

ANTARCTIC



The Journal of the New Zealand Antarctic Society Vol 16. No. 2, 1998



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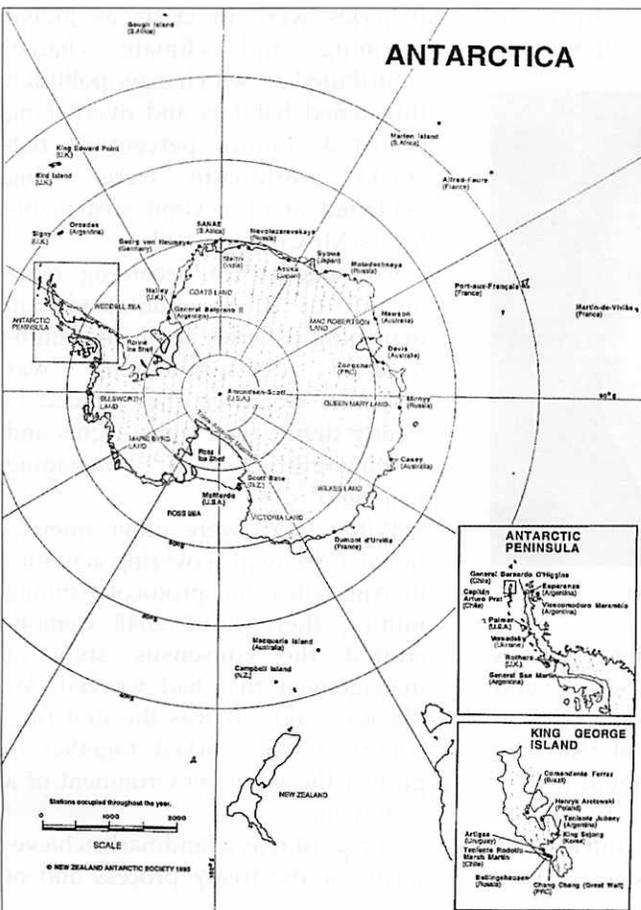


Cover Illustration: Courtesy of Nigel Brown, Acrylic on Canvas 1998. "A Conversation between Scott and Hillary concerning Journeys in Antarctica" from his collection of works painted as one of Antarctica New Zealand's first recipient of the 'Artists to 'Antarctic' award.

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Contents

	Page
FORTHCOMING EVENTS	25
LEAD STORY	
Antarctic Future Workshop	26
FEATURE	
Feline Pioneers on Ice <i>by Baden Norris</i>	28
NEWS	29
EDUCATION	
NATIONAL PROGRAMMES	
New Zealand	32
United States	34
Bulgaria	35
FEATURES	
TAE Hut <i>by David Harrowfield</i>	37
International Flavour at Bratina Is. Oasis <i>by Rob Smith, NIWA</i>	39
TRIBUTE	
Mike Prebble	40
OPINION	
Antarctica - A Continent for Science or Management <i>by Margaret Bradshaw</i>	41
FEATURE	
Riddle of the Antarctic Peninsula Swedish Trail Part III <i>by D Yelverton</i>	42
BOOK REVIEW	
That First Antarctic Winter <i>reviewed by Colin Monteath</i>	45
Forty Years on Ice <i>reviewed by Arnold Heine</i>	46
LETTERS TO THE EDITOR	47
GENERAL	
Hillary Video Series Promotion	48

FORTHCOMING EVENTS

25 - 31 October 1998 - A Geological and Mineralogical Approach to Environmental Protection at the Certosa di Pontignano in Siena, Italy. The course is organised by the International School of Earth and Planetary Sciences, Università' di Siena, Italy.

5-9 July 1999 - Eighth International Symposium on Antarctic Earth Sciences, Wellington.

TREATY OFFERS BEST PROTECTION FOR ANTARCTICA AND NZ

ANTARCTIC FUTURES WORKSHOP

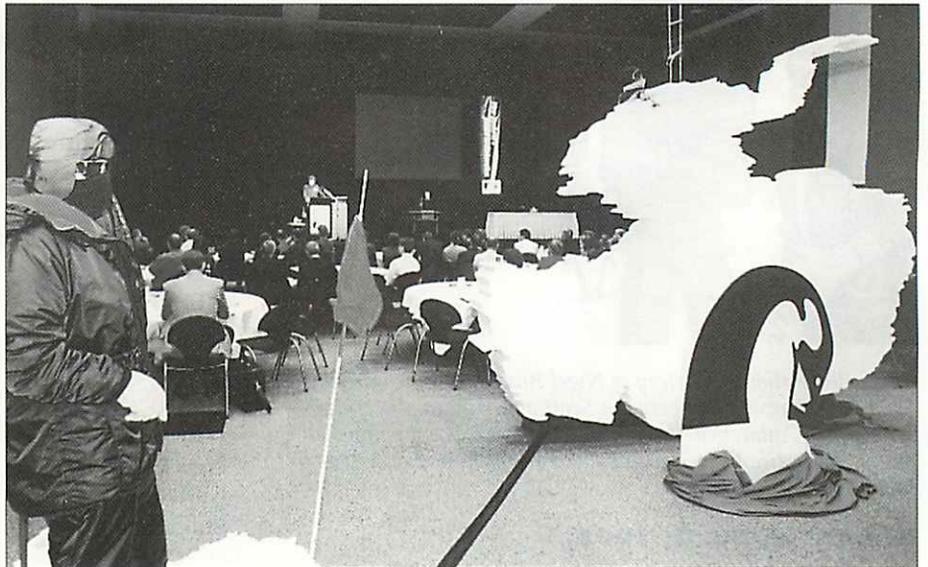
Despite its imperfections, the Antarctic Treaty has provided the best protection for the frozen continent and New Zealand's interests, says the deputy secretary of the Ministry of Foreign Affairs and Trade Don MacKay talking at the Antarctic Futures Workshop.

However, the treaty parties faced major difficulties in managing Antarctica, he said. Endorsed by 43 countries the treaty established that the continent be used for peaceful purposes, making it non-militarised and non-nuclearised. Also all claims to sovereignty were "frozen", he said.

The success of the treaty was shown in the ease with which countries had acceded to the treaty, and the growing acceptance of the system of governance which it applies, uniquely, to a whole continent. "No other regime would have provided the same level of protection for Antarctica and for New Zealand's interests," he said.

The issue of sovereignty had separated countries into two distinct groups: about seven nations, including New Zealand, claim sovereignty of parts of Antarctica, while many others do not recognise such claims. "Sovereignty cuts to the core of the treaty through article 4 which puts the issue of hold," he said.

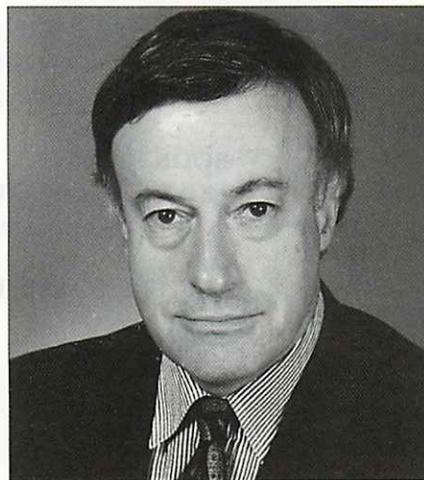
The overfishing of toothfish in the southern oceans was one of the greatest challenges as there were no regulations governing the area, Mr MacKay said. This was because the legal status of Antarctica has not been resolved and it was "not governed by an instrument that has been negotiated among the world's nations," he said. The Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR), designed to protect the



A working session of the Antarctic Future's Workshop held in Christchurch, New Zealand.

environment, was not working well. "CCAMLR is proving to be not as effective as we would like it to be. But if we didn't have CCAMLR the situation would be even worse."

Stan Crothers, deputy chief executive of the Ministry of Fisheries, said that investment in research would help develop ways to



The Antarctic Treaty has growing acceptance — Don MacKay.

manage the fishery better. Previous research resulted in sonar and satellite technology to keep track of ships and the amount of fish they caught. Governments should look at reducing subsidies, but reductions would not happen quickly as communities who relied on fishing

would be adversely affected.

International figures suggested \$124 billion was spent last year to catch \$70 billion worth of fish. "Fishing fleets could be reduced by half to catch the same amount of fish." Throughout the world, fisheries were in crisis as global warming and climate change contributed to sea change, pollution threatened habitats and overfishing occurred. Eighty percent of fish stocks worldwide were being exploited at or beyond sustainable levels, Mr Crothers said.

Countries were becoming more aware of their limitations in managing fisheries alone and multi-national decision-making was common. However, they needed to clearly define their aims, rights and responsibilities in managing fisheries."

While there were other international agreements covering activities in Antarctica, the protocol banning mining there until 2048 demonstrated the consensus style of management that had worked, Mr MacKay said. "It was the first time countries had worked together to protect the whole environment of a continent.

"I regard it as a landmark achievement for the treaty process and of

LOOKING FOR AN ICY RESOLUTION

great significance to New Zealand both strategically, geographically and environmentally." Criticisms of the treaty had focused on its scope, its lack of management of tourism and the issue of liability. Although the parties had undertaken to develop procedures for liability for damage caused by activities in Antarctica, it was not easy.

"The whole issue is fraught. It is extremely difficult to get to grips with in an Antarctic Treaty context," Mr MacKay said. "We are still a long way from reaching consensus as some fundamental differences have appeared (during negotiations)."

On the subject of tourism, Anne Kershaw, director of Canadian-based Adventure Network International, told delegates at the Workshop that growing numbers of tourists in Antarctica have prompted scientific bases to clean up their acts.

"Cruise ships and commercial flights arriving in Antarctica cause countries with bases to look at what they were doing to the environment," she said. "When cameras and videos started being taken there, people would return from trips and ask 'what's all this rubbish?'"

The sight of an impeccably clean base is also a worry, she said, for what is being done with the rubbish if a supply vessel only visited once a year to remove it?

Adventure Network International have been taking paying passengers to Antarctica on sightseeing tours since 1985. All rubbish taken into Antarctica is removed at the end of a trip, including human waste, which is disposed of in Chile, a six-hour flight away.

"Even if some parties could not remove their rubbish, they have to bury it, mark the location and the next available plane would find the rubbish, dig it up and remove it," she said.

The International Association of Antarctic Tour Operators are working together to promote the area and their stance in ensuring Antarctic remains pristine. "A greater amount of shared responsibility and communication between operators and governments with interests on the ice would improve safety in the area," said Ms Kershaw.

Extracts from an article by Roger Dennis, National Business Review

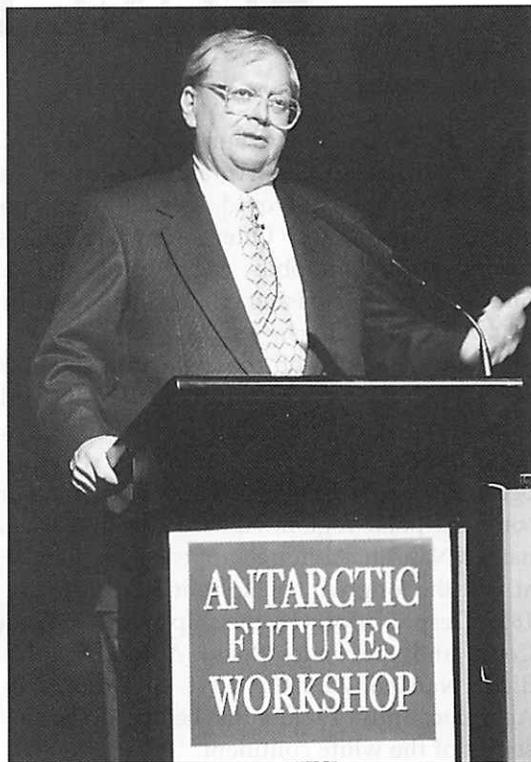
Owned by no single national, but administered by many, the future of Antarctica — and New Zealand's role in that future — was under examination at the Antarctic Futures Workshop, organised by Antarctica New Zealand at the Christchurch Convention Centre during April 1998.

