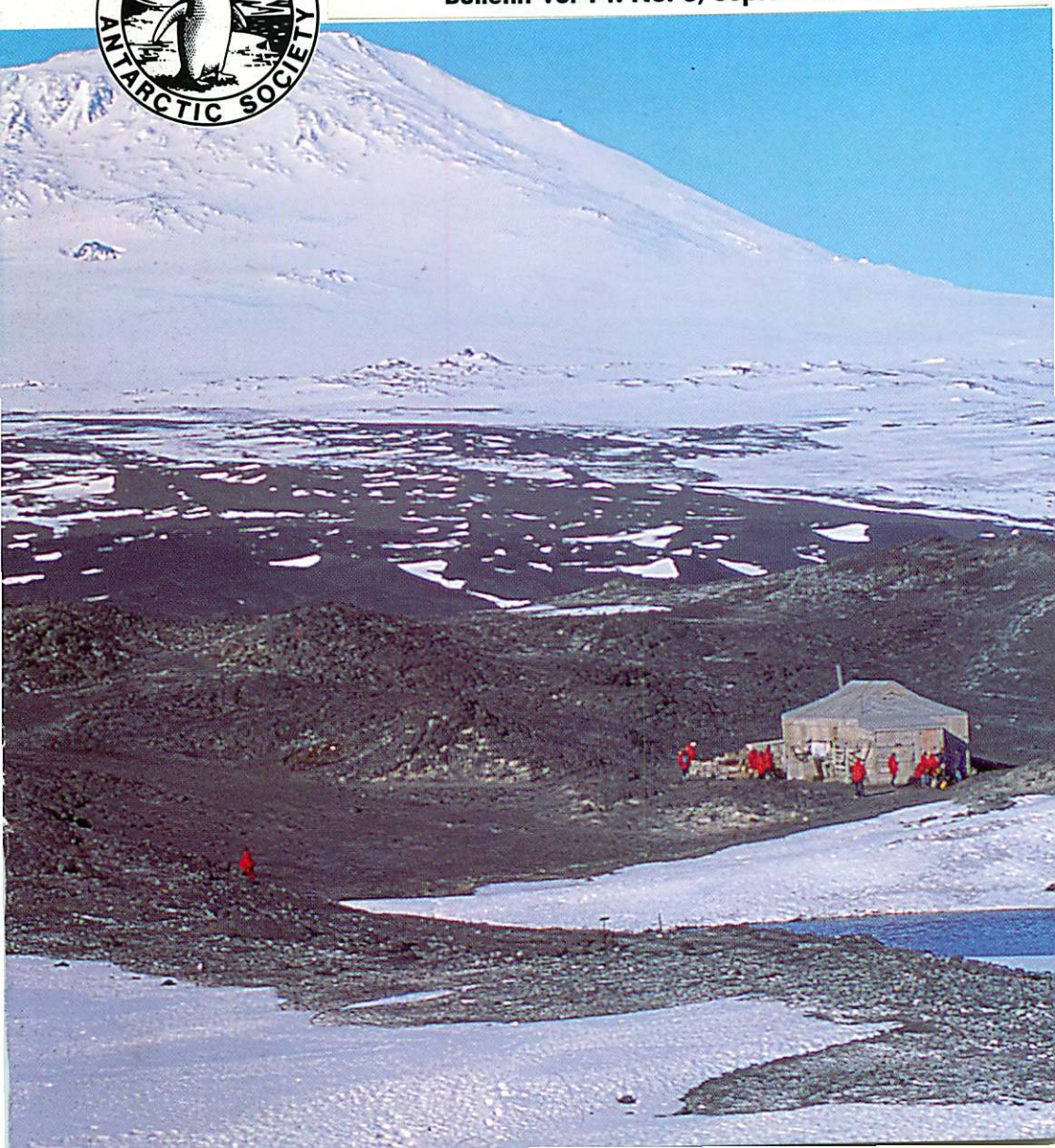
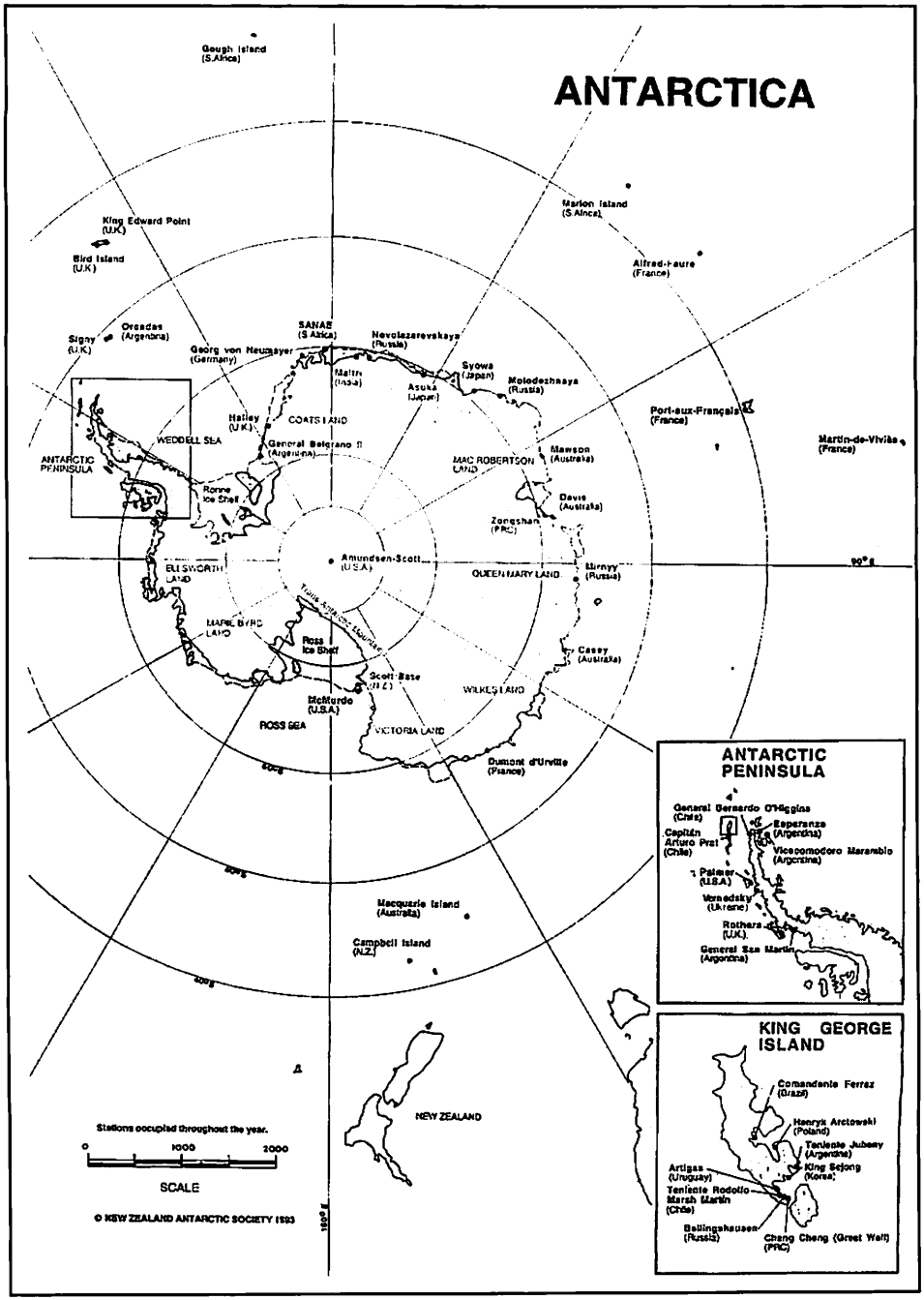
ANTARCTIC

Bulletin Vol 14. No. 3, September 1996

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Gough Island (S.Africa)
King Edward Point (U.K.)
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Molodezhnaya (Russia)
Marion Island (S.Africa)
Alfred-Faure (France)
Port-aux-Français (France)
Martin-de-Vivies (France)
Halley (U.K.)
COATS LAND
WEDDELL SEA
General Belgrano II (Argentina)
ANTARCTIC PENINSULA
Ronne Ice Shelf
MAC ROBERTSON LAND
Mawson (Australia)
Davis (Australia)
Zongshan (PRC)
Amundsen-Scott (USA)
ELLSWORTH LAND
QUEEN MARY LAND
Mirnyy (Russia)
90°E
MARIE BYRD LAND
Ross Ice Shelf
Casey (Australia)
Scott Base (NZ)
WILKES LAND
McMurdo (USA)
ROSS SEA
VICTORIA LAND
Dumont d'Urville (France)
60°S
Macquarie Island (Australia)
Campbell Island (N.Z.)
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180°E
Stations occupied throughout the year.
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King Sejong (Korea)
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Teniente Rodolfo Marsh Martin (Chile)
Bellingshausen (Russia)
Chang Cheng (Great Wall) (PRC)

ANTARCTIC

Cover: Tourists visiting the protected area of Cape Royds last season.
Photo courtesy of Tim Higham, Antarctica New Zealand.

September 1996,

Volume 14, No. 3,

Issue No.158

ANTARCTIC is published quarterly by the New Zealand Antarctic Society Inc., ISSN 0003-5327,
Editor: Greg Williamson

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AHT CONSERVATION TROPHY WINNER

The Antarctic Heritage Trust has been awarded the New Zealand Antarctic Society's prestigious Conservation Trophy for 1995.

The presentation, attended by various members of the Antarctic community, was the first official function to be held in the Society's Polar Information Centre based at the Christchurch Arts Centre.

Society President Margaret Bradshaw handed the trophy to AHT chairman David Crerar surrounded by a stack of old NZARP food boxes, used by the Society as file boxes.

Society President Dr Margaret Bradshaw presents the 1995 Conservation Trophy to AHT Chairman David Crerar.
Courtesy: Murray Martin.

The AHT had been nominated by a Canterbury Branch member for its unflagging conservation efforts, says Dr Bradshaw. The Trust had a huge task ahead of it still, but had done much already to achieve its conservation objectives.

"The Antarctic Heritage Trust has done a tremendous amount to preserve Antarctic history," she said.

Dr Bradshaw said, "to date the Trust's efforts have been concentrated on the conservation and preservation of the historic sites and artefacts left behind on the frozen continent by the expeditions to the Ross Sea area during the 'heroic era' of Antarctic exploration.

"It's major achievements, so far, have been the weather-proofing of the buildings erected by Scott at Cape Evans and Shackleton at Cape Royds and the completion of a data base inventory of all the artefacts found in, and adjacent to, all three historic huts on Ross Island.

"There is still much to be done. I am sure the Trust will continue its endeavours with the same uncompromisingly professional standards they have already used in this long-term and important task of preserving the unique Antarctic heritage, so that future generations can appreciated the trials, the fortitude, the courage and the heroism of those early polar explorers."

Accepting the award on behalf of the AHT, Chairman David Crerar thanked the Society, noting that he was wearing a Society tie. The Trust appreciated receiving recognition for its efforts, he said.

The NZAS Conservation Trophy, an Emperor penguin carved in African walnut, was donated to the Society in 1972 by Canterbury member Peter Voyce, "to make people aware of the unspoiled nature of Antarctica and to encourage them to preserve if for future generations."

Previous winners of the Conservation Trophy

1972 J Foster	1973 L Quartermain	1974 B Norris
1975 E Gibbs	1976 P Sagar	1977 Project Jonah
1978 A J Black	1979 Dr B Stonehouse	1980 Prof G A Knox
1981 R M Conly	1983 G J Wilson	1984 M W Cawthorn
1985 R L G Greenfield	1987 D Harrowfield	1991 Lyn Goldsworthy
1994 Sue Miller	1995 Antarctic Heritage Trust	

THE ANTARCTIC HERITAGE TRUST

The Antarctic Heritage Trust (AHT) is a charitable trust formed in 1987 for the purposes of protection and conservation of the historical heritage of human endeavour in Antarctica.

