkins in 1934.

Since 1930 Griffiths had cherished the idea of forming a polar society but he lacked the necessary contacts and was still only 22. The formation of the New Zealand Antarctic Society in 1933 made him realise there was no need for two societies with similar ideas.

FIRST BRANCH

But his efforts to persuade the society that there was a place for a branch in Dunedin were met with a strange reluctance to accept the idea of branches. In spite of the historic association of Dunedin, Christchurch, Lyttelton and Port Chalmers with the Heroic Age of Antarctic exploration, and obvious enthusiasm for the society's aims the view seemed to be that there should be only one central body.

After much correspondence the society decided to allow the founding of branches. Dunedin was the first, being formed in 1936, and naturally Griffiths was its president for two years. The Second World War forced it into recess; it did not come to life again for another 13 years.

Griffiths and his friends were encouraged by the arrival of Dr N. E. Odell to take up the chair of geology at Otago University. He was a noted mountaineer who had climbed on Everest, and a public address in which he drew the attention of young New Zealanders to the adventure that lay at their backdoor – in Antarctica – helped to arouse interest in starting the branch again.

Once again Griffiths was president. He remained in office until 1954 and with Dr Odell represented the views of Dunedin on the need for a reluctant New Zealand Government to take an active part in the Commonwealth Trans-Antarctic Expedition and the International Geophysical Year. Then he was transferred to Christchurch by his company and wasted no time in working for the establishment of a branch there.

SECOND BRANCH

Early in 1955 the Christchurch, later Canterbury, branch was formed. The late Dr Roger Duff, director of the Canterbury Museum, spoke at an inaugural meeting of mounting interest in Antarctica, introduced Griffiths, newly-arrived from Dunedin, and their speeches inspired those present to set up a branch. For the next five years Griffiths was again a president.

From 1955 to 1960 the new branch matched the energy and enthusiasm of its founder. It raised funds for New Zealand's first expedition, established good relations with Operation Deep Freeze, and initiated a policy of support for the Canterbury Museum as a centre for Antarctic historic relics and records.

Before his term ended Griffiths was a guest of Operation Deep Freeze in 1957 and saw for himself something of Antarctica although he was there only eight days. He returned in 1961 aboard the icebreaker Glacier, visited the historic huts of Scott and Shackleton on Ross Island, and came home by air.

Betwen 1957 and 1965 Griffiths was one of the society's two vice-presidents in 1957-59, 1960-61, and 1964-65. Then he served as national president in 1968 and 1969. His long and devoted service to the society was recognised in 1974 when he was made a life member.

LONG SERVICE

After 43 years with Mobil Oil (N.Z.) Ltd in Dunedin and Christchurch Griffiths retired but did not stop working. He joined the Antarctic Division, Department of Scientific and Industrial Research in 1971 as information officer, and remained there until the middle of 1973.

Before he joined the Antarctic Division Griffiths was appointed editor of "Antarctic", which had been transferred to Christchurch in 1970. He continued the production of the authoritative guide to Antarctic research and exploration with his usual energy and enthusiasm. With Jim Caffin's assistance he maintained the high standards set by his predecessors and stepped down after production of the 71st issue since 1956 (September, 1973).

In his last years, despite ill health, Griffiths maintained his interest in Antarctica, corresponded with veterans of early expeditions to New Zealand, and as one of the few New Zealand members of the American Polar Society kept in touch with August Howard, editor of the society's journal, "The Polar Times".

Griffiths read widely and voraciously on many subjects, but polar exploration and travels in faraway places were his favourites. He also had an interest not known even to some of his friends – words, their

origins and their meanings. For a number of years he was among the correspondents in English-speaking countries who kept the noted New Zealand-born lexicographer Eric Partridge informed of changes in their "slanguage". His contributions are noted briefly in Partridge's definitive work, "A Dictionary of Slang and Unconventional English".

J. M. C.

Sledging flag laid up

A sledging flag presented to the Wellington Branch of the NZAS at the 50th Anniversary dinner on November 6, 1983 was laid up in Wellington Cathedral during the 1984 Antarctic service held on November 4. Recently restored it now hangs from the original bamboo pole in the north west corner of the Cathedral.

The flag was used by (Otago Branch) member Dr Bernard Gunn, Commander Bill Smith and Dr Trevor Hatherton when as members of the Ross Sea Advance Party in the 1955-56 season they manhauled sledges nearly 483 kilometres to find a suitable site for Scott Base and a route to the polar plateau for laying supply depots.

Reference: Antarctic, December 1983,, page 147.

Dean James Thomas of Wellington Cathedral receives the sledging flag from Bill Hopper, President NZAS (left) and two members of the 1955-56 Ross Sea Advance Party Commander Bill Smith RNZN (ret'd) and Dr Trevor Hatherton (right). *Photo: N. D. Peat*

New Zealand Antarctic Society Inc.,

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

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