Differing views on where the future of Antarctica lies were expressed to 130 participants including scientists, policy-makers, the conservationist lobby and tourism operators. While the debate continues, companies with potential commercial interests are moving to position themselves to take advantage of the natural wealth of Antarctica. Meanwhile, pirate harvesting of Antarctic fish stocks continues despite the Antarctic Treaty System.

It was argued by James Hall of Saatchi & Saatchi that the image of Antarctica needed recasting and that commercial interests and scientific endeavours can co-exist in Antarctica given the right conditions. Accordingly, by pushing the right image of Antarctica back into the public focus, companies would be forced to avoid environmental shortcuts for the sake of profit.

Heightened public perception would encourage companies to sponsor or aid Antarctic research. Hall says that the use of "cause related marketing" is growing, and organisations that are involved in the preservation of Antarctica should exploit this. Commercial co-operation could also be fostered in other ways, and Hall cited the example of NASA hauling commercial payloads on the space shuttle to fund scientific research.

Selling Antarctica would be an easy proposition that any advertising agency or PR company would leap at said David Lange, adding that an image selling strategy would also put public pressure on govern-



*An usage strategy may be appropriate for Antarctica
— David Lange.*

ments and may be the best way forward for Antarctica. He said New Zealand's anti-nuclear movement showed how public opinion could change dramatically; "it turned from being a movement of heretics, unorthodox ratbag sort of people, disliked by most, into a popular anti-nuclear campaign."

He said public opinion in favour of the anti-nuclear stance was cemented in place by the actions of overseas countries. He said the only people able to afford to exploit the Antarctic would be "big ugly people — the huge consortiums because they are the ones with access to capital. No one loves a huge corporation, it doesn't matter how hard they try. They will be easily politically nobbled."

He scoffed at the idea that an organisation like the United Nations should become the ice police. "Being protected by the UN is not exactly a prescription for long life."

The notion of selling the image of Antarctic hit home with many of the assembled researchers, scientists and government officials. Antarctica New Zealand is currently in the

Continued on page 31

FELINE PIONEERS ON ICE

By Baden Norris

Most readers, when asked what animals went to the Antarctic with the early explorers, would answer dogs, ponies, and perhaps mules. Often, however, the ships carried squirrels, rabbits, caged birds, and cats. It might seem surprising that cats were in the Antarctic before dogs.

When members of the Belgian expedition of 1897-1898 under commander Adrien de Gerlache were trapped on their ship *Belgica* off Alexander Land in the Antarctic Peninsula region, they became the first humans to spend a winter in the southern polar region. Aboard the ship was a cat named Nansen. Although appearing to handle well at first the long winter night, it fell ill during June 1897. Despite efforts by the ship's doctor, Frederick Cook, and the mate, Roald Amundsen, Nansen died. Nansen was the first cat to die in the Antarctic, fully 19 months before dogs saw the shores of the white continent.

The next feline polar visitor was Blackwall, the *Discovery's* cat which wisely adopted Commander Robert Scott during the National Antarctic Expedition, 1901-1904. Soon it wormed into the leader's bunk, where it spent every night. Whether Blackwall survived the two winters the ship spent in the Antarctic now seems uncertain.

This same expedition, as planned, had a relief ship *Morning*, which sailed from Lyttelton after the first winter with supplies to allow the *Discovery* to spend the second year in the ice. *Morning* carried two cats to the Ice, a black female, Night, and her pure-white kitten, Noon. Before the ship arrived in Lyttelton from Britain, there were three cats, Morning, Noon, and Night. Morning a grey tabby, was lost overboard during the voyage.

Nigger, the black cat which figured in Herbert Ponting's films of the *Terra Nova's* role in Captain Scott's 1910-1912 expedition, was a firm favourite of the ship's company who even had a special hammock swung for him. Nigger used up his many lives rapidly, falling overboard at sea on one voyage and being rescued by ship's boat and revived with brandy. After surviving three Antarctic voyages aboard the ship, Nigger was washed overboard as the ship approached the English Channel at the completion of the expedition. The weather prevented Nigger's rescue by ship's boat. The *Terra Nova* also had a blue persian kitten aboard, but no records of its name or fate are known.

When the *Endurance* carried Sir Ernest Shackleton's Imperial Trans-Antarctic Expedition to the Weddell Sea in 1914, Harry McNeish, the ship's carpenter, had his cat with him. The two were inseparable. Born at Cathcart, Glasgow, the tabby bore the name Mrs Chippy. When the ship was lost and the expedition set out to reach safety at Elephant Island, Shackleton ordered the cat shot, which



Nigger enjoys the comfort of its specially designed hammock aboard the *Terra Nova* at Lyttelton in 1910. Photo courtesy of Ed McKenzie, Canterbury Museum

upset very much the ageing Scottish owner.

The incident certainly explains McNeish's truculent attitude during the long journey to the island and the following voyage by open boat to South Georgia. McNeish never forgave Shackleton for shooting Mrs Chippy. Following his return to Britain, McNeish came to New Zealand, where in ill health from the hardships of the expedition he lived out his life in Wellington. He died in 1930.

A book, *Mrs Chippy's Last Expedition*, has been published by a staff member of the American Museum of Natural History in New York. It is a view of the *Endurance* expedition through the eyes of a cat.

Surely this publication, above all, raises the status of cats in the very fabric of Antarctic history. The author, Caroline Alexander, has done a service to polar history from an angle not previously approached. I defy anyone with the smallest vestige of understanding of cats not to shed a tear after reading the final chapter.

With the death of Mrs Chippy, the feline contribution to the exciting history of the Antarctic closed, coinciding with the end of the heroic era of human exploration.

Courtesy of: The Christchurch Press

NEWS

ADVENTURER TO SPEND YEAR ALONE ON ICE

Melbourne adventurer Paul Marcotte wants to test his mental capacities in an experiment to determine if he is still sane after living alone for a year in Antarctica. Psychological tests taken by Melbourne University before, during, and after will determine the psychological effects of Antarctic isolation and whether or not he has succeeded in 'losing his marbles'. However, some may already consider Marcotte is 'a few cards short of a full deck' for even contemplating the ultimate test of loneliness.

Marcotte, a sociable person who has never been alone for more than a few days, will be dropped off in January by the Russian icebreaker *Kapitan Khlebnikov* at an isolated hut at Cape Adare. A native of Calgary,

Alberta, Marcotte claims to have experienced sub-zero temperatures as low as minus 70deg. He's also unconcerned about the continual darkness, saying he is looking forward to cross-country skiing under a star-lit sky.

If it were allowed, he would like to take a husky down to the Ice like the explorers who built the hut at Cape Adare 100 years ago, but the Antarctic Treaty now bans the importing of animals to Antarctica.

He says the most likely cause of madness is boredom. Retracing some of the explorations of those who built the hut 100 years ago and writing a book about the experience, taking photographs, filming the environment, and filing weekly reports over the Internet will fill in some of his time. His sponsors will pay money to

Scouts and the Fred Hollows Foundation for every day he spends at the hut.

Processing credit cards in a Melbourne bank may have been good training for dealing with long-term boredom, but not as much use in the polar region as his previous experience of skiing, hiking, and sleeping in snow caves in Canada's Rocky Mountains.

Marcotte's decision is not one to back out of easily. Once the sea has frozen into a sheet of ice around Cape Adare, there is no way in or out. After the *Kapitan Khlebnikov* leaves, an eerie silence will descend, leaving him with lots of time to drive himself 'around the bend'. To keep him alive, if not sane, he will have two years supply of food and fuel.

BIOLOGY TO FORE AT SYMPOSIUM

Over 200 scientists from 20 countries attended the largest science conference on the Antarctic calendar in Christchurch in September.

The Scientific Committee on Antarctic Research's International Biology Symposium is held every three years and sets the framework for biological research efforts on and around the continent. Scientists discussed biology from cellular level to the long-term effects of ozone depletion and climate change, in plenary, sub-group and

poster sessions. Symposium convenor Dr Clive Howard-Williams says there is growing interest in the value and potential of collaboration between scientists working in both polar regions.

Antarctica New Zealand chief executive Gillian Wratt says the conference was a great opportunity to showcase Christchurch's Antarctic expertise and capabilities. This industry injects around \$40m into the local economy.

[Full Reports Next issue]

ANTARCTICA PROVIDES
'SHOP WINDOW' FOR
NZ RESEARCH

The commercial value of Antarctic science to New Zealand is worth many times the value of the Antarctic vote each year, says NIWA regional manager and biologist, Dr Clive Howard-Williams.

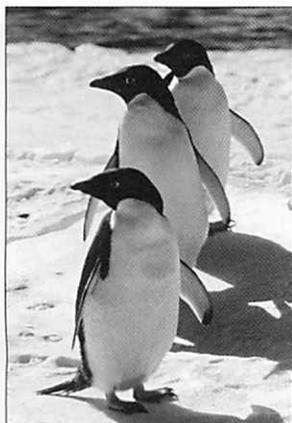
Talking at the Antarctic Futures Workshop, Dr Howard-Williams called for support to ensure NZ scientific endeavours are not left behind internationally.

"We can be certain of one thing: Antarctic science in New Zealand will be going places in the next decade. Our innovation and rapid embracing of technology will ensure that we will not be left behind in the big picture science of global importance. With international science coming to New Zealand, Antarctica provides a 'shop window' for this country's research."

"Science is a way of demonstrating our international skills," he said. "For example, the Cape Roberts research programme was not only good science but also displayed innovative logistics, advanced building techniques, imaginative solutions and good communications."

MALE PENGUINS PAY FOR SEX

Scientists working on Ross Island, Antarctica have discovered a courtship ritual among penguins in which the female requires her suitors to pay for sex.



As reported in the Daily Telegraph UK females elicit payment in stones needed for nest platforms to keep their eggs out of the icy waters.

Females have been seen slipping away from their mates and approaching the nest of an unpaired male, giving the standard courtship signals of a dip of the head and a coy look from the eye. After mating the female will grab a stone and take it to her nest. Sometimes satisfied customers allow them to take more than one, and some females have discovered that heavy flirting is enough to persuade more gullible males to part with a rock or two.

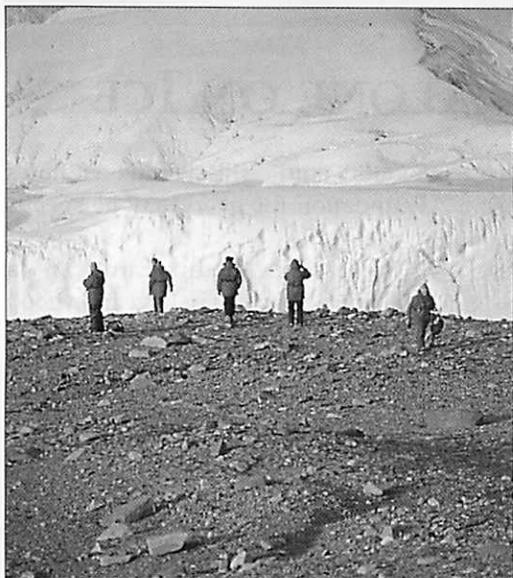
Ice Cap News, Jan-Mar 98

ANTARCTICA EXPECTS 15 MILLION TOURISTS BY 2010

Tourism in Antarctic will increase as more people continue to seek new experiences and frontiers. This is the message given to delegates at the Antarctic Futures Workshop by Glenys Coughlan, chief executive of the Tourism Industry of New Zealand.