Trustees include representatives of the governments of New Zealand, Great Britain and United States of America, the Director of the Historic Places Trust, the Director of the Canterbury Museum, the Chairman of the Ross Dependency Research Committee, the Director of Antarctica New Zealand (although this is currently under review as a result of restructuring) and the President of the New Zealand Antarctic Society. There are four individual trustees, Sir John Ingram and Mr Rob Fenwick of Auckland, Mr David Crerar of Christchurch and one vacant position. The Chairman is David Crerar.

The Trust's Executive Officer is Paul Chaplin who works part time from an office provided by Antarctica New Zealand on matters relating to the historic sites and artefacts. The Trust has initiated plans for the four historic huts in the Ross Sea area to be designated for special protection as provided for by the Madrid Protocol.

AHT coordinates specialist field parties which have worked at the historic sites each season since the establishment of the Trust. It has been instrumental in establishing the United Kingdom Antarctic Heritage Trust.

In the 1995/96 season, the Antarctic Heritage Trust's two person team of Lawrence Smith and Sheridan Easdale undertook a range of activities, involving annual maintenance, artefact identification and photography, chemical removal, and the assessment and implementation of conservation experiments.

Smith was primarily responsible for all maintenance aspects, photography, and inventory items, and Easdale for assessment of artefacts, implementation of conservation experiments, and a range of other tasks including an overview of the huts, their contents, and the environs.

A summary of Smith and Easdale's fieldwork report gives an idea of what work was involved.

Cape Royds

All of the essential tasks for Cape Royds were successfully completed in the time allocated. The hut was in good condition this year with few problems, which is attributable to the careful attention it has received in the past few years. The work at Cape Evans was similarly successful, with the only maintenance problems being a broken window and spindrift in the cold porch stables. The addition of a laptop for hut inventory made searching for items considerably easier and faster than it has been in the past.

The spread of rubbish' was not significantly different to last year, possibly less, due to the dump being contained. However, the chaff presents a problem with spreading. The outlying caches have suffered further deterioration over the winter with cans strewn around and skuas taking advantage of rusting cans by prising them open and eating the contents. In some cases it was obvious that a skua had picked up a can, eg. rice, and strewn the contents around.

Cape Evans

The hut was in good condition with the roof being sound as well as the majority of the structure. The SE wall of the cold porch i.e entrance, is subject to spindrift and while this is not entering the hut a substantial build-up may exist early season. The wood in the rest of the annex is generally sound, but showed substantial movement or splitting since last season and required a considerable amount of resealing.

One window was broken above Scotts Den and fortunately a spare pane from Scott Base could be brought out. It would be a good idea to have spare glass on-site at both Royds and Evans in the event of a window being broken.

Several areas in the hut, kitchen and stove near Ponting's lab, have metal sheaths on the floor which are now rusting and lifting. These pose a hazard to visitors and need to be refixed to the floor next season.

The items on the SE wall of the kitchen need to be renumbered due to their current numbers being that of the old system, and not correlating to the present database. There also appeared to be several non-inventoried artefacts, in the kitchen in particular, which were identified and could be numbered next season.

The leaner snow year and warmer temperatures presented a somewhat different Cape Evans than previous years. Most significant was the amount of 'rubbish' and artefacts in the vicinity of the hut, extending some distance away. The unsightliness of this was commented upon by

some visitors despite the explanation that much of it was 'historic'. There will be pressure in the future to tidy up these areas.

It was also apparent that the warm temperatures were contributing to the accelerated decay of canned food articles outside. Several photographs were taken both at Royds and Evans of food residue leaking from cans, and while this may not be unusual it was more noticeable than in previous seasons.

As with Cape Royds, chaff is also present at Cape Evans, and while at this stage it has not decayed to the same extent as Royds, it is quite possible that it will present a similar mess and dilemma in the future.

Hut Point/Scott Base

The hut is in good condition and appears to be weatherproof aside from the doorway and entrance. No major maintenance is required, but the asbestos and associated dust of cleaning these areas is a concern.

General Work

This season, new visitor books were placed in the huts, which should provide more details of those visiting. This may help in targeting people in future fund-raising projects. Other possible promotional opportunities include provision of a special range of fleece jackets, a special Antarctic edition of *Heritage Hearsay* or a limited philatelic issue.

Rather than any major tasks, this season consisted of a series of smaller objectives. All essential work was achieved, with most priority work also being completed, assisted by near perfect weather.

Work of Antarctic Heritage Trust personnel is becoming more complicated with an ever-increasing amount of equipment, from dynadrills and generators to vacuum cleaners. Things were made a bit easier with NZAP assistance in helo transport, prompting suggestions to box items in the future for this transportation.

The thermohydrograph proved, once again, to be difficult to transport both to the ice and into the field because of its delicate nature, despite careful handling. The actual readings this season are definitely a little different to the observed conditions. However, they are still valid as a general trend is indicated.

INTERNATIONAL

FIENNES TO MAKE ATTEMPT

Antarctic understands that world-renowned explorer Sir Ranulph Fiennes is to attempt a solo crossing of the Antarctic this summer.

Fiennes is understood to have a major British company as his sponsor. New Zealand will play an important role in his expedition, emphasised by the fact that he is due to visit the country in late September where he will give luncheon addresses in Auckland, Wellington and Christchurch.

This expedition will be Fienne's tenth polar trip. The man whose background

seems straight from a James Bond movie (for which he once auditioned), made his reputation with the epic Transglobe Expedition from 1982-85, increasing his international fame after his attempt with Dr Mike Stroud to make the first unassisted crossing of the Antarctic in 1992/93.

Eton educated, Fiennes served in the army and was later selected for the SAS. After leaving the army in 1970 he embarked on a career as an explorer and writer, selling the story of a trip he had made up the Nile.

In 1984, Fiennes' achievements were recognised by a Polar Medal with Bar (presented by the Queen) and a Founders Medal of the Royal Geographic Society.

Antarctic also understands that two failed explorers of last season, Briton Roger Mears and Norwegian Borge Ousland, will again be making attempts to cross the white continent. Unconfirmed reports have all three explorers returning on the same ship to New Zealand.

CAPE ROBERTS POSTPONED

The six-nation, multimillion dollar Cape Roberts project being led by New Zealand has been postponed for a year due to unstable ice conditions.

The drill rig, which was to core ancient seafloor sediments in 500 metres of water, required strong, uniform sea ice off Cape Roberts.

Studies of satellite photographs taken since early July revealed a large crack in the sea ice close to the coast. A large slab of ice later broke away and drifted north leaving open water over much of the planned drilling area, 18 kilometres offshore. Although the sea is now refreezing as Antarctica enters its coldest month, there is not enough time for the ice to reach the consistency and thickness required for safe operations.

Antarctica New Zealand Chief Executive Gillian Wratt, said the last time this occurred was in 1988 and the break-up appeared to be caused by unusually mild, cloudy weather in the southern Ross Sea region.

The Cape Roberts base camp.
Courtesy: Tim Higham, Antarctica New Zealand

The Cape Roberts Project, which involves scientific and logistic collaboration between New Zealand, the United States, Italy, Britain, Germany and Australia, is designed to reveal the climatic and geological conditions that existed 30-100 million years ago.

One of the main scien-

tific questions it will address is whether there were ice sheets on the Antarctic continent during this period, an important factor in the debate over climate change.

The drill rig and a specially designed containerised base are currently stored on land at Cape Roberts, about 140 kilometres north of Scott Base.

Ms Wratt said the delay in the project, although disappointing, would allow further testing of the drill rig equipment and further monitoring. The first of two drilling seasons is now scheduled for October/November 1997.

Eleven drillers, 10 support staff and 42 scientists, from around the world, have been affected by the postponement.

NATIONAL PROGRAMMES

NEW ZEALAND

FROM SUPER FISH TO THE OZONE: NEW ZEALAND'S ANTARCTIC SCIENCE PROGRAMME

The 1995-1996 New Zealand science programme comprised a number of projects, mainly in the vicinity of Scott Base, and a major involvement in the International Cape Roberts Drilling Project.

Notothenid Fish

Auckland University continued its 20 year study of the anatomical, biochemical and physiological aspects of adaptation in the notothenid fish (the only group of fish that have prospered under Antarctic conditions). Working from Scott Base, Dr John Montgomery (leader), Matthew Halstead and Bjorn Sutherland studied the morphology, physiology and behaviour of post-larval fish during early summer, linking their observations to studies on larval and juvenile New Zealand fish species.

The objective of the project was to see if Antarctic notothenoid fishes

share a common pattern of brain development with other fish species which undergo a shift in the sensory basis of their feeding as the animal matures. Adult notothenoid fish have a well developed mechanosensory system (lateral line system) which allows them to feed when light levels are too low for visual feeding. Larval fish, however, are totally dependent on vision to find food. The shift from visual to non-visual feeding during development has become known as the "ontogenetic shift", and this is what the Auckland team is studying. A pilot study

involved the use of an underwater video camera to observe the path of fish approaching a food stimulus (milk) released into a local water current. This information will allow computer simulations to be made of fish search strategies. The team's work was continued at Scott Base for the remainder of summer by Guido di Prisco and L. Camardella of Italy.

More Fish

Canterbury University also continued its long term fish studies, and this season investigated the circulatory and respiratory physiology and biochemistry of notothenid fish. All work was carried out in the new Wet Lab at Scott Base, a specially designed aquarium and laboratory that was still being built while the project was under way. Project Leader Dr Bill Davison was accompanied by father and son Dr Malcolm Forster and Angus Forster. Dr Forster is a senior lecturer in zoology at the University of Canterbury and Angus an honours student in pharmacology at the University of Otago. The party analysed heart beat using spectral analysis, developed an isolated gill preparation for use with healthy and diseased fish to investigate the control of oxygen uptake and regulation of resistance in gills, and determined protein structure and function in fish tissue. Results showed that while the control of blood pressure in the gills of Antarctic fish had a similar complexity to that in temperate water fish, the magnitude of the responses was distinctly different.

Geology in Southern Victoria Land

Dr David Craw (leader) and Yvonne Cook of the Geology Department, University of Otago undertook geological fieldwork during the first half of November, completing fieldwork for Yvonne's PhD study, and contributing new information on the geological evolution of the basement rocks of southern Victoria Land. This season's project arose after a previous visit located unusual metamorphosed sedimentary rocks in the Skelton Group at the Baronick Glacier, which provided new geochemical evidence for these sediments being originally deposited in a rift zone along the margin of Gondwana 750 million years ago. The sediments later become incorporated into part of the Ross Mountain chain about 500 million years ago. Unlike similar age rocks elsewhere in southern Victoria Land, the newly discovered conglomerates contain almost no material derived from the erosion of a landmass as would be expected, but contain material from a subaqueous volcanic eruption that had been altered by seawater. The volcanic material was interbedded with limestone layers, and there was local enrichment by metallic minerals, probably from a seafloor hot spring. In addition, the party made an unexpected and important discovery of a small block of migmatites (mixed granite and metamorphic rock) at the head of the Baronick Glacier, quite unlike the less deformed rocks of the area, possibly indicting the large scale movement of crustal blocks. Mount Dromedary in the southern Royal Society Range was also visited to study a major shear zone.

Adelie Penguins

The study of population dynamics of Adelie Penguin colonies on Ross Island was continued this year by Landcare Research. Dr Peter Wilson led a team which included Kerry Barton, Joanna Rees and Brian Karl, with assistance from

Mike Beigel and Nat Polish of the United States. The main objective was the study of factors regulating population size and distribution in three Ross Island colonies (Cape Bird, Cape Crozier and Cape Royds) concentrating on the relative importance of key resources such as nesting space and food, and the way they are influenced by behavioural traits. An automated weighbridge and data-logger was installed at Cape Bird to measure how long feeding trips took and what amount of food was collected by penguins with chicks. A sample group of penguins had their stomachs flushed to identify prey species and digestion rates.

Brian Karl. *Courtesy: Tim Higham, Antarctica New Zealand*

Aerial photographs were taken to add to baseline data of penguin populations trends by quantifying the number of breeding pairs in the three colonies. Chick counts were made at the end of the breeding season as an indication of breeding success. Chick condition was assessed by weighing and measuring a representative sample. Satellite imagery was used to assess the ice conditions that would affect penguin access to open water and breeding space, but there were some problems with availability of images and alternative sources of information are being investigated. The 1995/96 breeding season was late and, at the time of the chick counts, many of the chicks were small and still moulting. Aerial and ground counts show that the number of breeding pairs was up on last season, with 4103 pairs compared to 3563 pairs in the previous season.

Dry Valley Glaciers

Four members of the Geography Department, University of Otago, spent a month investigating the formation of deposits and landforms at the margins of selected alpine style glaciers in the Dry Valleys. The project was led by Dr Sean Fitzsimons, who was accompanied by Marcus van der Goes, Sarah Mager and Bonny Hooker (Science Awardee-sponsored RDRC) from Otago, and Regi Lorrain of the Free University of Brussels. The party focused on sampling ice from two glaciers for laboratory analysis. At the Suess Glacier, ice was cut from the foot of the glacier and from its surface using a tungsten carbide-tipped chainsaw. Ice samples were also excavated from ice-cored moraines along the margin of the Lower Wright Glacier.

Some of the ice was melted and filtered in the field to determine debris concentration, for sediment samples, and for liquid samples for chemical analysis. Ice travelled to both New Zealand and Belgium for further analysis of chemical

Sean Fitzsimons. *Courtesy: Tim Higham, Antarctica New Zealand*

composition, isotopic composition and gas content, data that will lead to a better understanding of how the ice originated. The Otago team observed that proglacial sediments are deformed and entrained as the dry-based glacier ice moves over valley-floor sediments.

Climate Observation

The National Institute of Water & Atmospheric Research (NIWA) continues to collate daily climate observations at Scott Base that were begun in 1957, making this one of the longest continuous climate records in Antarctica. Clean air samples were taken near Scott Base every two weeks for analysis in New Zealand. A routine instrument maintenance visit was made to Scott Base by Bob Newland of NIWA in mid-October. It was found that daily temperatures were well below average in April by 4.5°C, and the mean of -28.3°C was the second lowest mean April temperature on record. In November and December, however, mean temperatures were exceptionally high. The mean for November (-10.2°C) was the highest recorded for that month since 1974, while the December mean (-3°C) was the highest since 1984 and the second highest on record. January was notably sunnier than usual, with the highest mean daily solar radiation total since 1978.

Atmospheric Studies

NIWA also continued its Antarctic atmospheric research, with project leader Dr Steve Wood of Lauder, Central Otago, travelling to Scott Base on Winfly in time to measure the appearance of the southern polar ozone hole. Also with the programme was Dr Sylvia Nichol, Alan Thomas and Ian Boyd, all of NIWA, Brian Conner and Jim Barrett of USA, and Carlo Valenti of Italy. Measurements were made at Arrival Heights of ozone and stratospheric trace gases that are active in ozone depletion chemistry, the information adding to the Antarctic atmospheric database. In 1995 the ozone hole formed in early August, about 10 days earlier than in previous years, and rapid ozone depletion occurred during August and September. The hole reached its maximum extent in early October with an extent of over 22 million square kilometres, comparable to the size of the hole in the previous three years. The ozone hole broke up in mid-December, making it the longest lasting hole ever recorded.

Sea Ice

Last season was the second year of an eight year programme by Industrial Research Ltd on factors relating to the physical nature of sea ice and its interaction with the surrounding oceanic environment. The programme includes sea

ice impact on the climate in the southern oceans, its properties as a material, and its distribution and disintegration under Antarctic conditions. A five person party led by Dr Tim Haskell of Industrial Research, worked for up to seven weeks near Tent Island and at the ice edge at Cape Royds. Dr Haskell was accompanied by Colin Fox of Auckland University and Paul Callaghan, Craig Eccles and Joe Seymour of Massey University.

Ground-based data gathered during the field season will be enhanced by study of satellite imagery back in New Zealand. Equipment left on newly formed ice in winter will provide further information on how sea ice forms and grows.

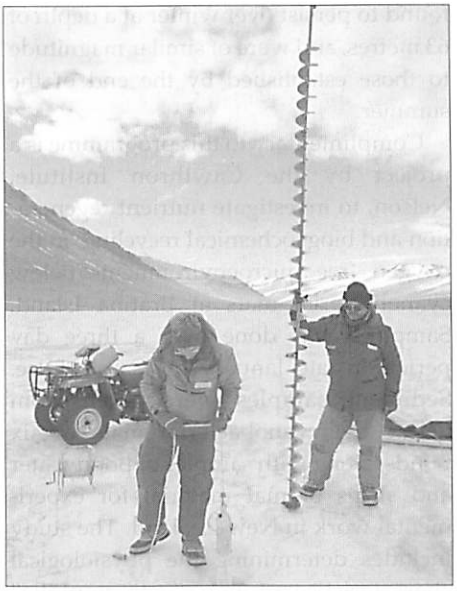
Phytoplankton

A significant proportion of the New Zealand programme was directed towards human impact studies. Kerry Webster (sister of project leader Dr Jane Webster) and Pete Nelson of Environmental Studies Research (ESR), Auckland, spent three weeks in November-December examining phytoplankton communities at different levels within Lake Vanda, and cyanobacteria rich microbial mats along the lake's margin.

The objective was to determine the nature of the interaction of these communities with natural trace elements, and with those that had been introduced near the site of former Vanda station. Meltwaters of the Wright Valley were also studied. The project collaborated with NIWA and the University of Western Ontario.

Human Effects

Five NIWA researchers continued a study on Antarctic inland aquatic ecosystems to provide information on how the link between dry valley lakes and their catchments may be affected by human activities and/or localised climatic change. Led by Ian Hawes, the party consisted of Anna Schwarz, Clive Howard-Williams, Rob Smith and Rowena Rae. Most of the fieldwork was undertaken in late August to early October, and during January. The party concentrated on factors controlling the flux of nutrients in the Onyx River, the planktonic microbial communities of Lake Vanda, and the role of benthic microbial mats in shallow water ecosystems at Vanda and Bratina Island. Preliminary analysis of Onyx River data has confirmed the hypothesis that microbial mats in the river bed play a major role in stripping nutrients from the river. Algal populations in Lake Vanda were



Kerry Webster and Pete Nelson at Lake Vanda. Courtesy: Tim Higham, Antarctica New Zealand

found to persist over winter at a depth of 63 metres, and were of similar magnitude to those established by the end of the summer.

Complimentary to this programme is a project by the Cawthron Institute, Nelson, to investigate nutrient regeneration and biogeochemical recycling in the oxygen free microenvironments below cyanobacterial mats at Bratina Island. Sampling was done over a three day period in late January by Carol Hulse. Sediment samples were taken from below the cyanobacterial mats of six ponds, along with samples of pond water and strips of mat material for experimental work in New Zealand. The study includes determining the physiological characteristics of two "extremophilic" anaerobic (lacking free oxygen) bacteria isolated from the pond systems.

Ozone Hole

The expanded ozone hole has resulted in increased amounts of ultraviolet light reaching algae growing on the underside of Ross Sea ice. Professor David Beaglehole and Bhagie Ramanathan of Victoria University of Wellington documented the amount of radiation in early November and early December. The relative amounts of visible, near and far UV radiation (blue, violet, UVA and UVB) falling onto the sea ice were measured at Tent Island south of Cape Evans. A proposed site at the ice edge 20 kilometres to the north could not be visited because of bad weather. Large amounts of snow fell at Tent Island and it became apparent that variable amounts of snow cover may cause large changes in the radiation passing through sea ice to reach algae. It was deduced that snow cover can cause variations in UV which are at least as large as ozone hole effects.

Soil Studies

The second year of a two part programme to determine the impact of human activity on Antarctic soil systems was undertaken by Dr Iain Campbell of Land & Soil Consultancy Services, who collected samples in Antarctica for one week in December.

At Scott Base, measurements of changes in the water content of permafrost, following experimental disturbance by removal of the summer thaw layer, were made with a neutron probe. Comparative measurements were made at an adjacent undisturbed site. Near Lake Vanda, an experimental site was sampled where the leaching compound lithium chloride had been applied as a tracer two years previously. The rate of the tracer's movement through the soil could be assessed, providing an indication of the rate and extent of contaminant movement through soils in an arid dry valley environment. This experiment was compared with the results of a similar trial on moist coastal zone soil.

Greenpeace

Two members of Greenpeace spent two weeks at Cape Evans completing impact studies on the old site of the Greenpeace World Park Base which was decommissioned in 1992 after five years of operation. An Argentinian geomorphologist, Dr Ricardo Roura, and British microbiologist, Dr Alan Pickaver, visited with the NZ Antarctic Programme, and focused primarily on the degradation of the physical environment, particularly the permafrost, and hydrocarbon contamination. A "plume" of "litter" was found to extend some 100-150 metres

downwind of the site, reaching the sea, while hydrocarbon contamination was detected as deep as 0.7 metres into the permafrost. The information will provide a useful database of the longterm effects of buildings on the immediate Antarctic environment.

(Summarised by Margaret Bradshaw)

BOSNIA VETERAN AND BEER MAN FOR NEW POSITIONS

Of the five key senior management positions at Antarctica New Zealand, two have been awarded to internal staff and two to outside people. The fifth position, that of Science Manager, is still pending confirmation.

Julian Tangaere, an army officer who has recently served in Bosnia, has been appointed Support Services Manager. Presently an officer cadet instructor, Mr Tangaere has a background in the New Zealand Army in transport, operations and personnel. Mr Tangaere will begin with Antarctica New Zealand on 30 September.

The other external appointment, from 24 September, is Kevin Foyle as Finance Manager. Mr Foyle comes from DB South Island, where he is the finance and administration manager. He has previously worked for Coopers and Lybrand, Applefields and the United Bank in New Zealand, and Unisys in the UK.

NZAP's Emma Waterhouse has been made Environmental Manager and the Information Manager within the previous structure, Tim Higham, has been appointed Communications Manager.

ICAIR SCORES UN COUP

The Christchurch-based International Centre for Antarctic Information and Research (ICAIR) has scored a major coup by being appointed as one of 12 nodes on the United Nations Global Resource Information Database (GRID).

This branch of ICAIR's activities will be known as UNEP/GRID-Christchurch.

UNEP/GRID-Christchurch will be partnered with UNEP/GRID-Arendal (Norway), which has primary responsibility for Arctic environmental data for UNEP. UNEP/GRID-Christchurch will take responsibility for establishing and maintaining Antarctic and Southern Ocean environmental databases relevant to the UN programme.

The organisation plans to focus its first year 's efforts on compiling environmental information on Antarctica relevant to UNEP interests, including the implementation of Agenda 21 from the Rio Earth Summit. An initial task the UNEP/GRID faces will be updating the UN General Assembly later this year on the status of the Treaty Party activities and SCAR and other scientific programmes in Antarctica addressing problems relating to environmental change.

What is UNEP/GRID?

The United Nations Environmental Programme (UNEP) was created in 1972 in order to initiate and catalyse environmental action and awareness at all levels of society worldwide, following the United Nations Conference on the Human Environment held in Stockholm.

The Global Environment Monitoring System (GEMS), which is a major element of Earthwatch, UN coordinates collection of data on global environment, specifically on the earth's atmosphere and climatic changes, environmental pollutants and their impact, and the earth's renewable resources.

The Global Resource Information Database (GRID) was established in 1985 in the framework of Earthwatch to provide timely and usable environmental data to the world community of researchers and policy makers. GRID also supports the developing countries through training programmes and transfer of the technologies pertinent to the geographic information system and remote sensing. This year two regional GRID centres were inaugurated in Nairobi and Geneva.