"Tourism is the largest, fastest growth industry in the world: during 1996, 85 million travellers visited the Asia-Pacific region. By 2010 this is expected to increase to 150 million," said Ms Coughlan. "Ten percent of those travellers were attracted by adventure or eco-tourism, and the future pool for Antarctic travel could increase to between 8.5 to 15 million people." The current total is only 9,000.

Accordingly the challenge for the future would not be stimulating consumer demand, but managing the sustainable supply of the tourism product. Those involved in Antarctica would have to balance the demands for tourism and the need to safeguard the environment," she said.



Antarctic travel is forecast to increase significantly from the current modest levels.

WHALE MEAT STILL SELLING IN JAPAN

Despite the 12 year old International Ban on whale hunting whale meat is still on sale in Japanese markets.

By testing the DNA of meat samples taken from sushi restaurants and supermarket freezers, two New Zealand scientists from Auckland University have found strong evidence of an international black market in whale meat in Japan and South Korea.

Analysis of meat taken from a Japanese fish market revealed its origin to be from a type of humpback whale found only in coastal waters of Mexico. With no evidence of these whales migrating into Japanese waters, scientist Gina Lento is confused as to how a Mexican whale can turn up on a Japanese dinner plate.

Other whale meat found included southern hemisphere sei whale, Bryde's whale, North Pacific minke, fin and blue whale.

Japan is restricted to hunting for research only and culls over 400 minke whales annually for this alleged purpose.

In defiance of the moratorium Norway also holds an annual hunt. South Korea has no research hunting permits and whale meat can be sold legally in markets only if caught accidentally on the coast along with legal fish.

Over the last four years, armed with a portable laboratory, Gina Lenton and fellow scientist Scott

Baker used DNA profiling to identify the types of whale meat being sold in Japan and South Korea.

"The evidence is strongly circumstantial at present, the 'smoking gun', if you will," Lento says. "We are moving toward a forensic approach that will provide the bullet in the body and the hand that pulled the trigger."

The scientists delivered a report to the Whaling Commission's scientific committee in May this year which stated that there is a surprising diversity' of whale meat in commercial markets, some of which is of questionable legality.

Source: The Press

SEEKING SUPPORT TO SALVAGE FOKKER

A group organised to salvage Admiral's Richard Byrd's Fokker from Antarctica (pictured below) is seeking funds to bring back the historic aircraft.

Last year daughters of Admiral Byrd donated the aircraft to the people of New Zealand. The Fokker Super Universal XI monoplane was one of three aircraft taken to the ice on Admiral Byrd's first expedition to fly to the South Pole in 1929 and was the first aircraft to land in Antarctica. It was badly damaged at Lake Aquamarine near the Rockefeller Mountains on 14 March that year.

A team coordinated by Chris Rudge of the Antarctic Aviation Society will stay long enough to put the aircraft in to a transportable state. If everything goes well, the Fokker will be restored in Christchurch and displayed at the airport.



ANTARCTIC ICE CAP MELTED ONCE AND MIGHT MELT AGAIN

Three separate studies have raised the spectre of a melting Antarctic ice cap. Two articles published in the journal *Nature* by US scientists suggest that the West Antarctic ice sheet is vulnerable to disintegration because it rests on a bed far below sea level. Melting of the ice sheet could result in a six-metre rise in the Earth's sea level.

It has happened before, some 750,000 years ago, according to an article in *Science* magazine. Discovered by Swedish scientists, evidence of diatoms and concentrations of beryllium-10, which collect on basin floors during periods of open water, indicated that the West Antarctic ice sheet has broken up and come back at least twice.

There's no need, however, to study "Waterworld"-style survival techniques yet. Although opinions differ on how fast the ice sheet might disintegrate, much more study of the poorly understood geology below the ice must be undertaken before any predictions can be made.

*Extract from University of Canterbury Research Office
newsletter*

CO-ORDINATORS WANTED FOR NEW ANTARCTIC STUDIES COURSE

Antarctica New Zealand is seeking expressions of interest and applications from people in the Antarctic community for the positions of two course coordinators for The University of Canterbury's Graduate Certificate in Antarctic Studies (refer to the Education section of *Antarctic*).

This intensive six-week course involves foundation learning, examination of contemporary issues, and first-hand experience of the Antarctic operating environment. The course concept and structure has been developed with input from university representatives, with the intention that the course will be relevant to, and cross-creditable towards any university's post-graduate programmes.

If you are interested in this opportunity, or teaching parts of the course, contact Tim Higham, Antarctica New Zealand.

LOOKING FOR AN ICY RESOLUTION

Continued from page 27

process of drafting a new business plan, and the ideas presented at the workshops will no doubt have a strong impact on this.

Gillian Wratt, chief executive of Antarctica New Zealand pointed out that some of the conflicts surrounding the notion of scientific preservation versus commercial development in Antarctica may be exaggerated. "I think some of these tensions can be overplayed — you look at how these activities conform to your values. You could argue that science is a commercial activity."

Despite the messages from some speakers at the conference that the future of Antarctica was doomed to be the sphere of mining and mineral exploitation, Lange presented delegates with a positive message learnt from his years of political jockeying.

No matter what the situation there are always a plethora of positions which, when used well can be put to your advantage he said.

EDUCATION

NEW ANTARCTIC STUDIES COURSE INCLUDES ICE VISIT

Canterbury University and Antarctica New Zealand have joined forces to offer twenty graduates a six-to-seven week Certificate in Antarctic Studies. For about a \$4500 fee a special bonus of this short post-graduate summer course is that students get to spend up to 10 days at Scott Base at the end of the season.

The purpose of the Graduate Certificate in Antarctic Studies is to provide an intensive high quality educational programme for students with an interest in pursuing postgraduate research in fields related to the Antarctic and the Southern Ocean, and for people working in relevant professions and organisations who are able to make significant contributions to their profession and the community as a result of participating in the programme.

Accordingly the course aims to strengthen New Zealand's say on Antarctica's future and Christchurch's role as gateway to the Ice.

It aims to build on the interest generated by an undergraduate Antarctic subject already offered by the University and to help foster debate on environmental, increased tourism and geopolitical issues.

The 1999 programme will run from 11 January to 19 February and will comprise 100 hours classroom contact, and 40 hours syndicate work prior to the 7-10 day visit to Scott base.

ELECTRONIC ANTARCTICA TOO EXPENSIVE

Live electronic access from Antarctica to schools has come to an abrupt end largely due to insufficient funding. Both New Zealand's popular LEARNZ programme and the NSF's 'Live From Antarctica' telecast have been discontinued indefinitely.

ICAIR TO HAVE NEW LINKS WITH UNIVERSITIES

Although it is not officially announced as yet, *Antarctic* has learnt that ICAIR (International Centre for Antarctic Information and Research) may also be part of the restructuring at the International Antarctic Centre.

Options are being considered by universities as to how ICAIR, currently part of the Royal Society of New Zealand, can be incorporated into research and teaching.

Continued on page 48



NEW ZEALAND

ARTISTS TO ANTARCTICA

Selected from over 20 applicants for the recently introduced 'Artists to Antarctica' scheme, children's writer Margaret Mahey and landscape painter Margaret Elliott will visit Antarctica this summer to gain fresh perspectives on the icy continent.

The pair will spend about ten days at Scott Base and Cape Bird, a summer research station where scientists will be studying a large Adelie penguin colony.

Margaret Mahey of Banks Peninsula near Christchurch is one of New Zealand's most celebrated

writers and author of over 150 books. She plans to use the experience to colour a children's television script and new writing projects.

Wellington artist Margaret Elliot's recent work features raw, brooding landscapes, particularly the landforms of the Wairarapa coast, Elliot won the inaugural Lillian Ida Smith Award in 1993.

The Arts Board of Creative New Zealand provides \$10,000 funding for each artist to enable them to work fulltime on the project on their return to New Zealand.

ANTARCTIC LIBRARY SHIFTS TO UNIVERSITY OF CANTERBURY

Due to secondary use of the library collection by scientists, Antarctica New Zealand will incorporate the Antarctic library collection, currently at the International Antarctic Centre, with the University of Canterbury library.

A users' survey completed in 1995 indicated that the library was secondary to that of scientists' own library resources. With the aim of maximising use and development of the collection, Antarctica New Zealand will retain ownership of the collection and vest it on long term loan to the university. The integrity and accessibility of the collection will

not be compromised in the relocation.

Physical relocation of the collection should occur over the week 31 September — 4 October. Antarctica New Zealand will be reviewing its information support positions as part of this change and will continue to service the information needs of the Antarctic community. Greater investment will be made in databases, including a National Antarctic Data Centre, and web-based information.

This arrangement is part of broader discussions with the University of Canterbury about its role in the Antarctic community, in partnership with Antarctica New Zealand.

STRENGTHENING CITY LINKS WITH ANTARCTICA

In an effort to increase business and tourism links, Christchurch business and civic leaders are working to strengthen the links between the city and Antarctica. The aim is to increase the millions of dollars pumped into the economy each year.

Since the 21st Antarctic Treaty meeting and the Antarctica Futures Workshop were held in Christchurch, the Canterbury Development Corporation says that initiatives resulting from the meetings are currently under way.

Proud of the success of its recent workshop, Antarctica New Zealand's chief executive, Gillian Wratt, explained one of the initiatives on the agenda — that of encouraging countries who are not currently involved in the Antarctic to become involved.

The city's mayor, Vicky Buck, is looking into the possibility of recommencing commercial flights from the city to the Antarctic. Although flights from Australia have continued, commercial flights from New Zealand were halted after the Erebus disaster in 1979.

ANTARCTICA NEW ZEALAND APPOINTS NEW SCIENCE STRATEGY MANAGER

Dean Peterson, an atmospheric chemist, has recently started as Science Manager for Antarctica New Zealand. One of his initial tasks is to finalise the Antarctic Science Beyond 2000 Strategy.

Dean received a PhD in Chemistry from Michigan State University in 1987 and did microwave and infrared spectroscopy of NH₃, CH₃OH, and CF₃I. He then went to the Jet Propulsion Laboratory (JPL) in Pasadena California as a post-doctoral student in 1988. After one year as a post-doc at JPL he joined as staff scientist working in the far-infrared region where he spent six years building and flying (13 flights) a Far-Infrared Limb Observing Instrument (FILOS)

on a large helium balloon at 40 km altitude to measure OH in the stratosphere.

From 1994 to 1997 he was appointed Visiting Senior Scientist from JPL to NASA headquarters in Washington, DC to manage the Upper Atmosphere Research Program (UARP). He returned to JPL Pasadena in 1997 to work on a ground-based instrument measuring absorption features of many different molecules in the atmosphere within the ultra-violet region.

Dean aims to help New Zealand scientists achieve maximum scientific benefit from funding and is keen to foster co-operation between science projects.

MONITORING THE EFFECTS OF HUMAN ACTIVITIES ON FISH IN ANTARCTICA

The Antarctic waters are rich in metals from both natural and anthropogenic sources. Many of these are potentially toxic to the local biota, especially to fish since these organisms are directly exposed to water contaminants across their gill epithelium. Fish, like other organisms high in the food chain, can also accumulate certain metals through their diet.

Scientists from Auckland University lead by Dr Clive Evans propose to measure the burden of specific metals in tissues from the fish species, *Trematomus bernacchii*, selected as a representative indicator organism.

Results will be correlated with pathophysiological condition to evaluate the impact of metal contamination on fish physiology and health. It is also intended to apply a molecular-based technique which utilises the sensitivity and precision of the reverse transcriptase-polymerase chain reaction (RT-PCR) amplification technique to provide an indication of the level of responsiveness of the indicator species to specific metals.

The results obtained will establish the level of metal burden in fish from natural and anthropogenic sources, indicate the impact of metal burden on fish physiology and health, and contribute to an invaluable database for monitoring the effects of future changes arising from continuing human activities in Antarctica.

THE 'PSYCHOLOGY' OF SPECIAL INCIDENTS

Living and working in Antarctica has, since the early days of exploration, been portrayed as a unique and stressful experience. Unfortunately, scant empirical work has been conducted on the nature of the specific events that give rise to this claim, and it may well be that much of the Antarctic experience is health-promoting or otherwise beneficial.

Special incidents (including "critical" situations and specific, challenging events) may form a powerful subset of experiences in Antarctica, contributing greatly to the diverse psychological effects of a polar sojourn. Psychological data will be gathered utilising a well-validated personality scale, a mood grid, a critical incident interview methodology.

Targeting "prototype" events, and employing a combination of content coding and quantitative analysis, this study, led by Dr Gary Steel of the Department of Parks, Recreation, & Tourism at Lincoln University, will describe the structure of special incidents as experienced by past and present personnel at Scott Base, and will determine the relationships between event dimensions, personality characteristics, and mood change.

The results will expand models of special incidents that currently tend to deal only with more mundane environments and their pathogenic effects. Practical applications of the study include recommendations for specialised Antarctic stress management programmes.

HERITAGE ASPECTS OF THE ICE

A team led by Dr V G Kirby of the Department Of Human & Leisure Sciences at Lincoln University will investigate the nature and range of the Antarctic-linked cultural heritage resource in relation New Zealand. The research aims to provide a context and background for on-site management decisions, and the definition of parameters for other, heritage-specific research projects.

Existing data on this topic is fragmented and in some instances simply lacking. An integrated, comprehensive review is needed, both of the physical resource in Antarctica and of the past and present roles of agencies and individuals who were/are implicated in heritage planning and management in Antarctica.

It is hoped that this review will provide baseline data that can provide background to further research in a number of areas. The study will involve primarily qualitative research, interpreting written and spoken (transcribed) texts. It will also take a comparative case study approach to the assessment of heritage values and meanings in a range of sites in Antarctica. Documents, files, archives and other written texts, one-to-one interviews and focus groups will be analysed using close reading techniques, for a range of possible approaches to and meanings of heritage. Where relevant, quantitative methods, both descriptive and inferential, will be used to provide appropriate contextual summaries.

IMPACTS OF FUEL SPILLS ON ANTARCTIC SOILS

Antarctic soils are unique as they occur in an extremely cold, arid, environment. There is increasing concern about the impacts of human activities in the Antarctic. In occupied regions there is evidence of terrestrial oil contamination.

To more effectively assess effects of fuel spills, and determine whether amelioration measures are necessary, information is needed on the properties of Antarctic soils, and how they respond to hydrocarbon contamination.

Dr Jackie Aislabie of Landcare Research New Zealand Ltd has divided this research programme into four objectives in order to determine the impact of fuel spills on Antarctic soils. Three are focused on the effects of hydrocarbons on the biological, physical and chemical properties of soils, and the fourth on developing a decision support system for prevention of and remedial action after (oil) spills on soils in ice free areas of the Ross Dependency.

YOUNG RESEARCHERS ICE BOUND

Young scientists with research interests in fish and penguin biology and sea ice physics have been awarded this year's post-graduate Antarctic Scholarships, administered by Antarctica New Zealand.

The scientists, from Auckland, Massey and Otago Universities, will travel to Scott Base this summer to carry out their research work.

Sponsors also provide funding of \$10,000 each to the doctorate students, whose proposals were judged outstanding among the 15 applications for the annual awards.

Alexander Carton of Auckland University will use a Kelly Tarlton's scholarship to further knowledge about the way fish use non-visual senses to position themselves in water currents and locate prey. His work builds on that of a previous scholarship winner, whose joint research was published last year in the prestigious international journal *Nature*.

Massey University ecologist Peter Ritchie will use his New Zealand Post Scholarship to investigate the topical

issue of poultry disease in penguins. Introductions of such diseases through disposal of chicken wastes, as found recently in colonies near an Australian base, could pose a major threat to Antarctic wildlife. Ritchie will collect and test blood samples to see whether Adelie penguins on Ross Island, the site of Scott Base and McMurdo Station, show any signs of exposure to the virus.

Telecom Payphones scholar, Paul Bond of Otago University, will work as part of a multi-disciplinary team examining the properties of sea ice in the early summer. The growth of sea ice doubles the size of Antarctica each winter and has a major effect on atmospheric and ocean processes. Bond's work will focus on the role cracks play in the transmission of sun light through the two metre-thick ice layer.

Antarctica New Zealand chief executive Gillian Watt says the scholarship scheme provided a good example of how the private sector and Government could work together in understanding, managing and protecting the Antarctic environment.



UNITED STATES OF AMERICA

"SCIFISH" TECHNOLOGY PROTECTS FISHERIES AND PROMOTES SUSTAINABLE USE

With the assistance of the National Science Foundation's Small Business Innovation Research (SBIR) programme, Scientific Fisheries Systems Inc (SciFish) has developed software and a type of sonar that will help fisheries while reducing harmful effects on the environment.

Evidence indicates that the world's current fishing fleets could easily over-fish the ocean. This could result in the collapse of an important source of food for both humans and animals. In response to over-fishing and bycatch — catching animals that were not intended for harvest — regulations worldwide have put restraints on common fishing practices.

A computer science graduate and former Alaskan fisherman, SciFish creator Patrick Simpson was able to draw upon his experience to create software which takes some of the guesswork out of fishing. His Alaskan-based company, SciFish, has just released the latest version of the software, Fisherman's Associate 2.0, which combines fishery, oceanographic and navigational data to direct fishers towards more productive waters. "By processing all this data," says Simpson, "we can enable

fishers to get a better return while minimizing their impact on the ecosystem."

Using technology first developed in the defence industry, SciFish has also created a prototype sonar device capable of identifying individual species of fish. This capability will become an integral part of the Fisherman's Associate 2.0; it will allow commercial fishers to identify fish before they pull them out of the ocean.

"We have moved beyond using a single frequency sonar to using a broadband system that emits a greater range of frequencies which,

in turn, gives us more information about individual fish," said Simpson. The difference between the two types of sonar is like the difference between colour and black and white versions of the same photograph of flowers. They both show you the tulips, but only the colour picture can tell you which ones are red."

Building on the success of Fisherman's Associate, SciFish has been busy working on another NSF SBIR grant for work to benefit the fishing industry. This one is for Observer's Associate, software designed to improve the ability of inspectors to monitor fishing catches.

ANTARCTIC GEOPHYSICAL OBSERVATORIES ESTABLISHED

A network of six unmanned Antarctic Geophysical Observatories (AGOs) housing instruments to collect data about the earth's ionosphere and magnetosphere at high latitudes is now up and running in the remote reaches of Antarctica.

These small trailer-like observatories, which operate all year long, measure approximately 3x3x5

metres and provide 50 watts of electrical power to the experiments. They store data to be retrieved later during the Antarctic summer. The AGOs also report on weather and their own status via satellite.

"Antarctica is the only place on earth where there's a landmass on which to base these instruments to study the upper atmosphere at very

PLAN TO EXPLOIT LAKE VOSTOK — NASA'S STEPPING STONE TO EUROPA

high and at many different magnetic latitudes," said Louis Lanzerotti of Bell Laboratories, Lucent Technologies. Lanzerotti uses the observatories to house magnetometers which measure changes in the earth's magnetic field caused by electrical currents in the upper atmosphere.

Naturally changing currents can induce secondary currents in long-distance telephone lines, for example, sometimes causing damage or interference.

"Data from the AGOs, added to observations from the inhabited Antarctic stations and from AGOs of the British Antarctic Survey, are beginning to give us a wealth of information about the ionosphere at high geomagnetic latitudes — the region around the earth's geomagnetic pole," said John Lynch, National Science Foundation (NSF) program director for polar aeronomy and astrophysics.

"This is where magnetic-field lines and ionized particles come down from space to intersect the earth's atmosphere, so we can study the outer parts of the earth's magnetosphere," Lynch said. "The AGOs are also helping to foster better understanding of the earth's response to solar activity."

Knowing the physics of the magnetosphere helps to predict geomagnetic storms that can disrupt power grids and satellite communications.

The long, dark Antarctic winter permits optical observations of the aurora around the clock. The extremely cold, dry air of the East Antarctic plateau also lends clarity to such observations. These measurements cannot be done at similar latitudes in the north which are located above the Arctic Ocean — not a stable observing platform. Besides magnetometers, the AGOs contain VLFHF (very low frequency/high frequency) receivers, riometers and all-sky cameras.

The AGO network is the result of years of planning how to use stable, earthbound sites to acquire data on the upper atmosphere and space. The network had to overcome the challenge of operating in the harsh environmental extremes of Antarctica.

Controversy surrounds the plan to penetrate the pristine waters of Lake Vostok in order to prepare for a mission to Europa, one of Jupiter's moons, presented at the annual meeting of the Polar Research Board on 1 May 1998 by Dr. Frank Carsi of NASA's Jet Propulsion Laboratory (JPL).

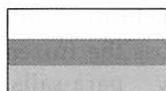
There was no mention of conducting a Comprehensive Environmental Evaluation (CEE) of the activity to evaluate the likelihood of environmental impact, a step seen as necessary for drilling project to go further.

Earlier, at the ACTM Russia stated that it intends to produce a draft CEE for the proposed drilling into the sub-glacial lake under Vostok station and circulate this for comment. However, according to a report in the 'Antarctic Project', if a CEE concluded that the technology was not available to ensure the sterility of the lake, the project might not proceed.

Dr Carsi had avoided assurance as to whether or not the NASA drilling project would be abandoned.

The proposal to drill into Lake Vostok below the very thick East Antarctic icecap has raised serious concerns namely the need to preserve a pristine part of Antarctica and to ensure that all appropriate procedures are followed in accordance with international law, including the Environmental Protocol.

Europa is one of the four largest moons and first seen by Galileo. It is the smoothest object in the solar system, with a surface of frozen water. NASA officials think the Jovian tides have thawed an ocean of liquid water underneath the ice. Speculating that life may exist in this theoretical, extraterrestrial ocean, NASA plans to send a robot to Europa having trialled this at Vostok.



BULGARIA

BULGARIA NOW A CONSULTATIVE PARTY

On 25 May 1998 Bulgaria became a Consultative Party to the Antarctic Treaty. This makes up a total of 43 parties (unchanged) of which 27 are consultative.

The objectives of the Antarctic treaty, which entered into force in 1961, are to:

- keep Antarctica demilitarised, to establish it as a nuclear-free zone, and to ensure that it is used for peaceful purposes only;
- promote international scientific cooperation in Antarctica;
- set aside disputes over territorial sovereignty.

The Treaty provides for confidence-building procedures, including exchanges of information about Antarctic activities and on-site inspections. It also provides means of consulting on matters of common interest. It is open for accession to all Member States of the United Nations and to others by agreement of the

Treaty States. Treaty members represent claimants/non claimants, the developed/developing countries and 80% of the world's population.

Consultative (voting) status is open to all countries which have demonstrated their commitment to Antarctica by conducting significant research there.

Antarctic Treaty Meetings (ATCMs) are held annually; non-Consultative Parties and international organisations with expertise are also invited to attend. Of the many regulatory measures adopted since the first meeting in 1961, over half have dealt with conservation and environmental protection, while others have covered subjects such as telecommunications, postal service, air safety and meteorological cooperation.

Bulgaria's summer station Sandt Kiment Ohridski', on Livingston Island has existed since 1 December 1993.

IRIDIUM ICE TREK TO POLE

Inspired by the tragic endeavours of Captain Robert Falcon Scott to reach the South Pole and return, New Zealand explorer Peter Hillary and Australian explorers Eric Phillips and Jon Muir will attempt a return journey to the Pole this summer on skis.