In recent years, UNEP reviewed its monitoring, assessment, reporting function in response to Agenda 21 Chapter 40, "Information for decision making" and the new Environment Assessment Programme (EAP) was started to develop and update an Environmental Information database consisting of data/information on a set of indicators which are regularly to be reported.

GRID Functions

GRID's main functions are as follows:

- To bring together global and regional scale environmental data produced from monitoring activities both within and outside GEMS.
- To integrate the data through geographical referencing and defined functional linkages.
- To provide information for analysis and assessment of urgent global environmental issues.
- To convert environmental data into

integrated information usable by both national and international decision-makers and scientists.

- To provide access to Geographical Information System (GIS).

GRID Centre Roles

The GRID archive is operated in a decentralized fashion with each regional GRID node responsible for certain data sets. Global data sets are maintained at GRID-Geneva. In general, the division is along geographical lines: the African data sets, for instance, are maintained in Nairobi. Arendal is for Nordic region, Sioux Falls for North America, Bangkok for South-east Asia, Kathmandu for Himalayas. Some other GRID nodes also have specific sectorial responsibilities.

UNITED STATES

AMC BEGINS ANTARCTIC INVOLVEMENT

The start of Winfly in late August saw the US Air Force's Air Mobility Command (AMC) flying missions for the first time instead of Antarctic Development Squadron Six (VXE-6). AMC delivered support personnel and supplies to McMurdo to construct the sea-ice runway, to ready the base for the 1996-97 austral summer season, and generally prepare McMurdo and New Zealand's Scott Base for the October surge of scientists and support workers.

Winfly's three flights were on Aug. 20, Aug. 22nd, and Aug. 24th, using a single C-141 Starlifter from the US 15th Air Force, based out of Travis Air Force Base in California. An Air Force jet is completing the trips this year to save money and time.

The C-141 can traverse the 2,117-mile distance from Christchurch to McMurdo in five-and-a-half hours, as opposed to the Navy's LC-130 Hercules, which takes eight hours to travel the same distance.

Aircraft used the hard-snow packed runway on Pegasus Field, during the three hours of twilight at McMurdo.

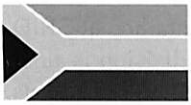
The first and third flights carried mixed passengers and cargo, while the second carried only cargo. More than 60,000 lbs. of cargo and 156 persons headed south.

The people included US Navy personnel, National Science Foundation staff, Antarctic Support Associates workers, and Antarctica New Zealand staff.

As there was no mid-winter airdrop this year, it was the first human contact the winter-over parties at McMurdo (236 people) and Scott Base (10) have had since the last flight out of McMurdo in February. The first flight brought in personal letters to the winter-over parties, while the second one carried the rest of more than 4,000 lbs. of mail which has accumulated over the austral winter.

While the winter-overs were in no danger of starvation at any time, the more than 9,000 lbs. of fresh food was welcome.

Returning from the ice were three winter-over personnel suffering from dental problems. After receiving treatment in New Zealand, they returned to the ice. Also coming back was a New Zealand Hagglund snow tractor that suffered damage in a fire and required repairs.



SOUTH AFRICA

NEW BASE READY FOR SUMMER

SANAE 4, the new South African National Antarctic Expedition base currently under construction, is located some 200 km inland of SANAE 3, and is being built on a nunatak named Vesleskarvet at about (71° S; 2° W), and an altitude of about 800m. Construction crews remained on site until early March 1995, and the southernmost of the three planned modules was constructed.

The new base will provide vastly improved accommodation and facilities for at least 20 overwintering scientists and support team members. During the summer season up to 80 additional personnel will be able to operate from the base. Design and materials used in the new base are state of the art, and include a helipad and hangar facilities for 2 support helicopters.

Construction teams returned to SANAE 4 in early December 1995, but were hampered by bad weather. However, the second module and the diesel bunkers have now been completed. Final completion of the new base is scheduled for the 1996/97 summer changeover — the first team to winterover in the new base will therefore occupy the station for the winter of 1997.

The current base, SANAE 3, was built in 1980 and is located on the ice shelf at about (70° S; 2° W). Unfortunately it had to be closed at the beginning of 1995 for the 1995 and 1996 winter seasons. With an annual accumulation of snow in excess of 1 metre per year at the site, the base is now some 25 metres below the surface, with the result that the structure has been severely crushed and distorted, and is no longer considered safe for occupation.

1995 was the first time since 1960 that SANAE did not have a team winteringover.

SANAE Scientific Programmes

1. The Southern Hemisphere Auroral Radar Experiment (SHARE)

SHARE is an international collaboration involving the University of Natal, Durban (UND), Potchefstroom University (PUCHE), the British Antarctic Survey (BAS) and the John Hopkins University Applied Physics Laboratory (APL). The four participants agreed to construct and operate an HF phased array radar experiment.

The radar will be located at the new South African base located at Vesleskarvet (71 S, 2 W) in Antarctica. The radar will be operated in conjunction with the identical PACE radar located at Halley Station Antarctica (76 S, 27 W) and operated by the British Antarctic Survey (BAS).The data from the SHARE and PACE radars will be combined to provide information about electric fields, velocities and irregularities in the upper atmosphere over a large region of the Antarctic continent.

Key data will be returned regularly to Durban by INTELSAT. They will then be transmitted to the British Antarctic Survey in Cambridge, England, where they will be combined with the data from Halley. The combined data will regularly be deposited in the NASA GGS data base in Maryland. The complete data set will be

returned to Durban at the end of each Antarctic season (about March each year) and will be made available under the protocols of the SuperDARN agreement.

The radar is currently undergoing testing at Potchefstroom. Deployment is currently scheduled for the beginning of 1997, when the new base will be ready for occupation. Operations are scheduled to commence immediately afterwards. at the beginning of 1997.

The South African radar at SANAE is managed by the South African Share Steering Committee under the Chairmanship of David Walker.

South Africans involved are David Walker (University of Natal) and Piet Stoker (University of Potchefstroom)

Other SHARE members are John Dudeney (BAS), Kile Baker (APL) and current co-investigators are Jon Rash (UND) and Harm Moraal (PUCHE)

2. Space Physics Research Institute: Project AMIGO

AMIGO (Antarctic Magnetosphere Ionosphere Ground-based Observations) is a suite of experiments located at SANAE to observe the geospace environment near the plasmapause. They are operated by the Universities of Natal (Durban) and Potchefstroom. Experiments include:

- Observations of the effects of energetic particles on the ionosphere with wide angle and imaging riometers
- Observations of the southern aurorae with low light level imaging tools.
- Observations of electric fields and wave-particle interactions utilising VLF radio noise which has propagated through geospace.
- Observations of the geomagnetic field.
- Observations of the interference of ionospheric events with radio propagation from navigational transmitters.

The participants at the University of Natal are Prof. A.R.W. Hughes (Project Leader), Prof. A. D. M. Walker and Dr. J. P. S. Rash. The Project Leader at Potchefstroom is Prof. P. H. Stoker.

The goal of AMIGO is to contribute to the international co-operative programme STEP (Solar Terrestrial Energy Programme), and to train high level manpower by making co-ordinated ground based observations of plasma and high energy particle phenomena at Sanae. The objectives set in order to achieve this goal are:

- To investigate energy transfer processes in the magnetosphere and ionosphere, especially those associated with substorms, VLF wave-particle interactions, radio propagation, hydromagnetic waves and ionospheric irregularities and disturbances, by carrying out a programme of coordinated ground-based observations of wave and particle phenomena in the magnetosphere-ionosphere system using inter alia: Magnetometers, including instruments with sensitivity (a few nanotesla) and resolution (if greater than 1 Hz) capable of studying ULF pulsations, Riometers to measure ionospheric absorption of galactic radio noise, Auroral imaging devices and VLF receivers, which are capable of direction finding
- To complement observations of magnetospheric and ionospheric convection made by the radar.
- To set up collaborative international programmes with scientists of the

other nations active in Antarctica to meet the objectives of STEP

3. South African National Ozone Programme

As part of the South African Programme an SAOZ spectrophotometer has been operated at Sanae since the beginning of 1993.

A similar instrument has been operating in Durban since mid-1993. These instrument measure scattered light spectra between 290 and 600 nm. The spectra are used to extract total column values of O_3, NO_2, O_4 and H_2O and some minor constituents and the photon fluxes at 310, 320, 330, 350, 450 and 550 nm.

UV-B monitors have been operated at Durban and SANAE since the beginning of 1994. They are providing integrated UV-B (between 280 and 320 nm) every 5 minutes.

Recently a surface ozone monitor has been acquired. As yet no data are available from this instrument.

The goals of the programme are:

- To measure ozone jointly at SANAE and at Durban to establish correlations between the two stations. These should help clarify the mechanism of the influences of the Antarctic ozone hole on the ozone distribution over South Africa.
- To study and clarify the direct link between ozone and UV-B at SANAE. Also, conduct similar studies for Durban in order to study and clarify the differences and similarities between the two stations.
- Noting that the changes in total ozone over SANAE are many times larger than over Durban, to obtain a clear understanding of the differences and similarities between the two stations in order to predict the trends expected over Durban.

Participants at the University of Natal are Prof. R. D. Diab (leader; Dept. of Geographical and Environmental Sciences), Prof. M. W. J. Scourfield (Dept. of Physics), Prof. J. A. Cooke (Dept. of Biology), Dr. E. Mravlag and Dr. J. Stephenson (Dept. of Physics), Dr. B. S. Martincigh and Dr. M. W. Raynor (Dept. of Chemistry).

JAPAN

JAPAN PROMOTES POLAR TOURISM

In response to growing interest in ecological and polar tourism in Japan, the Japan Polar Research Association (JPRA) has formed a Polar Tourism Information Centre.

JPRA received frequent requests for advice and information about polar tourism from individuals and tour operators, providing them with polar information and introducing home and onboard lecturers, says Kou Kusunoki of the new Polar Tourism Information Centre.

"We understand that all visitors to the polar regions should have some sort of background information in order to appreciate what will be experienced and observed."

In an endeavour to "foster the formulation of sound and sustainable polar tourism and non-governmental activities by Japan", JPRA established the Information Centre.

The term "eco-tourism" is becoming popular in Japan, which indicates the growing number of ecologically minded tourists in the country, says Mr Kusunoki.

JPRA, which was established as non-profit foundation in 1960, assists with the furtherance of polar research, maintaining close liaison with the Japanese Antarctic expeditions and polar research communities on other countries.

BRITAIN

BRITAIN'S ANTARCTIC HERITAGE

The importance of early British scientific research in Antarctica has been recognised by the designation of four former stations as Historic Sites and Monuments under the Antarctic Treaty System.

The conservation and renovation of the first of these stations, Port Lockroy, has just been completed. Situated in a well known anchorage, at one of the most scenic locations on the Antarctic Peninsula, Port Lockroy is visited regularly by Antarctic tourist ships. During a nine week conservation project 30 vessels and 16 yachts visited the site with around 1000 visitors coming ashore to inspect the work.

Port Lockroy was built towards the end of the Second World War when the Admiralty set up a secret naval operation, the aims of which were to establish a British presence in Antarctica and to deny the use of anchorages in the South Atlantic to enemy shipping. Given that the men would be wintering in the Antarctic darkness it was codenamed "Operation Tabarin" after a famous Paris night-club.

The conservation project was jointly supported by the Foreign & Commonwealth Office, the UK Antarctic Heritage Trust and the British Antarctic Survey (BAS).

A five man conservation team, led by BAS veteran Dave Burkitt set off in autumn 1995 to carry out the work. Other members were New Zealand's own well known conservation architect Chris Cochran, carpenter Rick Atkinson, Joiner Simon Almond and General Assistant Ben Hodges.

The following is leader Dave Burkitt's personal account of their experiences.