The ski expedition will be the first such attempt since Scott's unsuccessful mission in 1911. Scott lost the life-and-death struggle and died with his fellow expedition members.

"We believe Scott and his team made a fatal error in not eating enough calories for the mammoth journey," says Hillary, in an interview with the "New Zealand Herald." It was rather like setting off the conquer the Antarctic on half a tank of fuel."

Hillary, the son of the great Antarctic and Everest explorer Sir Edmund Hillary, intends to retrace Scott's attempt to ski from Scott Base to the South Pole and back. But he will stock up on a huge diet at normally four times the normal daily intake to survive the 3000km trek to the Pole in 100 days.

Hillary explains that the savage cold (-40deg) and sheer exertion required will burn up the 7000 calories that the trio will each ingest each day. This sheer quantity would

normally prove to be an artery-blocking health threat.

"We expect it make us pretty sick to start with but gradually our bodies will get used to the change of diet. The daily demands will be so rigorous that we will burn up those calories.

The Iridium Ice Trek will use quadrifoil kites the size of hang-gliders to gain a tow for themselves and 140kg sleds. The expedition will depart in late October, ski-ing southeast over the Ross Ice Shelf, laying out five food depots for the return phase.

At the Transantarctic Mts, they will climb 80kms along the Shackleton Glacier to reach the Antarctic plateau. Turning south for a 500kms slog at an altitude of 3000m, they hope to reach the Pole in December. The return trip will retrace the 1480kms journey by late January.

Unlike Scott, Hillary's group will be in contact with the outside world, using the new Iridium global communications system which uses a series of satellites to relay phone calls.

In 1997 Norwegian explorer Borge Ousland made Antarctic history with the first solo walk across the frozen continent, aided by para-sails. "Antarctic" reported the epic journey in our issue of Vol 15, No 1, March 1997.

ANTARCTIC MEDICAL EVACUATION

The United States Antarctic Program (USAP), managed by the National Science Foundation, conducted a successful medical evacuation of a US civilian employee, Gerry Ness, with acute appendicitis from McMurdo Station. Through coordination with New Zealand Defence Forces Air Staff, a wheeled Royal New Zealand Air Force C-130 flew the mission on 12 August.

Located at the edge of the Ross Ice Shelf in Antarctica McMurdo Station on 12 August was in winter operations mode with 166 staff. Though there is a twilight period, the sun was yet to rise marking the end of winter, and the temperature was reaching minus 13 degrees F. The first pre-season flights were not scheduled for another week.

The US Air Force usually provides the logistical support for the USAP, but polar-qualified US aircrews were not available in the area at that time. To wait for a US crew and aircraft would have delayed the mission several days.

McMurdo correspondent, Madison Hall, submitted Antarctic a copy of the memo from the acting winter site manager reminding personnel of the safety procedures and rules during the support of the medivac' landing operation at Pegasus runway:

From: ASA RESIDENT MANAGER
Subject: Fight Ops Safety Brief
Date: 8/12/98 Time: 6:40am

All,

Because of the time-frame we are dealing with in this event there is not adequate time to gather together everyone involved to have a full blown safety brief. Basically the rules are simple and logical:

1. Wear or have your ECW Gear at the runway and readily available. You may be required to work for long durations in the cold.
2. Monitor each other for hypothermia and frostbite. If you notice either your skin or anyone else's turning white bring that to their attention immediately so they can take the proper measures to cover and/or warm the area slowly. If you notice either yourself or any one else starting to shiver, become lethargic or slurred of speech you or they may be coming down with hypothermia and that person should be sheltered and warmed immediately and the firefighters or medical staff be sought out. Teamwork is very important!

There are shelters at the runway to use to warm up. There is also a bundle of survival bags in the Pax terminal at the Pegasus Townsite which have sleeping bags in them to warm hypothermia victims with. If anyone has any medical problems including the above they should contact any of the firefighters or medical personnel at the runway for further direction and/or treatment.

The temperature at Pegasus is currently -25 °F (-31.6 °C) and the wind is about six knots. Windchill would be in the area of -50 °F (-45.5 °C). This can change any time so please be prepared.

I think most of the people that will be out there have worked in cold conditions many times but, if anyone requires further information on the possible medical symptoms or how to prepare for the work in the field please contact me and I can direct you to the answers.

Thank you,
John Hahn
Acting Winter Site Manager

FEATURE

THE TAE'S LAST HUT

BY DAVID L. HARROWFIELD

David Crerar, chairman of the Antarctic Heritage Trust, recently wrote (*Antarctic*, Vol.15, No. 4, p.90) that the Trust should support the continued preservation of the one remaining hut of the Trans-Antarctic Expedition 1955-58. Perhaps it should return to its original bright yellow and burnt orange colour. This inspired a member of the TAE Hut Committee to write to the Trust emphasising the autonomous role of the Hut Committee. Through the Society's Trustee, *Antarctic* had asked Antarctic historian, David Harrowfield, another member of the committee, to summarise the history of the hut and its committee. — Ed.

Since its establishment in 1957, Scott Base, New Zealand's permanent Antarctic Station, has been completely rebuilt and enlarged, except for a single hut from the original eight.

A-Hut, has been retained as a 'recent history museum' and commemorates New Zealand's official involvement in Antarctica. A-Hut was the first building to be erected on Pram Point. It was built in five days, as part of New Zealand's contribution to the Commonwealth Trans-Antarctic Expedition (1955-58) and International Geophysical Year (1957-58), and was dedicated with a flag raising ceremony on 20 January 1957. When Scott Base was replaced between 1977-1988, two buildings, A-Hut the mess hut, and B-Hut the science laboratory were retained. A-Hut continued to be used as the Scott Base mess until 1982, and later for additional summer accommodation until 1989. B-Hut, also used for accommodation, was dismantled in the 1995-96 summer.

In June 1982, *Antarctic* reported that A-hut had been presented to Ferrymead historic park in Christchurch and would be returned to New Zealand the following summer. Although components of one other building did go to Ferrymead, some sections were used in a Canterbury Museum display on the Scott Base dogs and the remainder were later disposed of.

By the mid 1980's, with planning under way for a new biology laboratory and accommodation block, A-Hut and B-Hut both had to go and were scheduled for demolition in 1990-91. In late 1985 Garth Varcoe, Buildings and Services Officer of Antarctic Division DSIR who understood the historic significance of the old buildings and was active in alpine hut preservation, conceived the idea of a 'recent history museum'. That summer, surveyor and planner Gerry Turner, museum curator David Harrowfield and carpenter Russell Skerten, inspected the buildings and endorsed Varcoe's

proposal. They recommended that, "A-Hut be included in consideration of the historic sites management objectives and be integrated as appropriate".

In 1987 New Zealand TAE pilot Wg.Cdr. John Claydon began a vigorous, almost single-handed campaign. The significance of the huts to New Zealand's Antarctic history was promoted and in August, archaeologist Dr Neville Ritchie, architect Chris Cochran and restoration specialist Nelson Cross, wrote to Mr Peter Skellerup CBE, Chairman of the newly established Antarctic Heritage Trust. While encouraging the idea of retention at Scott Base or removal to Canterbury Museum or Ferrymead, they recommended, "that the decision to demolish them or bring either of the buildings back to New Zealand be deferred for one year". Next summer, Ritchie, Cochran and Cross inspected the huts and proposed that either A-Hut or B-Hut could be converted into a conservation laboratory for the Trust. However at the February 1988 meeting of the Ross Dependency Research Committee (RDRC), Chairman Bob Norman stated that any preservation of the TAE huts was a matter for DSIR and not the Trust. While RDRC and the Trust was sympathetic towards the retention of A-hut, the Antarctic Heritage Trust was fully committed to the preservation of the 'heroic-era' (1895-1917) historic sites, huts and artefacts.

The preservation campaign was gathering momentum and in April support was obtained from the first Scott Base leader, Sir Edmund Hillary, who wrote to the Minister of Research, Science and Technology, Bob Tizard. Meanwhile further support was obtained by John



Preparing to move A-Hut, the first building erected on Pram Point.



Winching 'A-Hut' to its new location, with a Caterpillar D-8 anchoring the weight of the 31 year old structure.

Claydon from Arthur Helm MBE; the former Secretary of the Ross Sea Committee (1955-58), who had been a member of the TAE summer support party (1956-57); from the foreman of the 1957 Scott Base construction team Randal Heke; and from the overall leader of the Commonwealth Trans-Antarctic Expedition, Sir Vivian Fuchs, who wrote to the Minister.

In reply to a question raised in Parliament by the Minister for Defence, Warren Cooper, Mr Tizard stated it was intended to preserve A-hut only. By late July, Hugh Logan, manager of DSIR Antarctic, announced the retention of the building and Garth Varcoe assessed that \$3650 was required for its relocation and for materials to ensure its preservation.

Previous experience had shown that removal of other buildings of the old Scott Base was difficult. Bearers were bonded to the frozen volcanic scoria and in December 1989, a team of Royal New Zealand Engineers of the New Zealand Army, set to work under the direction of Garth Varcoe. For several days, the 12 x 6m hut, which had been surrounded by canvas and parachutes, had hot air from Herman Nelson heaters blown beneath the floor. A Kango percussion hammer was also used to chip ice away from the bearers after which four ton bottle jacks, steel I-beams were positioned under the bearers. Steel cross members with angled supports to the side walls, were attached across

the ends of the I-beams to form a sledge and to prevent the building from warping. The base was linked by tensioned chains to two steel beams placed either side on top of the flat roof. Plywood sheets were nailed over the windows and a protective bank of snow and rubble was formed between the hut and the new site seaward.

After drilling holes in the volcanic rock at the new site 30m from the corridor outside Q-Hut; Garth Varcoe laid explosive charges and blast mats of steel mesh borrowed from McMurdo Station, were laid over the surface. The rock and permafrost was shattered and site levelling completed the preparation.

On 12 December, with a Caterpillar D8 positioned as an anchor on the slope behind the hut, D3 and D5 Caterpillars winched the 31-year-old building down the slope to its new position. It was a smooth operation. An engraved souvenir jack was presented by Garth Varcoe to each of the engineers involved and a message announcing the successful relocation was sent by Hugh Logan to Sir Edmund, Sir Vivian, John Claydon and to TAE mechanic, Murray Ellis.

Before the end of summer the engineers had attached an outer 'cold-porch'; a new shallow-pitched roof with synthetic rubber covering to shed melt water; painted the exterior to match the rest of Scott Base; re-partitioned the area occupied by Sir Edmund and the radio equipment; had re-wired electrical circuits for fire alarm protection and for an intercom

link to the base; and had installed heating. The interior was painted the following winter.

In 1990 the Trans-Antarctic Association (TAA) made a donation of \$2662 towards the restoration and upkeep and Garth Varcoe then began contacting TAE members for photographs to display inside. The question of future management was also considered and next year a useful report was compiled by Alastair Fastier and Emma Wright. During the 1991-92 summer, the building interior was sealed with chlorinated rubber paint.

A tragic loss occurred with the death of Garth Varcoe in a helicopter accident on 13 October 1992, with Scott Base summer carpenter Terry Newport, who had also supported the project. Further donations were now received for the hut restoration. A TAE Hut Committee comprising Gillian Wratt, Director New Zealand Antarctic Programme (NZAP), Deirdre Sheppard, Ron Rogers, Arnold Heine, John Claydon and David Harrowfield, held its inaugural meeting on 2 November 1992.

Proposals by Alastair Fastier and Emma Wright, including utilisation of the hut as an interpretation site and quiet area, its retention as a Scott Base facility under its general maintenance standards, and for the introduction of guidelines within the station regulations, were all adopted.

An additional nine committee meetings have been held since then, and in 1993 the committee was extended to include John Parsloe, representing the New Zealand Antarctic Society, and to Kath Varcoe, assisting ex-officio.