RETURN TO PORT LOCKROY

Last summer I was privileged to be appointed leader of a five man team to carry out the conservation work necessary to bring the Port Lockroy buildings back to the state they were in when last occupied in 1962.

I was based at the BAS headquarters in Cambridge from where all the planning was done organising everything from ordering building materials to food, camping equipment, clothing, radios and so on. Once assembled it was put into a container and delivered down to Portsmouth to be shipped to Antarctica on board the Royal Navy s ice patrol ship

The boatshed from near Bransfield House, building materials stacked in the foreground.

HMS Endurance. During this period the team was selected, all of us were experienced Antarctic travellers who had spent several winters down there. A key member of the team was Chris Cochran, a New Zealand conservation architect who has recently been working on the restoration of Scott and Shackletons huts on the other side of the Antarctic continent.

On the 2nd of January we flew from London to Punta Arenas, the southern most town in Chile. There we joined *HMS Endurance* and two days later were sailing south.

True to form the voyage beyond Cape Horn was stormy and most of the time we were in our bunks. Once down amongst the Antarctic islands though the weather eased.

First of these islands is Deception, a volcanic atoll which forms a natural harbour and good anchorage. This is also where one of the first Tabarin bases was established.

We went ashore and had a look around the buildings, all are now lying in ruins though from the last eruption of 1969.

The voyage down the west side of the Antarctic Peninsula is amazingly beautiful, narrow channels, steep snow topped mountains, little wonder that it is now a popular tourist cruise ship destination. On the 14th of January we arrived at Port Lockroy, it too provides a sheltered anchorage and was used by the early whalers nearly a hundred years ago. In no time at all the Royal Navy had got us ashore together with all of our equipment for the next three months and we were on our own to take stock of the situation.

Nothing has been done to the base since it was last occupied in 1962 and in the intervening years it has deteriorated badly. In parts the roof was stove in, several of the rooms had three foot of ice which covered the floor and work benches, and most of the artefacts had been looted or were rotting away in the ice. However it was to be our home while we worked on it, and so for the first few days we busied ourselves using pickaxes and shovels clearing away the debris of 34 years.

It wasn't long before we had ourselves a clean living space and could use the old kitchen for cooking our meals. Life was soon comfortable. The big problem was that whenever it snowed the roof was

like a sieve and everything got wet, so it was important that we worked on the roof on any fine day. Occasionally there was the frustration of getting everything stripped off then it would be panic stations to get the tarpaulin over before a sudden snowstorm. After five weeks though the roof was completed and there was time for a bit of relaxation.

The Antarctic Peninsula now features very much in glossy travel brochures and during our time at Lockroy we had a number of visits from cruise ships. Having no washing facilities ashore an invitation to one of these vessels was always welcome. I'd "sing for our supper" by giving a talk about our work to the tourists and in return we d get a shower/sauna then be wined and dined. This was our relaxation!

There is no shortage of wildlife on the island. When we arrived all of the birds were nesting. In particular the large colony of Gentoo penguins proved fascinating, they had made their homes everywhere from inside rusty oil drums to derelict parts of buildings, and it was interesting to see the chicks from hatching right through to fledging the nests, learning to swim after their fluffy down had disappeared, to finally leaving the island at the onset of winter. We were also fortunate in having a number of whale sightings — schools of Minke, killers and humpbacks, together with several species of seals which would haul up out of the water.

Work on the building progressed well, artefacts dating back to the whaling days were discovered, everything was recorded and the ten weeks went by quickly. At the end of March the Royal Research Ship Bransfield arrived to pick us up. We lowered the union flag for the last time, bolted the front door and it was time to leave. The base certainly looked good and should prove to be an interesting piece of Britain's Antarctic heritage for people to visit in the future.

HERITAGE FACTS

Britain's history in Antarctica began when Captain James Cook first circumnavigated the continent in 1773-75 and discovered a "country doomed by nature to lie buried under everlasting ice and snow". Cook was followed by the expeditions of Sir James Clark Ross, Sir Ernest Shackleton, and Captain Robert Scott which all led to the important early geographical and scientific findings about Antarctica.

The UK s permanent presence dates back to 1943 when the Admiralty mounted "Operation Tabarin". Its objective was to provide reconnaissance and meteorological information concerning the South Atlantic Ocean by establishing a string of small stations along the Antarctic Peninsula.

In 1945 "Operation Tabarin" ceased and the stations were handed over to the Falkland Islands Dependencies Survey (FIDS). In 1962 the FIDS was renamed and reorganised as the British Antarctic Survey (BAS).

In recognition of the historical importance of early British scientific research in the Antarctic Peninsula region, four unoccupied British stations have been declared Historic Sites and Monuments under the Antarctic Treaty System. They are: Port Lockroy, Goudier Island; Argentine Islands, Winter Island; Horseshoe Island, Marguerite Bay, West Graham Land; Stonington Island, West Graham Land.

THE UK ANTARCTIC HERITAGE TRUST (AHT)

The AHT, whose patron is HRH The Princess Royal, strives to promote an educational programme aimed at British youth to stimulate an interest in science, the global environment and Antarctic research through the inspiration of earlier British Antarctic endeavours. Its objectives are to conserve selected early British scientific bases on the Antarctic Peninsula for education and enjoyment of visitors and to help with the acquisition and preservation of Antarctic memorabilia.

The UK AHT works closely with the Foreign and Commonwealth Office, the British Antarctic Survey, the Scott Polar Research Institute, the New Zealand AHT and Society, the Dundee Heritage Trust, the Captain Scott and James Caird Societies, and the South Georgia Whaling Museum. It is a registered charity.

More information can be obtained from Captain Pat McLaren, The Blue House, East Marden, Chichester, UK.

Supplied by Ian Collinge and Dave Burkitt of the British Antarctic Survey.

UK HOSTS MAJOR ANTARCTIC CONFERENCE

Cambridge hosted two major international conferences last month. Over 300 world leaders in Antarctic research and logistics met to discuss national plans, scientific achievements, programme management and logistics.

Groups of specialists discussed a wide variety of subjects including Astronomy; the Antarctic Ice Cap; Bar Coding Penguins; Environmental Affairs and Conservation; Global Change; Ozone Research; Oil Spill Contingency Planning and Air Operations at the 24th Meeting of the Scientific Committee on Antarctic Research (SCAR) and the 8th Meeting of the Council of Managers of National Antarctic Programmes (COMNAP). A large exhibition by suppliers of polar snow vehicles, sledges, tents, cold weather buildings and equipment was also held.

It was almost 30 years since Britain hosted a Scientific Committee on Antarctic Research (SCAR) Delegates Meeting which are held every two years.

Director of the British Antarctic Survey, Dr Barry Heywood said: *"Antarctica is a vast and remote wilderness — it is a unique laboratory for studying global problems. It really would be impossible for any single nation to manage or fund the complex nature of large-scale experiments that are conducted there. The level of international coordination and cooperation that exists in Antarctica is not seen anywhere else in the world. The free and open discussion at SCAR and COMNAP meetings allows national scientific programmes to be internationally coordinated. Delegates are responsible for formulating SCAR policy and strategy which provides the key framework for the large-scale operation of national and multinational Antarctic research programmes."*

SCAR is the single international interdisciplinary, non-governmental organisation which, as a member of ICSU (International Council of Scientific Unions), is charged with the initiation, promotion and coordination of scientific research in Antarctica. SCAR provides advice on the protection of the ecology and environment of Antarctica to the Antarctic Treaty System.

The Council of Managers of National

Antarctic Programs, COMNAP, was established in 1988 and has a close and special relationship with SCAR. Each manager is responsible for the implementation of their nation's government-funded Antarctic programme and related activities.

SCAR HIGHLIGHTS

- *Antarctic Pack Ice Seals:* The pack ice region surrounding Antarctica contains at least 50% of the world's population of seals. These seals are among the dominant top predators in the Southern Ocean. Fluctuations in their populations, pattern of growth and life histories provide a potential source of information about environmental changes. An international group of specialists discussed methods of surveying seals and the best ways to collect information.
- *Bar Coding Penguins:* Penguins are potential indicators of human-induced changes to the environment, climate change and the effects of commercial fisheries in on the Southern Ocean ecosystem. Researchers assessed the best ways of marking penguins to study their behaviour and survival. Use of bar-code tags, implanted transponders and other electronic devices were featured.
- *International Field Geology Workshop:* Geologists from many different countries working on the South Shetland Islands have made several differing geological interpretations of the same area. A collective understanding of the geology will advance knowledge of past environments and promote new initiatives for collaborative projects when an international expedition organised by Argentina, Brazil and Chile visits key rock outcrops next year.
- *State of the Environment Report:* Following the Rio Summit in 1992 Agenda 21 recommended that State of the Environment Report should be prepared for the whole world. The Antarctic Treaty nations agreed to prepare a report for Antarctica for the Environmental Protocol. During the conference assessments of the contribution of the SCAR Specialist and Working Groups were made.
- *Global Change:* According to some geologists much of the current concepts of global change have occurred in the last five minutes' in the history of the planet.
- *Working Group on Solar-Terrestrial and Astrophysical Research (STAR):* Future Directions in Antarctic Research. Geospace is the region of space surrounding the Earth. It is the area where satellites, crucial for the global economy, operate. Antarctica is a window into geospace. British and American scientists have designed chains of automatic geophysical observations and these, together with large radar installations, provide an unprecedented opportunity to make measurements over the whole Antarctic continent.
- *Specially Protected Areas:* Certain areas of Antarctica require special protection. Management Plans are required for two of these are to be discussed: Cape Evans — the site of Scott's Hut and; Lewis Bay — where 257 people perished when a New Zealand tourist flight crashed into Mount Erebus in 1979; declared a "tomb" by the Antarctic Treaty.

TOURISM

MORE PEOPLE TRAVEL TO ANTARCTICA IN 1995-96

A record 9,200 people travelled to Antarctica aboard commercially - organised tour vessels this season — an increase of 1,000 over last year. Travellers sailed aboard 15 vessels on 113 departures, most from Ushuaia, Argentina.

In addition, Adventure Network International, celebrating its 10th season, brought 155 travellers and 20 staff to the Antarctic. Besides its regular climbing programmes, ANI provided logistical and emergency support for all private expeditions and operated flights to the South Pole. In cooperation with Uruguay, ANI operated a satellite meteorological station at its base camp in Patriot Hills for the first time.

Now in its second season, Croydon Travel of Victoria, Australia offered a series of nine well-received overflights, carrying 2,958 passengers. Each flight from Melbourne lasted about 12 hours with one or more orbits of scenic areas. The flights aboard Qantas Boeing 747 aircraft were conducted at a minimum altitude of 10,000 feet and featured lectures on the history, conservation and environments of Antarctica.

Looking to the future, 100 voyages are planned for the 1996-97 Antarctic season by 13 IAATO-member vessels, carrying approximately 6,500 passengers. Nine of these vessels are Russian. Neither the *Marco Polo* nor the *Vistamar* are planning any Antarctic voyages next year, which accounts for most of the reduction in number. No new vessels or operations are expected.

TEN MOST VISITED ANTARCTIC SITES, 1995-96

Whalers Bay
Half Moon Island
Cuverville Island
Brown Station
Port Lockroy
Petermann Island
Hannah Point
Pendulum Cove
Paulet Island
Waterboat Point

TOUR VESSELS: A RESOURCE FOR ANTARCTIC SCIENCE

International Association of Antarctic Tour Operators (IAATO) members provided transport to more than 100 scientists during the 1995-96 season, again demonstrating that tour vessels are a cost-effective and convenient platform of opportunity in the Antarctic. Among those transported, two station personnel were taken to port for medical attention. In addition, passengers and staff contributed to censuses and other projects, such as the ongoing work to supply humpback whale fluke identifications photos to Allied Whale at College of the Atlantic in Bar Harbour, Maine.

Among IAATO's objectives is to support science in Antarctic programs, including logistical support and research.

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PRELIMINARY ESTIMATE OF SEABORNE ANTARCTIC TOURISM 1996-1997

Ship	*Operator*	*Carrying Capacity*	*Estimated # Voyages*	*PAX Load Per Voyage*	*Probable Total PAX*
All Tarasova	Quark Expeditions	95	2	90	180
Alla Tarasova	Marine Expeditions	95	8	95	760
Bremen	Hanseatic Tours	164	1	110	110
Bremen	Quark Expeditions	164	1	110	110
Explorer	Explorer Shipping	96	9	75	675
Akademik B. Petrov	Marine Expeditions	45	11	40	440
Hanseatic	Hanseatic Tours	180	6	125	750
Akademik Ioffe	Marine Expeditions	79	9	75	675
Akademik Ioffe	Quark Expeditions	79	3	75	25
Kapitan Khlebnikov	Zegrahm Expeditions	114	1	98	98
Kapitan Khlebnikov	Quark Expeditions	114	2	100	200
Professor Khromov	Quark Expeditions	38	8	30	240
Professor Molchanov	Quark Expeditions	38	2	30	60
Professor Molchanov	GMMS Pty Ltd	38	7	30	210
Professor Multanovskiy	Marine Expeditions	36	5	32	160
Professor Multanovskiy	Mountain Travel-Sobek	36	4	33	132
Akademik Shokalskiy	Southern Heritage Expeditions	36	3	33	99
Akademik S. Vavilov	Marine Expeditions	79	10	75	750
World Discoverer	Society Expeditions	138	7	75	525
World Discoverer	Zegrahm Expeditions	138	1	125	125
Total				100	6,524

From IAATO News, July 1996

This support is offered at minimal cost. Tour passengers appreciate the presence of national Antarctic programme personnel aboard, who share experiences and often volunteer to lecture on their work. With more than 100 departures on 13 different vessels, most from South America to Peninsula, scientists have many options for transport and research. Also, itineraries are substantially similar year after year — a bonus in planning and in conducting repetitive work. Corollary to the larger number of small Antarctic tour vessels, is the increased opportunity for science. Much science can be conducted with minimal impact on tour itineraries.

In addition, a number of the vessels — especially the converted Russian research ships — have the expertise, cranes and cargo space to provide significant support in resupply efforts. In 1995-96, the materials and personnel to inaugurate the Ukrainian Antarctic program at the former Faraday station were transported by tour vessels.

GENERAL

CLIMATE CHANGE: A LONG TERM PERSPECTIVE

In geological and even in shorter terms, climate change happens — frequently. It is not an artefact of human activity. So efforts to stop it, as certain organisations and individuals seem to hope can be done, are rather pointless. Whether changes can be in some way affected by human activity is another issue. CO_2 levels have increased, and appear to be continuing to increase, well beyond levels that are known to have occurred in the past few million years. The effects of this increase are not well established, although efforts to determine them continue, with increasing refinement.

This is mainly by the agency of GCMs — Global Climate Models — which vary considerably in the number of climate variables that they include, and the complexity of the levels of interaction that they can simulate. They are also constrained in that they depend significantly on the input of instrumentally recorded data. The length of record and the global scatter of recording sites is, of course, rather limited.

Instrumental records can be supplemented by information on past environmental change, which provides a means of testing the reliability of the GCMs. Thus a few years ago the CLIMAP group produced a reasonably realistic representation of global climate at the peak of the last glaciation. Unfortunately, studies of vegetation change, glacier fluctuations and sea level change, the proxy data for climate variables, rarely provide the quantitative data that modellers would wish to use. What they do offer is evidence of periodicities in climate change.

These periodicities are astronomically controlled. Variations in insolation, which affect the global atmospheric circulation, are determined by characteristics of the earth's orbit around the sun, and the obliquity of the earth's axis. These variations were plotted by Milankovic in 1941 for the Northern Hemisphere, and related

to the four glaciations then believed to have occurred. At the time it was by no means certain that glaciations were contemporaneous in the two hemispheres. If variations in insolation were the sole control, glaciations, like insolation, should have varied in the opposite sense in the two hemispheres. The establishment of virtual contemporaneity meant that the Milankovic hypothesis was abandoned.

It was revived when the oxygen isotope record from deep sea cores was shown to have periodicities which matched the astronomical record. Unfortunately the original relatively simple explanation for the effect of variations in insolation in producing glaciations could no longer be applied, and we still do not understand how they operate. But the occurrence of 100,000, 40,000, and 23,000 year cycles in the Quaternary record cannot be ignored. Glacial/interglacial cycles over the last 1.5-2 million years have lasted about 100,000 years. Interglacials warmer than or as warm as the present have lasted for about 10,000 years. Other periodicities within the 100,000 yr cycles are associated with peaks of glaciation and intervals of relatively mild conditions. The pattern of the deep sea core stages is duplicated in data obtained from the Greenland and Antarctic deep drilling programmes, from sequences of raised shorelines in the Pacific and the Caribbean, and from vegetation sequences in Europe and elsewhere.

The last interglacial peaked about 120-125,000 years ago, and probably peaked about 18,000 years ago. Conditions then improved rapidly to the present interglacial, the Holocene. Internationally the beginning of this period is placed at 10,000 years ago.

In New Zealand we think warming may have begun rather earlier. The warmest part of the Holocene — the so-called Climatic Optimum — probably happened about 8,000 yrs ago. Since then climate in the mid-latitudes at least has been getting cooler, although not without shorter term variations. The Mediaeval Warming occurred about AD 1200, when the Norsemen explored Iceland, Greenland and America, and the Little Ice Age was reflected in advanced glaciers in New Zealand and elsewhere around 1700-1800AD.

Some people argue that the warming currently shown in the records represents recovery from the Little Ice Age, and temperatures may not yet have reached the level that they were in the Mediaeval Warming (when apparently good wine was made in England). However that may be, the implications of the longer term fluctuations of climate should not be ignored. There is no logical justification for assuming that astronomically forced climate cycles have ceased. It is logical to assume that past patterns will be repeated — and the evidence is that we have passed the peak of the present interglacial, and are moving into the beginning of the next glaciation.

There is, of course, the important question of time scale. How long does it take for the earth to move from interglacial to glacial mode? Longer than it takes for CO^2 warming to bite?

There is no precise answer to these questions. However, it is increasingly apparent that the change from one state to the other need not be gradual, and may rarely have been so in the past. The Greenland ice core study (GRIP) in particular, but not in isolation, has demonstrated

that changes can occur with surprising rapidity. The change from ameliorating conditions at the end of the last glaciation to the cold interval known as the Younger Dryas was marked by a drop in mean annual temperature of the order of 5°C within 25 years. Other "terminations" are also abrupt, although information on the precise rate of change is more limited as we go further back in time.

Climate change which can be identified in the long-term record must cause unease about the extent of our understanding of the mechanics of climate. We do not know what precipitated the glacial phases of the Quaternary, or what produces an interglacial — although the ice cores have shown that they are associated with increased atmospheric CO^2 induced warming may be all that is deferring a descent into much more rigorous conditions!

Jane Soons is Emeritus Professor of Geography at the University of Canterbury. Her record includes being President of INQUA (International Union for Quaternary Research) and Convenor of the Royal Society of New Zealand"s Standing Committee for the IGBP (International Geosphere-Biosphere Programme).

COLD HARD CASH

An American company is seeking to assist "scientific and humanitarian research" in the Antarctic by printing a range of 1, 5, 10 and 20 dollar Antarctic notes.

The Antarctica Overseas Exchange Office says that "some may argue that, due to Antarctica's limited prominence as a centre of commerce, a local note is simply not needed. We take the contrary view that local notes are precisely what Antarctica needs to generate capital needed to perform valuable scientific and humanitarian research within her borders."

80% of all proceeds from the sales of these notes will be donated directly to organisations seeking funding for research and humanitarian projects says the AOEO.

John Hamilton, "comptroller" of the AOEO, has been a collector of coins, stamps and banknotes for over ten years. He is an avid collector of all three, and acts as a professional "numismatist" with a large financial firm where trades world currencies, coins, and other commodities. He has an active stamp collection which focuses on Antarctic themes.

Mr Hamilton is a member of the International Banknote Society, the American Philatelic Society, the British Columbia Philatelic Society, and other historic societies.

HARROWFIELD FURTHERS RESEARCH ON FELLOWSHIP

Well known Christchurch Antarctic researcher David Harrowfield travelled to the UK, Norway, and Canada under a Winston Churchill Fellowship in April and May this year.

"It was one of the most rewarding things I have done during my long interest in historic site preservation," he says.

In 1987 Harrowfield was recipient of the Antarctic Society's Conservation Trophy for his work at historic sites in the Ross Sea region of Antarctica and has published extensively on the subject.

Harrowfield spent most of April studying conservation problems and the preservation of Arctic historic sites and monuments in Norway, Russia and Canada, at the Scott Polar Research Institute, Cambridge University.

It was soon established that only a few people are active in this work which also includes archaeologists investigating prehistoric sites. Conservation problems include those that are climate related, damage by animals particularly bears, coastal erosion and by increasing numbers of tourists. Most work undertaken at these sites has been similar to the maintenance programmes carried out on historic monuments in Antarctica with the most sophisticated work done on a large stone storehouse in the Canadian High Arctic. This building was associated with the Franklin search expeditions of the mid 19th century.

Limited in-situ conservation of historic artefacts has been undertaken with much of this by Canadian conservators. Harrowfield made inspections of conservation laboratories at the Canadian Museum of Civilisation and the Canadian Conservation Institute.

A highlight of Harrowfield's fellowship was the opportunity to visit the Royal Geographical Society and to inspect the famous polar ships *Discovery, Fram* and *Gjoa* and the boat *James Caird* from the ship *Endurance.*

The *Discovery,* which is dry-docked at Dundee, is undergoing continual restoration and much of this work is focussed on tracing the sources of leaks and replacement of timber. Records and drawing are kept of all work done and the total restoration has been estimated at a cost of £1 million. In charge of the work which involves several full time staff, is the Ship's Manager, Hugh Scott. In the adjacent Discovery Point visitor centre are excellent displays with original artefacts lent by the Royal Geographical Society and portraying activities associated with the Discovery Expedition.

The *James Caird* is kept under cover at Sir Ernest Shackleton's old school, Dulwich College at West Dulwich, London. Some components of this famous boats from the Endurance of Shackleton's Imperial Trans Antarctic Expedition (1914-17) are not original. With exception of some planks that have opened slightly the boat is in very good condition. A society formed to keep alive Shackleton's memory and to ensure future preservation of the James Caird, has about 200 members.

In contrast to the *Discovery* the *Fram* is undercover in a purpose-built structure beside Oslo Fiord. The ship is maintained in immaculate condition by an enthusiastic group and a range if displays with original artefacts tell of the ships associa-

tion with Nansen and Amundsen. Outside and presently undergoing restoration, is the much smaller ship *Gjoa* which was the first vessel to transit the Northwest Passage in 1903-06. While in Oslo visits were made to the Folk Museum which has an interesting collection of 19th century buildings and to the Ski Museum where there in addition to exhibits portraying a history of skiing, there are excellent displays of artefacts associate with Nansen, Sverdrup and Amundsen.

A detailed report on Harrowfield's research has been completed and *Antarctic* understands he is planning to continue his research at the Scott Polar Research Institute and to participate in field work in the High Arctic of Norway or Russia.

Of the Scott Polar he says "the institute which has the greatest collection of published and archival polar material in the world, is essential for any serious scholar of Antarctic history. The main difficulty however, is preventing oneself from being diverted to other areas of interest."

HISTORICAL

COULD IT HAVE BEEN DIFFERENT

Thomas Feather and Scott's Expedition
By Glenn M. Stein

When 31-year-old Tom Feather was appointed Boatswain of the *Discovery* in May 1901, the Norfolk native and Petty Officer First Class had no idea that his performance during the upcoming venture would net him a warrant as a Boatswain in the Royal Navy.