A further \$3000 received from the TAA and a grant from Trustbank Canterbury, have enabled other projects to be completed. These have included carpet laid by Total Carpet Services Christchurch, vinyl in the kitchen and in January 1997, with assistance of Royal New Zealand Engineers, an extension of the cold porch, incorporating a section of the original covered way.

Period furniture, pictorial displays, the original paintings, early field radios, meteorological, photographic and kitchen equipment, a mannequin provided by Mr Roger Ballantyne OBE, with clothing worn by John Claydon during the TAE and

signage and other memorabilia from Vanda Station (1968-1995), have been added to create an interesting atmosphere within the hut. In Garth Varcoe's words, "one can sit and relax, and soak up the nostalgia of past years".

An important aspect has been the provision of interpretative materials. These include a leaflet written by David Harrowfield, maps, books, photographic and other records, and an engraved formica sign explaining the building's history. A poignant display contains framed portraits of the four New Zealanders (Lieut. Tom

Couzens, 1960, Jeremy Sykes, 1969, Garth Varcoe and Terry Newport) who have died in service with New Zealand's Antarctic programme.

Meetings of the Hut Management Committee are held once a year, and Antarctica New Zealand Scott Base staff undertake any required maintenance, while a base staff member serves as 'custodian' during the summer months. An inventory is maintained of artefacts within the hut. During summer, the TAE hut is visited by members of the Ross Island community and occasionally by passengers on tourist vessels. It was a

special feature during the Scott Base 40th anniversary celebrations in January 1997.

Sir Edmund Hillary who visited the hut for the third time since the TAE and IGY, found it considerably more spacious and with greater comfort.

The author wishes to thank Wg.Cdr. John Claydon, Pete Nelson, Mike Dew, Tony Oskam, Ron Rogers, Deirdre Sheppard, Paul Woodgate, David Geddes and Antarctica New Zealand for information, and the New Zealand Antarctic Society for the opportunity to compile this article.

INTERNATIONAL FLAVOUR AT BRATINA IS. OASIS

By Rob Smith, NIWA

January 1998 saw an international visit to New Zealand's research station at Bratina Island in the McMurdo sound. The team, led by NIWA scientists Clive Howard-Williams and Rob Smith, included two Americans, Dick Castenholtz and Tracie Nadeau, University of Oregon, and two Spanish scientists, Antonio Quesada and Eduardo Fernandez-Valiente, University of Madrid.

Work was conducted in the ablation zone of the McMurdo ice shelf (78°S), next to Bratina Island. This area has many hundreds of ponds of vastly contrasting conductivity, many containing open water in the summer months. The biomass in this region is primarily cyanobacteria-dominated microbial mats which persist from year to year on the bottom of the ponds.



Sampling at Salt pond. Note the build-up of salt around the pond margin.

This season's work built on the results of the previous year when we had examined the effects of temperature, salinity and radiation flux on rates of photosynthesis and respiration in the cyanobacterial mats.

There were two main aims to this year's field season. The first was to retrieve data collected between the 1997 and 1998 summers by an automated weather station. Our second aim was, on the basis of the information obtained from the logging system, to design and conduct further experiments on the effects of temperature, salinity and radiation flux during the autumnal freezing period on microbial mat photosynthesis and respiration.

It has long been realised that the summer period in this region is relatively benign for photosynthetic organisms with pond temperatures typically between three and eight degrees, and plenty of light. We suspect that it is the ability of the benthic mat community to withstand the onset of winter with its reduced light and temperature and increasing conductivities, followed by freezing which may set

the limits on microbial continuance within the ponds.

Work was also conducted on the effects of different components of the solar spectrum (visible, UVA, UVB), on N₂ fixation, migratory behaviour of the cyanobacteria, photosynthesis and respiration, and the combined effects of radiation and temperature on photosynthesis and respiration.

Weather station data for a range of ponds indicated that by July/August temperature at the depth of the mats had dropped to below -30°, with winter minima in the ponds of below -40°C, approximately the same as the air temperature.

During the freezing process, the mats were exposed to a steady increase in the conductivity. In one of the study ponds conductivity increased from 1 mS cm⁻¹ to 7 mS cm⁻¹ before freeze up finally occurred (figure 1).

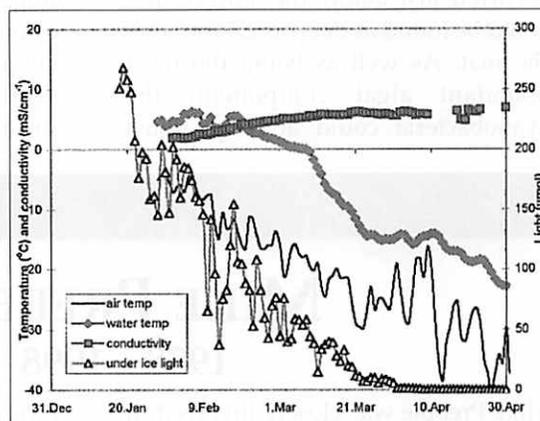
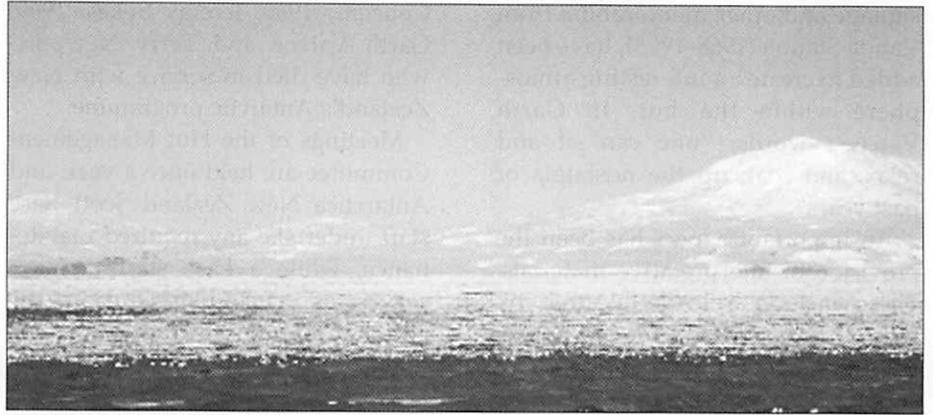


Figure 1. Physical conditions in Fresh pond during the freeze-up period of 1997, as recorded by in situ logging equipment.

Although the surface of the ponds may freeze by mid February, at depths of only 40 cm freeze-up may not occur until mid March. During this time we found there was sufficient light available for several hours of photosynthesis each day.

Indeed, experimentally, mats were found to be still able to carry out limited photosynthesis at temperatures of -2° with less than $15 \mu\text{mol m}^{-2} \text{s}^{-1}$ light, at this temperature in situ the mats would be exposed to conductivities of more than 50 mS cm^{-1} , though most ponds were frozen before such temperatures were reached. The balance between the light availability and time of freezing in each pond was a major determinant in the long term persistence of the benthic mats.

The photosynthetically active layers in the microbial mat normally occurred just below the surface, but could be found as deep as 2.5 mm into the mat. As well as being the most abundant algal component, the cyanobacteria could actively adjust



Ablation zone of the McMurdo ice shelf next to Bratina Is. (78°S) looking toward Ross Is.

their position within the mat allowing them to optimise their light environment.

In some of the ponds this migratory behaviour could be seen within two hours of applying a shade screen to the mat, and was viewed as a visible greening of the mat surface. This migratory ability allowed the cyanobacteria to optimise the light environment and hence their photosynthetic success, and at the low light prior to freezing most of the

trichomes would have been at the mat surface.

We intend to further investigate the effects of the antarctic autumn/winter transition on the mats in the coming summer field season at which time we will also have another years data of in-pond physical conditions.

This project was funded by the New Zealand Foundation for Science, Research, and Technology under contract CO1601 with logistical support provided by Antarctica New Zealand.

TRIBUTE

MIKE PREBBLE 1938 - 1998

Mike Prebble was closely involved in the New Zealand Antarctic Programme from 1960 when he was a volunteer member of the Huts Restoration Party in 1960-61, until his death in April 1998. Over these many years Mike will be remembered mostly by those team members when he was their deputy leader in 1964-65, leader in 1965-66.

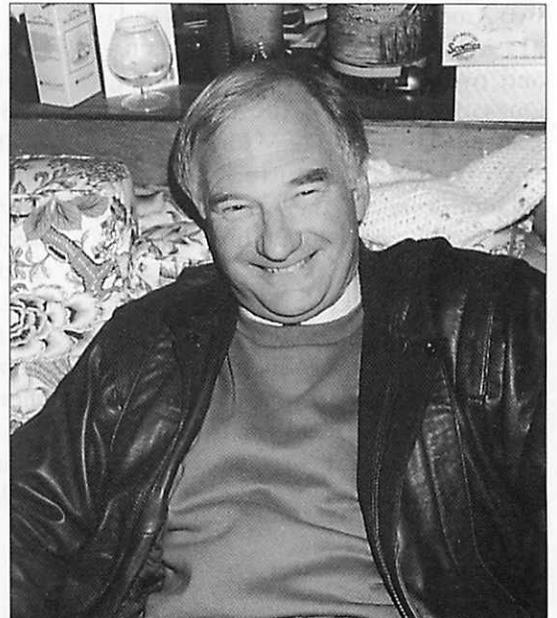
I was fortunate to have Mike as a close neighbour and friend when I lived in Eastbourne in the mid-late 1960s, I was thus able to learn much of his abilities and personality. All of this aided me in selecting him for the position of Leader, Scott Base, in 1965-66, my first leader selection soon after my own appointment as Superintendent, Antarctic Division, in 1965.

Mike's ability to relate with others and his keen sense of humour brought much enjoyment to me when we toured New Zealand selecting members for his team, and indeed many happy times together over the

following years including reunions of his various teams. However, there was also the more serious side of Mike's work in the Antarctic where he demonstrated unique abilities in handling difficult situations including surviving aircraft crashes and mid-air emergencies.

Soon after take-off from the helo pad in October 1965 with Adrian Hayter and the OIC McMurdo, we crashed two miles out on the sea-ice. We leapt clear, ran fast and threw ourselves on the ice just in time to see our helicopter explode and disintegrate in a sheet of flames.

One year later I was sitting with Mike in a C121 'Super-Connie' returning to New Zealand when at midnight about two hours out from McMurdo all four engines stopped. There were no red exhaust flames, and no noise apart from the wind. This lasted for several minutes, Mike



and I looked at one another . . . "could this be it?" We continued to lose altitude and suddenly there was a hiss and roar, and flames from the exhausts — we were on our way again and finally returned to Christchurch in record time with the aid of 180 knot tail winds!

Mike was leader again when the Air NZ DC10 crashed on 28

Continued on page 48

OPINION

Opinions expressed in this section are those of the author, and not the New Zealand Antarctic Society Inc. Replies to opinions expressed, and new articles are welcome. — Ed

ANTARCTICA — A CONTINENT FOR SCIENCE OR MANAGEMENT?

By Margaret Bradshaw

From the time New Zealand first established a respectable reputation in Antarctica during the Trans-Antarctic Expedition (1955-58), the country has built up a very creditable national science programme based on small, effective field parties who produced a large number of scientific publications for the size of the programme.

With increasing Antarctic experience, New Zealand took a strong role in Antarctic environmental matters, Antarctic politics and in encouraging participation by women. The high diplomatic profile of New Zealand in Antarctic affairs was underpinned by the quality of its science.

Today it appears that our national programme is in jeopardy. The decline set in during the 1980s when the Government's "sinking lid" policy started to erode science employment in New Zealand. Science was further undermined by changes in policy and funding, as well as by the restructuring of DSIR, from which science is still reeling. Managerialism, accountancy and commercialism dominated the scene.