Feather was a post office boy in Stalham before he joined the Royal Navy in 1885 as a Boy Second Class. He was promoted to Ordinary Seaman in November 1887, and then Able Seaman in May 1888. Feather's rise through the ranks assumed a rapid pace between 1893 and 1895. During this brief period, he rose from Leading Seaman to Petty Officer First Class; having served aboard the training ship *St Vincent* from 1892 until 1895.

Feather's ability to handle men evidently showed itself and accounts for

T. A. F. Feather, 29th July 1908. Polar Medal - Bar Antarctic 1902 - 4.

his quick promotions. It came as no surprise when he was appointed to the British National Antarctic Expedition out of the training vessel *Boscawen* (at Portland), where he had served for nearly two years.

Though appointed to the position of Boatswain of the *Discovery*, such an appointment was usually held by a First Class Petty Officer if a warranted Boatswain was not present to fill the billet. Still, one is inclined to conjecture that Feather's "people skills" aided his

appointment more so than the latter circumstances.

Praise for the Boatswain's abilities during the expedition came from the top:

"Our boatswain, Thomas Feather, was a thorough seaman, and took that intense pride in his charge which was so well known in the old sailing days. A sailor will understand well the merits of a boatswain who can make the proud boast that the *Discovery* circumnavigated the world without losing a rope or a sail. Our boatswain, like the rest of us, under new conditions had to turn his talents into fresh channels; in the Far South all that pertained to our sledge equipment was placed in his charge, and with him rested the responsibility that everything was in readiness when we started out on our sledge journeys. And here, as before, he proved his excellence, for I do not remember a single complaint or breakdown that could have been obviated by more careful preparation." (Scott, 1905: Vol. I, 73)

"One might travel round the world, and not find a more suitable man for the position of boatswain of an exploring vessel than Mr Feather. A quiet, determined man, he would carry out exactly what he was ordered to do. Under the supervision of Royds, he saw to all the executive work of the ship. The contented spirit that prevailed throughout the mess-deck, as well as the first-rate condition in which *Discovery* arrived in New Zealand on her return from the region of frost and snow, were largely due to him." (Armitage, 1905: 102)

A bit of foolhardiness early in the expedition (mid-May 1902) nearly cost Feather and Second Engineer James H. Dellbridge dearly:

"After dinner it was reported that the Bo'sun and the Second Engineer had gone out at 2 in the afternoon and had not returned, so immediately three search parties were set on foot. They had been out for 6 hours and had been expected back to tea.

". . . All this cackle about nothing. We all were ready, brandy flasks filled, wind clothes on, face masks, crampons, and everything else with a sledge to each party to bring back the pieces, when the two men turned up on board."

However it was a near shave, for they had completely lost themselves in the snow drift for over six hours and were in pitch darkness. They had started out with the pigheaded idea, which many of the seamen on board will not give up, that the island on which they were camped was very small and could be walked round in a few hours by keeping on the ice floe and following the coast. Though this is an island, as has now been proved, it measures 60 miles in length and is probably nearer 200 miles round by the coast, part of which is sheer cliff on the Ross Sea.

". . . They actually went on right through our winter quarters bay without recognising a thing in the darkness; how they escaped tripping over the guide ropes, no one can guess. I suppose they were drifted up where they crossed them." (Wilson, 1966: 142)

Despite his wanderlust, Tom Feather displayed his mettle during a preliminary southern sledging reconnaissance that left the ship on September 27, 1902. The party consisted of Scott, Shackleton and Feather (who replaced Barnes, who had a severely frostbitten hand from the first attempted reconnaissance on September 17).

The trio's two dog teams weren't

Three four-man sledging parties prior to departure from their base camp at Hut Point, Ross Island. Feather was often Capt. R. F. Scott's first choice for members of his personal sledge, and he is standing second from left.

always kind to them, as Mr Feather discovered:

"On one occasion, as they were crossing a crevasse which was 3 $^{1}/_{2}$ feet broad, and when Mr Feather was harnessed to the traces, in front of the dogs that were dragging the sledges, the dogs stopped short in front of the crack, and dragged the boatswain back into it, and he was suspended by his harness just below the surface of the ice. Shortly after he had been dragged up and had resumed pulling, the toggle connecting him to the traces carried away, so he had a near shave. When asked if he was hurt, he only replied: Damn the dogs! 'On another occasion one of their sledges, on which were stowed most of the provisions, went down one of these treacherous places, and Mr Feather was lowered down to unpack it before it could be recovered. They had left a depot near the Bluff, with provisions for three men for six weeks, and rather more for the dogs. All the dogs had pulled very well, and were quite fresh when they arrived back at the ship." (Armitage)

"This evening the boatswain has shown me his harness; one strand was cut clean through where it fell across the ice-edge. Altogether he had a pretty close call." (Scott)

During the 1903 sledging season, Feather saw no less activity on the ice trail. After a party under Lieut. Armitage advanced up what would subsequently be called the Ferrar Glacier and reached the icecap in early January, a route to Antarctica's interior was revealed. On September 9, Scott, Engineer Skelton, Carpenter Dailey, Evans, Handsley and Lashly left to lay a depot in preparation to ascend the western mountains, and this was accomplished at about 2,000 feet above sea level.

The main journey began on October 12, with the advance party consisting of Scott, Skelton, Feather, Evans, Handsley and Lashly. Ferrar led a smaller party, taking

Welder and Kennar, and was to concentrate on geology. The supporting party's leader was Dailey, with Williamson and Plumley, whose role was to lay depots. Despite having to return to *Discovery* to repair split sledge runners, the sledgers struck out again and by October 27 was camped on the glacier tongue. Next, Scott's party would seek the icecap, while Ferrar and his men explored the valley.

On November 13, the summit was reached and they then commenced a march across the vast plain of snow. As they headed west, the unforgiving conditions began to take their toll on everyone, as Scott relates:

"Up to the 17th we kept a fairly good pace, but on the 18th and 19th there was a visible slackening. By this time we had divided our sledges; Feather, Evans and I pulled one of them, whilst Skelton, Handsley, and Lashly pulled the other. It was customary for my sledge to pull ahead whilst the other followed as best it could, but soon I found that second sledge was only keeping up with the greatest difficulty, and it was borne in on me that the excessive strain of our labour was beginning to tell on the party." (Vol. II: 255)

It was some time during this period that Feather had his first honour bestowed upon him for polar exploration. Mount Feather was christened and retains its title to this day; however, the honouree's relationship with his commander hints at the reasons for such a gift:

"The Boatswain has been suffering agonies from his back; he has been pulling just behind me, and in some sympathy that comes through the races I have got to know all about him, yet he has never uttered a word of complaint, and when he knows my eye is on him he straightens up and pretends he is fit as ever. What is one to do with such people?" (Scott: Vol. II, 257)

The time had come to divide the party. Lieut. Skelton, Feather and Handsley were sent back toward the ship with a sledge on November 22. Scott, Evans and Lashly struggled westward until December 1, when they too turned for the ship; their adventure was drawing to a close.

By February 16, 1904, *Discovery* was leaving her snug home away from home and heading on the long road back to England. When he arrived, Scott submitted a lengthy dispatch to the Admiralty, praising all expedition participants in the highest terms. However, six select individuals were specifically Mentioned in Dispatches (MID): Feather, Dailey, Dellbridge, Wild, Evans and Lashly.

The MID. requires some historical perspective in order to understand the resulting effects of Feather's "mention". By the time of Antarctic expedition, there was a long tradition of commanders at sea and on land of mentioning subordinates in dispatches, so that praiseworthy officers were brought to the notice of higher powers. The majority of MIDs were limited to formation and unit commanders, and senior staff officers. It appears that enlisted men were first mentioned in the early 1840s, and following the Crimean War (1854-56) such recognition formed the basis for a tangible reward in the form of a medal. "The actual form of mention varied from a mere listing of names to a description of the individual services performed. Where the latter was the basis for an award, or of promotion in

rank, it sometimes took the form of what now would be regarded as a citation." "A device frequently used in the Royal Navy." (Abbott & Tamplin, 1981: 296)

Scott's own praise came in the manner of a royal invitation to Balmoral, and as he was already a Member of the Royal Victorian Order (MVO), his Antarctic success brought him a notch higher, to a Commander of the Order (CVO). Queen Victoria established this honour in April 1896, to be ". . . conferred for extra-ordinary, important or personal services to the Sovereign or to the Royal Family . . ." (Dooralong, 1974: 60-1); hence, the award was granted solely by the Sovereign.

Petty Officer T. A. F. Feather, Boatswain of the DISCOVERY, giving orders from the head of the port forecastle steps. This photograph was taken in 1902, outward bound for Antarctica.

The awards for merit stopped here nothing was forthcoming from the Government, not even a congratulatory telegram. The news media lost no time in making it known that they felt ". . . Scott deserved a much better reception and at least an Order of the Bath, if not a knighthood." (Huxley, 1978: 140)

Scott was not the only one who missed out on something more tangible, so did the men noted as MID. The entire situation was not a mere oversight — expedition politics were churning behind the scenes; and yet, the Navy came through for Mr Feather. He was promoted Acting Boatswain on September 10, 1904, and confirmed in that rank almost exactly two years later.

Before moving on to Feather's next association with Antarctica, the presentation of his Polar Medal should be brought to notice. This award has its precedence in two 19th century Arctic Medals, and was created upon the expedition's return. It should be stressed that this award was granted for services rendered, and did not constitute a meritorious or gallantry award, thus, need not be confused with abovementioned writings regarding the MID. Feather's Polar Medal was presented by the hand of King Edward VII on December 7, 1905. Not all those from the expedition received the medal on this day or in this manner.

A New Expedition

In September 1909, Scott declared that he would go south again, with the primary objective of achieving the Pole. At the time, Feather was serving with the H.M.S. *Bulwark* as part of the Channel Squadron. While assigned to the *Renown* at Portsmouth, he was officially listed as part of Scott's new venture on April 19, 1910, but by November 10, the following notation appears on his service record: "Sent home as unsuitable for Antarctic

Expedition" (ADM 196/35)

Such a statement as "unsuitable" is remarkable when one considers Feather's previous services in Antarctica and Scott's M.I.D. In addition, from the time of his return to England until retirement in 1922, Feather is referred to by several officers as "decidedly temperate", "capable and zealous".

Why, after seven months' involvement with Scott's last expedition did the Boatswain come home? Feather's participation cannot apparently be traced in any published sources or in official records, but must be pieced together through information from his daughter and grandson, and a former *Terra Nova* crew member.

"I remember being told that my grandfather fell over on the deck of the steamer taking him to New Zealand, developed water on the knee' and was unfit to go any further . . . Scott apparently went to Cape Town by steamer, then Wilson went in the same way from Cape Town to Melbourne while Scott took command of the *Terra Nova*." (Dr John Feather to Stein, January 12, 1995).

Feather's daughter (who passed away in March 1993) related a similar story:

"He went with the party on the start of the expedition but a damaged knee made him a liability and he came home." (Letty M. Feather to Capt. A. R. Kroulik Jr., March 6, 1989).