The New Zealand Antarctic Programme, after a temporary sojourn as an operational division of the Ministry of External Relations and Trade, metamorphosed into the Crown Entity Antarctica New Zealand, whose strategic goals place great emphasis on commercialism, while scientific research is relegated to compete with a range of issues that include environmental stewardship and the encouragement of commercial and tourist activity.

The creation of Antarctica New Zealand followed far-reaching changes in science funding within New Zealand which have increas-

ingly favoured "relevance" and quick "economic" returns rather than long term fundamental science. The application of science often comes many years later, and the significance, or "relevance" may not be known at the time of a submission for funding.

It is basic Antarctic science that we are in danger of losing. Bell and Watson's invention of the telephone was greeted by company executives with the statement "After careful consideration of your invention, while it is a very interesting novelty, we have come to the conclusion that it has no commercial possibilities". Failure to recognise relevance even after the research and development had been completed suggests relevance may be impossible to judge.

In the scramble for funding during the demise of DSIR, Antarctic research was almost completely overlooked, with the result that the Antarctic research Output within the Public Good Science Fund is completely inadequate, especially with more user charges and overheads within New Zealand. Antarctica is a huge continent and with New Zealand as one of its closest neighbours, there are good reasons for taking a close interest in it with appropriate funding.

The secret of scientific success in Antarctica seems now to be the ability to jump on an appropriate bandwagon, such as "environmental monitoring" or "climate change". Some Antarctic science topics will inevitably dwindle, or will be done under the umbrella of another national programme, with no kudos for New Zealand. Is this really what we want? Multinational programmes fare well under the new scheme of things because they are diplomatically acceptable and sound good. In

practice, establishment of such programmes is commonly protracted, logistics are complex and the writing up slow and subject to a range of difficulties.

Since its creation, Antarctica New Zealand has never looked back, which is a pity as a great deal of practical experience is being lost. Those who ignore the lessons of history are compelled to relive them. Can we afford to do this? The feeling among scientists is that the new Antarctic management structure is not progressing as a "one shop stop" the way it was imagined, and that a national programme cannot be run totally like a business any more than health-care can.

The danger is also perceived that science might be being led by management rather than the other way round, despite multidisciplinary science workshops.

Long gone are the days when science dominated New Zealand's Antarctic scene and perhaps we have to accept this change. Today the Government has encouraged tourism, commercial opportunities, writers and artists programme, basic monitoring and the facilitating of various enterprises rather than the support of them.

All important items, but has perhaps the pendulum swung too far? Can we truthfully say that we have a national Antarctic identity and programme on par with those of other countries, or is the lack of support for a broad science base suggesting a lack of interest in Antarctica?

Does the pendulum need to swing back a little and how can this be achieved?

Dr Margaret Bradshaw is a New Zealand Scientist with over 20 years of Antarctic involvement.

THE RIDDLE OF THE ANTARCTIC PENINSULA

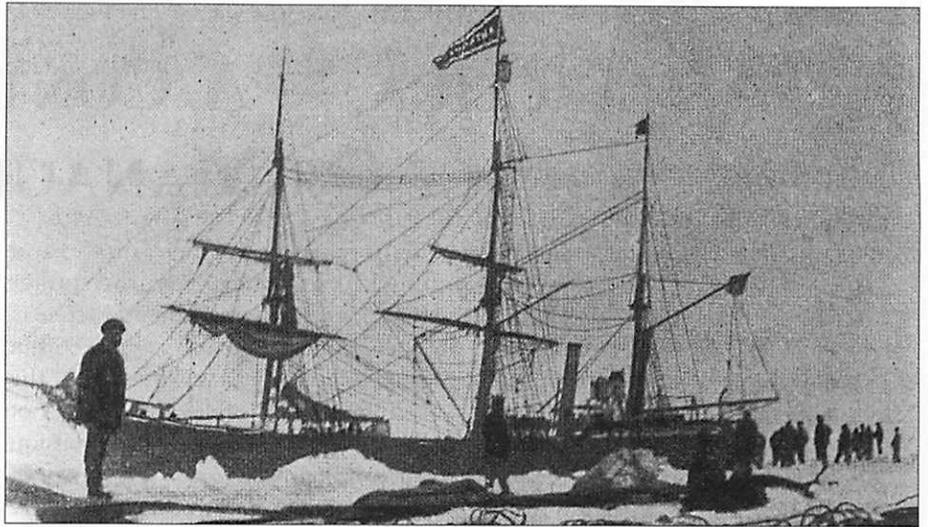
by David E. Yelverton FRGS
The Story of the Swedish Antarctic Expedition 1901-3: Part III

For Andersson, marooned at Hope Bay, there had been one compensation. On 14 January, the day after their return to the beach, he had gone to look at the shoulder of the big mountain to the south west of them (later named Mt. Flora in honour of his finds) and found an array of marvellously preserved plant fossils that, unlike those on Seymour Island, were immediately recognisable as proofs of a tropical climate in the Antarctic in the Jurassic period, nowadays dated to 145 to 208 million years ago.

By 28 February some miracle and a great deal of hard work by all had helped Larsen bring the shipwrecked party to the very beach Nordenskjöld had landed on at Paulet Island¹. Like the three men 40 miles northwest of them they were fortunate in arriving before the nearby penguin colonies migrated northward. Whereas Sobral had amassed 33 seals to supplement the Snow Hill party's diet and fuel — they had ruined three quarters of their penguin meat, thinking it would be better preserved by salting it with sea water — the Paulet Island party only found eight seals, so their diet of meat from 1100 penguins laid up was only varied with seal on Sundays. All their salt and much of their sugar had been lost along with their mattresses on the hazardous trip to safety.

Like the others at Hope Bay, as they had christened it, they only had a tent to live in and set about building a stone shelter. With twenty of them the task was easier. A nearby hill provided a supply of flattish stones for the walls and long since deodorised penguin guano made an effective mortar.

In a space 20ft by 18ft they placed their sleeping bags on stone shelves either side of a 4ft walkway beneath a roof of sailcloth held up by tent poles and eventually weighed down with seal skins.



Abandon Ship! Larsen's dramatic photo as the ice wrought his ship's final destination.

In contrast to Nordenskjöld's confidence about the ship's return that buoyed him up during the long winter months, Andersson faced a steadily growing conviction that the ship might have been lost and that the only hope of rescue for his party was to reach Snow Hill. But it was not until 2 September 1903 that the weather allowed him to ski along the old track past Mt. Flora to check the state of the Gulf².

Returning with the good news that the way looked safe for sledging, they had their meagre equipment ready on the 20th after repairing virtually everything with the crudest devices. They had one sail needle only and even unravelled the legs of one pair of ruined socks to darn the gaping holes in the others. With all set to go an eight-day blizzard drove them back to the shelter until they woke to a clear day on 29 September.

This time they took 12 days to reach the little depot they had left on the far shore on their first attempt. Camped beside it on 10 October they had seen that there was a channel west of them that curved away southward, but little suspected that there was another tent behind the end of the coast they had now reached.

Fog towards Snow Hill next morning led to Duse discovering that they were on an island with Sidney Herbert Sound emerging about 13 miles west of them. The more direct

routes proving impossible, the three men set off westward on the 12th to sledge through the Sound.

Starting about 16 hours after Scott set out on his first attempt to reach the summit of Victoria Land (aborted at the New Mountain depot), the Swedes halted for lunch about one o'clock, barely three miles to the good. They soon found themselves handing the field glasses to each other in puzzlement at the sight of two seals apparently standing upright on their tails. In a moment the images resolved into the figures of two men. Minutes later they were greeting Nordenskjöld and Jonassen amid the barking of their six dogs, and having to explain who they were before the men from the west could understand — so unrecognisable had the three men's ragged blackened appearance rendered them.

If Duse had discovered an island the day before — they called it Vega Island after Baron Nordenskjöld's famous ship — the baron's nephew had just proved that Ross's Mt. Haddington stood on a much larger island, separated from the mainland by the channel he had just traversed in a 70-mile pioneer journey from Lockyer Island.

Having started by coincidence on the day the others left Hope Bay, 29 September, the two men realised when they had covered the 14 miles to Lockyer Island that they had forgotten to pack the bread, and back

they had had to go to make a fresh start on 4 October.

Now here they were, emerged from the channel he had anticipated (which he named after the Crown Prince Gustav of Sweden) after just five days sledging, interrupted by only two days of bad weather. The two youngest dogs were the yearling survivors of the first Greenland litter, and had pulled behind the four veterans of the southern journey to make some remarkable daily runs.

This time, with more justification, Nordenskjöld had counted on finding seals at both ends of the channel, if channel it proved to be, and started with dog pemmican sufficient for only 20 of the 30 days he thought the journey might take. The gamble had paid off, seals being found as soon as they camped at the first headland beyond Cape Foster, and now again there were plenty on which to gorge themselves³.

Bolstered by their feast on the evening of that extraordinary day, the six dogs made light work of the reorganised total load of 772lbs as the five men made the first ever traverse of Sidney Herbert Sound to complete 24 miles on the 13th. Then on the 14th, clear of the sound that had become a channel, Nordenskjöld and Jonassen for the first time faced the sort of disheartening day Scott and his southern journey companions had so often experienced — with all on ski and two men hauling alongside the dogs, which were up to their hocks in the sticky snow, they struggled for hours at less than two miles an hour in snow that refused to support even the ski, let alone the sledge runners.

It took two interminable days to cover the 20 miles to Cape Gage, where at last they found a surface swept clear of snow by the wind. Once on it, just three hours sufficed for the 12 mile run to the hut, which they entered two years to the very hour since they had left Gothenburg on 16 October 1901.

Nordenskjöld had snatched another prize from the jaws of misfortune and unravelled another fragment in the riddle of the quadrant's coastline. Now it was a case of waiting — even if he had a nagging suspicion of his ship's fate, he was certain that a ship would come.

After three weeks of very

restricted outings, 8 November 1903 began in no very unusual way. Bodman and the young Akerlündh were away getting penguin eggs, when someone saw four men approaching from the north. As everyone hurried to meet them, all were convinced the Antarctic had come.

As they neared, Akerlündh hurried forward from the group and in an instant their excitement was turned to dismay. There was indeed a ship, but it was an Argentine navy sloop, the *Uruguay*, and not Larsen's which had never been heard of since she left Ushuaia! The Argentine government had organised the relief ship, appointing their Naval Attaché in London, Lt. Julian Irizar, to command her the previous April. While the ship was virtually rebuilt and enormously strengthened in Buenos Aires, he had consulted Shackleton, Nansen and others, and returned with much equipment to await the arrival of the Swedish government's relief ship, the *Fridthjof*, hastily chartered and due to reach Ushuaia before 1 November. It had been agreed Irizar would sail on that day if she had not arrived, and here he was at his goal a mere seven days later.

After much anguished discussion as to whether to return and concert plans with the Swedish commander, Captain Gulden, or to conduct a search themselves, Nordenskjöld was left to wrestle with the difficult choice while Jonassen sledged the two Argentine officers back to organise help for moving the collections and other essentials to the ship.