Mr David Slade, of West Sussex, England, spoke with Letty Feather in person in 1988, and the result was some possible insights as to why Thomas Feather left the expedition at Lyttelton:

"He set off with Scott's last expedition but returned due to an injury to his knee. It seems also that he didn't get on too well with Lord Mountevans at the time Lt. Edward Evans. Evans it seems wasn't too keen on a man who came up through the ranks and especially as he had the ear' of Scott. His daughter said he was glad enough to return because of this but always felt that had he been there to oversee the supplies, the tragedy might not have occurred." (Slade to Kroulik, May 31, 1988)

This information was repeated, in somewhat more detail, later on:

"There was a lot of ill feeling between him and Lieut. Evans. She reported that Feather thought him a self opinionated officer who would not be advised or told anything and would not listen to what Feather was telling him about the supply chain and arrangements, he of course having had the experience of the 1904 Expedition behind him. The injury gave him the opportunity to withdraw without loss of face but it seems, subsequently, he felt he was partly to blame for the disaster that was to follow and that, had he stayed course and been available to advise and assist, things might have had a different outcome." (Slade to Stein, September 20, 1994)

This scenario would seem logical, given the knee injury and the reported poor relationship between Evans and Feather; the latter dilemma would have put Scott uncomfortably between his Second-in-Command and his Boatswain. And yet, William Burton (Leading Stoker, R.N., of the Terra Nova) adds to this scene with another possible clue:

"He was sent home from New Zealand. I asked Bill Burton, stoker, about it in 1982. He said Scott rejected him as he was too navy-fied'. That is strange for a naval officer and a stickler for things that didn't

matter. It did not interfere with his career." (A. G. E. Jones to Stein, March 16, 1994)

Burton was the last survivor of Scott's expeditions, passing away in New Zealand in 1987, aged 99 and only a few weeks shy of his 100th year.

Since two-thirds of *Terra Nova's* crew were mercantile marine, and Evans was mercantile-trained (while Feather was regular navy), it should be noted that Scott had written about the incompatibility of the naval and mercantile men on his first expedition. Feather's presence alone may have been a factor in the situation.

In the end, the combination of difficulties facing Feather could have tipped his mind against staying with the expedition, and Scott may have agreed with his old sledging companion, without holding anything against him for returning home. Likewise, Dr Feather wrote that ". . . my grandfather never apparently expressed any bitterness towards Scott, which one might have expected." (Feather to Stein). Then again, the death of the Pole Party apparently weighed on Feather's conscience, thus brushing aside any bitterness, if such ever existed, for past events.

When the outside world learned of the disaster, boatswain Feather was not too far away from the frozen continent . . . since early in 1912, he was serving on the *Sealark*, a surveying vessel based out of Sydney. Until 1914, the *Sealark* was working mainly in the Solomon Islands and off Queensland. One wonders if simple coincidence found him in the neighbourhood'?

From November 1914 until August 1917, Feather was in charge of H.M.S. Torch (sloop), and as previously mentioned, she was based in New Zealand. In the closing months of 1917 until August 1919, he was aboard the battleship *Dreadnought*, during which time (September 13, 1918) Feather was promoted to Chief Boatswain. His 37-year naval career came to an end in August 1922, when he retired with the honourary rank of Lieutenant.

Lieut. T. A. F. Feather died on July 1, 1943, in Norwich, Norfolk, and is buried in the City Cemetery. Fortunately for posterity, his memory remains alive, as the artefacts identified in the box once belonging to this gentleman are held in a private collection in the United States.

Happily, the Royal Geographical Society Silver Medal for Scott's first expedition is still held by the family of Lieut. Feather. The author seeks information related to any aspects of Feather's life, particularly his involvement

THE FEATHER COLLECTION

1) **1914/15 Star**
2) **British War Medal**
3) **Victory Medal**
4) **Polar Medal (silver/with bar Antarctic 1902-04)**
5) **Naval Long Service & Good Conduct Medal (Edward VII issue)**
6) **Silver monogrammed cigarette case**
7) **Boatswain's pipe and chain**
8) **Silver monogrammed napkin ring**
9) **Brass and enamel matchbox**
10) **Gilt *Discovery* uniform button**

with the Terra Nova expedition. Please contact: Glenn M. Stein, 1268 Foxforrest Circle, Apopka, Florida, 32712-2335, U.S.A. Phone: (407) 884-4148 (any time/ answering machine). All information will be treated with strict confidence, and all correspondence will be acknowledged by myself.

ACKNOWLEDGEMENTS
Mr Rick Broad
Dr H. J. G. Dartnall, FRGS
Dr John A. Feather
Ms Letty M. Feather
Mrs Margaret Feather Fowler
Mr A. G. E. Jones
Rear Adm J. A. L. Myres, CB, RN
Mr Baden Norris
Mr David Slade
Mr David E. Yelverton, FRGS

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TRIBUTES

Malcolm James Roding Ford, 10 May 1939 — 4 July 1996

Malcolm Ford with his Polar Medal. Courtesy: Ford Family

Malcolm Ford's impact on the Antarctic, particularly its surveying, is epitomised by the three geographical features named after him.

Mount Ford in the Bowers Mountains, Ford Peak in the Prince Albert Mountains and Ford Rock spon Ross Island are all legacies of the surveyors Antarctic work.

Nelson born Ford trained as a surveyor, first visiting Antarctic in the summer of 1962-63 as a member of the 240km dogsled trip to the outlet of the Mawson glacier. He spent time during 1963-64 and 1965 on the ice.

"The recently completed survey by New Zealand's Northern Party, 1963-64, of Oates Land and northern Victoria Land must rank among the last major journeys of Antarctic exploration," commented an article in *Antarctic* March 1964, of the expedition of which Ford was deputy leader.

Other members of that historic expedition were J H Miller (Leader), M J Sheehan, F Graveson, A Sturm and S Carryer.

Ford's contribution to the Antarctic was recognised after this expedition with a Polar Medal, presented by the Queen Mother.

Following Ford's Antarctic experiences he chose the life of a economic consultant over a return to suburban surveying, completing a degree at the London School of Economics.

Ford settled in England, marrying in 1981 and living in Sussex until his untimely death.

Lars Eric Linblad, Antarctic Tourist Pioneer, 1927-1995

The memory of Antarctic tourism pioneer Lars Linblad was recently honoured by the U.S. Board on Geographic Names which approved the Antarctic geographic name *Lindblad Cove* (63°51'S, 59°27'W) earlier this year.

The Cove, 5km wide, is situated between Almond Point and Auster Point in Charcot Bay, Trinity Peninsula.

Linblad was a noted conservationist, who operated the first cruise to Antarctica in 1966 and who helped use Antarctic tourism as a tool to raise environmental consciousness.

Originally from Sweden, Linblad moved to the United States in 1951 to work for American Express and the Lissone-Lindeman. Linblad opened Linblad Travel in 1958, based in New York. Linblad Travel offered tourists the opportunity to visit places off the usual tourist path.

His first Antarctic tourist expedition was in 1966, when he charted a Argentine

naval vessel and took tourists across the Drake Passage ad along the northern trip of the Antarctic Peninsula. Two further voyages were undertaken in 1968 with a Chilean naval vessel.

In 1969 Linblad produced the Linblad Explorer a purpose-built tourist ship, designed for polar and other tourist destinations.

A wrangle with the US government in 1987 over trips to Vietnam left Linblad Travel bankrupt and its vessel sold.

Shane Scott

Antarctic was very sorry to hear of the death of Shane "Scotty" Scott on 29 June 1996 at a paraponting convention near Denver, USA.

Scotty was the 1992/93 summer chef at Scott Base. He returned at Winfly in August 1993, for 6 weeks, after the mediavac of the winter-over chef.

His third posting to Scott Base was as the winter-over chef for the 1994/95 season, returning to New Zealand in October 1995.

NEW FEATURE

STARTING IN DECEMBER 1996

THE RIDDLE OF THE ANTARCTIC PENINSULA

The Story of three Pioneer Expeditions in the 40-year quest to establish its connection to the Antarctic Continent — by David Yelverton FRGS

1997 will see the centenary of the departure of the first truly geographical and scientific expedition to the Antarctic since Ross returned with news of his great discoveries.

Already conceived by its leader, the Belgian naval Lt. Adrien de Gelache de Gomery (28 years old when he gained the first sponsorship for it in 1894), the resolution of 1 August 1895 at the 6th International Geophysical Congress in London (see R K Headland in *Antarctic*, June 1995, page 425) had generated support from the Royal Belgian Geographical Society in Brussels by the end of that year.

As the whole world faced the dawn of the new century it was to be the first of four "heroic age" attempts to unravel the secrets of the Peninsula that would only finally be resolved, by John Rymill's British Graham Land Expedition 40 years later.

Of those first expeditions only Dr Frederick Cook's book on the Belgian expedition, Otto Nordenskjold's account of his Swedish expedition (an abridged translation lacking some detail and several key chapters from the original) and the French explorer Jean Charcot's account of his second expedition in the *Pourquoi-Pas?* have been published in English. Particularly in the case of the first three, it requires a considerable effort to piece the stories together as the typical reader of *Antarctic* would wish to understand them.

Starting in December, *Antarctic* will

serialise the stories of those three expeditions, as condensed from the original accounts and scientific reports.

BOOK REVIEW

"A MAN FROM THE MINISTRY" BY W. FRANK PONDER

Our island nation has been remarkably well-served by people dedicated to development and conservation. In world perspective we are a small group of about three million people clinging around the edges of some pieces of rock sticking up four thousand metres into the trade wind belt. Yet in the short space of 150 years, we have wrought works of wonder on these islands, and on neighbouring territories. Architects, engineers and builders have plied their skills to produce artifacts in world class in the most unlikely and often hostile environments.

Frank Ponder is one of these people. A story like his needed to be told, because in the myopia and amnesia of human recall, it is easy for achievements to remain forever unsung. Frank Ponder is an architects's architect. His great emphasis has been on design and improvisation - creating things for the needs of the time with the skills and resources at his command. In this slim volume he opens a window into the past greatnesses of kiwi ingenuity. He shows us that all tasks, however grand, however trivial, merit only the best that human intellect and sensitivity can offer.

Of special significance to the Society is his contribution to New Zealand's antarctic activity. It would not be an exaggeration to say that his impact on our working environment in the Ross Dependency has not been surpassed by anyone else. As a Senior Architect in the old Ministry of Works, he was given the task of designing and building the first Scott Base to service the 1957 International Geophysical Year and the Trans-Antarctic Expedition. Within the astonishing timespan of a year, he dreamed up, designed, developed and built a complex of structures away ahead of their time. His story on this project is a legacy of achievement, as are the buildings themselves, some of which are still in service nearly forty years after their initial planned "best before" date.

In this book, as in his own mission to build objects utility and grace, Frank Ponder demonstrates his love of the environment. He shows us that our works must blend with sensitivity and humility into the grand landscapes of our habitat.

"Frank Ponder was a remarkable man" wrote Ed Hillary in his foreword to this book. To that my I add: "Ut Homo, Sic Opera", for the works are the reflection of the man, and take their place in the history of our proud achievements in New Zealand's domains in this part of the world.

(This book is available from the Polar Bookshop at $25 + p&p to members)

A Review by Bob Norman

Former Commissioner of Works, Former Chairman of the Ross Dependency Research Committee

The New Zealand Antarctic Society Inc., was formed in 1933. It comprises New Zealanders and overseas friends, many of whom have been to the Antarctic and all of whom are vitally interested in some phase of Antarctic exploration, history, development or research.

The annual subscription entitles members to: Antarctic is published each March, June, September and December. It is unique in Antarctic literature as it is the only periodical which provides regular and up to date news of the activities of all nations at work in the Antarctic and the subantarctic. It has a world-wide circulation.

Members also receive a regular newsletter called Polar Whispers and an annual Polar Log, which records the decisions made by the Society's Council at its AGM. Regular meetings are held by the Auckland, Wellington, Canterbury and Otago branches.

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P O Box 7083
DUNEDIN 9030

Overseas Branch Secretary
New Zealand Antarctic Society Inc.,
P O Box 404
Christchurch 8000
NEW ZEALAND

Advertising rates

Full colour (outside back cover only)	$400
Whole page (b & w only)	$300
Half page (b & w only)	$200
Quarter page (b & w only)	$50

Rates for regular placement are negotiable.
Enquiries to the:
National Treasurer
New Zealand Antarctic Society Inc.,
P O Box 404
Christchurch 8000
New Zealand

Fliers and other advertising material can be inserted at a cost of $150 per issue plus any additional postage incurred through such insertions. Inquiries should be made to the Treasurer. Phone and fax numbers for the bulletin appear in the front of each issue.

Deadlines for advertising and copy are the 20th of each month proceeding