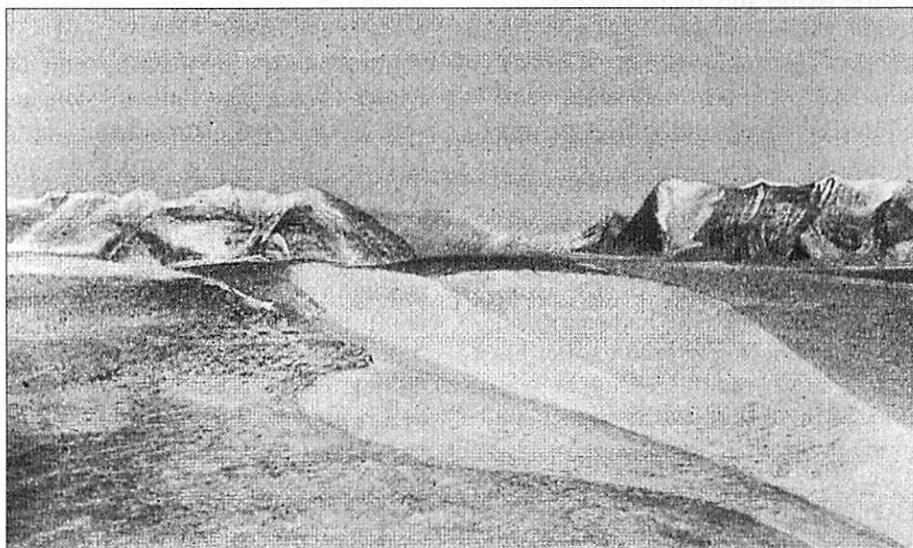
At 10.30pm that evening the fate of their shipboard comrades hung heavily on the atmosphere in the hut as the dogs began barking. Going outside they saw several figures approaching far out on the ice. Thinking Irizar might have sent men straight away, it was not until Bodman got outside to find six men standing round the flagstaff that the truth emerged. As a figure stepped forward from the group the astonished magnetician realised it was Larsen!

The story was soon told — their boat journey from Paulet Island via Hope Bay had taken a day longer than Irizar's from Ushuaia. After 22 hours' rowing from the deserted beach, the exhausted party had reached the ice edge at two o'clock that morning⁴. Camping on the ice, unseen by Jonassen and the Argentineans on the way to the ship, they had started their 10-mile walk at 3pm and here they were.

In an instant the cloud of foreboding was dispersed and fortune had turned the 8th of November into a day of miracles for the Swedes — a day that was anything but that for Scott and his companions immured in their tent since the 4th at Desolation Camp near the top of the Upper Taylor Glacier.

By 4pm on the 10th the nine men at Snow Hill Island were aboard, and ten hours later, as the *Uruguay* sounded her whistle off the bleak Paulet Island beach, Skottsberg and the twelve left there with him scrambled out of the stone shelter rubbing their eyes in disbelief.

After setting up a depot of



The Richtohofen Valley from the summit of the Borchgrevink Nunatak.

supplies future expeditions could call on, they erected a cross in memory of Ole Wenersgaard, the comrade who had succumbed to consumption and breathed his last in the smoke-filled shelter on 7 June 1903, the fourth man to give his life in the cause of Antarctic exploration during the multi-national campaign on the threshold of the 20th Century.

Irizar had the ship in Hope Bay by lunchtime the following day to recover the priceless collection of fossils Gunnar Andersson had left there, and as the *Uruguay* steamed north out of Antarctic Sound, there cannot have been a man aboard who did not believe their ordeal was over.

Yet within 24 hours they were all in the same predicament as Larsen had been in off King George Island. Forced to heave to in a three-day storm off Cape Melville, the Weddell Quadrant bade them a frightening farewell that left the ship with its two principal topmasts sprung in their crosstrees and only held up by the backstays.

And that with the stormiest seas in the world between them and safety beyond Cape Horn!

Realising the masts were doomed in the next serious gale, Irizar gave the only order possible — to let go the backstays holding the topmasts. To everyone's relief they fell without causing injury or serious damage. Fortunate to have enough coal, the ship steamed into Santa Cruz harbour a week later to telegraph news of the rescue to an astonished Europe.

That very day, 22 November 1903, the ice broke out of Scotia Bay at Laurie Island and at last released the Scotia, William Bruce's ship with the 33 men of the Scottish National Antarctic Expedition who had wintered there oblivious to the drama being played out 400 miles west of them.

Six hundred miles to the north, the Argentines in Buenos Aires had been awaiting the arrival of Dr Jean-Baptiste Charcot, who had sacrificed the aims of his expedition to offer his help. Unaware of the rescue, he was nearing the mouth of the river Plate in the Franáais.

NOTES

1. In their 20-strong Paulet Island party Larsen, the botanist Carl

Skottsberg and assistant zoologist Karl Andersson had the following members of the crew with them (all Norwegian except where noted otherwise): F.L. Andreassen (1st Mate), H.J. Haslum (2nd Mate), Axel Reinholdz (Swedish 3rd Mate), Anders Karlsen (Ch.Engr), George Karlsen (2nd Engr), G.F. Schönback (Swedish, Steward), Axel Andersson (Swedish, Cook), Anton Olsen Ula (Bosun), Ole Johnsen Bjönerud (Blacksmith), Ole Olaussen (Sailmaker), five seamen: Ole Wenersgaard, O.P. Duus, Martin Tofte, J. Aitken (Falkland Islander), F. Jennes (English), and two Swedish stokers: Karl Johansson, V.J. Holmberg.

2. The peninsula they had traversed to reach the gulf is today named Tabarin Peninsula, after the World War II operation led by the naturalist James Marr, who had been with Shackleton in the *Quest* in 1921, and then, after a distinguished polar career with Mawson aboard *Discovery* in 1929-30, and with the *Discovery Investigations* aboard *Discovery II*, was chosen to set up a base in Hope Bay in 1944 to prevent it being used by enemy submarines and raiders.

3. Nordenskjöld implies that they had camped at Red Island, but the implication that they had covered 15 miles from there to Cape Well Met by 1pm, having already had their lunch break, is hardly credible, let alone consistent with his description of a "short southward march" (p307 in the English edition of his book *Antarctica: or Two Years amongst the Ice of the South Pole*), and of "unbroken ice" in the direction of Paulet Island. The author's conclusion is that they camped on Corry Island. Although it is hard to equate it to Nordenskjöld's description of it as "in the middle of the channel", his reference to passing "a narrow deep bay with Mt Haddington in all its magnificence in the background" (this would be the western end of Sidney Herbert Sound with Croft Bay behind it) during the afternoon is hardly consistent with the camp being anywhere west of that island. The day's run to Corry Island would have been 25 miles. After daily runs of 15 and 17 miles through the

channel, the longer distance ties up well with his description of the run on 11 October as "a good long day's march".

4. Larsen's companions were Karl Andersson, 2nd Engr Georg Karlsen, 3rd Mate Axel Reinholdz, Bosun Anton Olsen Ula and the cook Axel Andersson.

AMENDMENTS:

In accordance with the author's request, omissions and corrections that occurred in previous sections of the article "Riddle of the Antarctic Peninsula: Stories of the Swedish Antarctic Expedition 1901-3" are as follows:

- i. Omitted text in Part I of Stories of the Swedish Antarctic Expedition 1901-3 is included below:

Picking up coal at Falmouth, the 14 Greenland dogs were brought aboard by the Norwegian Ole Jonassen who had sledged with the Duke of Abruzzi on his North Pole attempt two years before. Weighing anchor on 27 October, they had crossed the Equator on 24 November to arrive at Buenos Aires on 14 December, having lost ten of the dogs in fights or from tropical heat . . .

Calling at the Ano Nuovo Island observatory off the north coast of Staten Island and finding the key instrument for co-ordinating their own with an established magnetic base had not even been commissioned, they headed south past the fearsome Cape Horn on 5 January. Their aim was to pass through the Orleans Channel which Larsen still believed to run through to the Weddell Sea between Dumont d'Urville's Louis Philippe Land and the Belgians' Danco Land further west. The goal then was to establish a winter station as far south as possible on the western coast of the Weddell Sea, preferably beyond Larsen's farthest 1893 sighting in 68 10S.

Safely across the Bransfield Strait they had sailed west into the Orleans Channel to find that after

75 miles* it emerged not into the Weddell Sea but into Hughes Bay at the entrance to De Gerlache's Strait. They had made their first discovery — the two lands were one and the same. To reach the Weddell Sea they would have to try the sound separating it from Joinville Island, which had been blocked by ice when the French Adm. Dumont d'Urville discovered it in 1838. Never since navigated, it proved to be entirely free of ice and they passed through on 15 January to emerge in Ross's Erebus & Terror Gulf. As

though guided to the very places that would figure in future crises, Nordenskjöld had pointed out a sheltered beach at the foot of a magnificent glacier on the west side of the Sound as very suitable for a depot, and later landed on the eastern shore of Paulet Island in search of fossils.

- ii. The illustration in Part II was in fact 'The return of the Uruguay' and not as explained in the caption 'Nordenskjöld's ship *Antarctic*' departing from Gothenburg 16 October 1901.

- iii. The author also wishes to apologise to readers for a mistake in the l/h column of p153 in the December 1996 issue. In the paragraph beginning "On top of this . . ." the first sentence ended with the words "and so had been forced to make a diversion through the difficult Beagle Channel to pick the meat up at *Punta Arenas*". The underlined should have read "Lapataia which lies west of Ushuaia."

*All mileages are expressed in nautical miles.

BOOK REVIEW

THAT FIRST ANTARCTIC WINTER

THE STORY OF THE SOUTHERN CROSS EXPEDITION 1898-1900

AS TOLD IN THE DIARIES OF LOUIS BERNACCHI

WRITTEN AND EDITED BY JANET CRAWFORD

Reviewed by Colin Monteath

270 pp 27 B/W and 24 colour photographs, pen drawings, manuscripts, maps.

South Latitude Research Ltd. (in association with Peter Skellerup) Christchurch, 1998. \$NZ45

With a number of "Heroic Era" centenaries looming, the timely appearance of *That First Antarctic Winter* will rekindle interest in the Southern Cross Expedition which, during 1899, pioneered the concept of wintering on the Antarctic continent.

Janet Crawford, grand-daughter of the expedition's physicist Louis Bernacchi, has combined extensive excerpts from Bernacchi's diary with her own linking narrative to produce a most readable and highly informative account of what must have been a harrowing year at Cape Adare, one of Antarctica's least hospitable spots. David Harrowfield, the book's publisher and historian who has worked twice at Cape Adare, has provided detailed background notes and a final chapter outlining visits to Adare from 1901 to the present day.

Though many of the colour photos in the book are either faded or poorly reproduced they do give a good impression of the present condition of the expedition's headquarters, artefacts, recent restoration work, Hanson's grave, tour group visits and neighbouring islands reached by expedition members. The excellent B/W plates (many taken by Bernacchi — one is printed backwards) are largely drawn from the original expedition accounts *'First on the Antarctic Continent'* (Borchgrevink 1901) and *'To the South Polar Regions'* (Bernacchi 1901). Others, reproduced for the first time, greatly enhance the book and highlight the value of

both SPRI and Canterbury Museum as important repositories for early Antarctic photographic material. The two maps, tastefully drawn and contained in a rear pocket, depict sledging routes around Cape Adare and the course of the *'Southern Cross'* in the Ross Sea and eastward to the Bay of Whales.

Trained in magnetology, astronomy and meteorology in Melbourne, the red-headed Louis Bernacchi (1876-1942) was, at 23, the youngest member of the expedition. He was to retain a lifelong passion for Antarctica and, as his diary makes clear, he became an astute observer and writer as well as a dedicated scientist. Apart from his scarce *'To the South Polar Regions'*, Bernacchi subsequently edited or wrote *'The Polar Book'* (1930) *'A very Gallant Gentleman'* — (a biography of Oates, 1933) and *'Saga of the Discovery'* (1938). As a native Tasmanian he could perhaps be forgiven for the crest on his coat of arms — "brussel sprout rampant" (*South Polar Times* 1901 — edited by Bernacchi) though some may wonder at his motto "Let Melbourne Flourish".

As a young scientist, Bernacchi journeyed from Australia to England to sign on to the scientific staff under the expedition's leader, Norwegian Carsten Borchgrevink. While nominally a British expedition (its financier was the English publisher Sir George Newnes), the expedition was essentially Scandinavian with five Norwegians and two Lapps. Only three of its ten members were native English speakers.

As leader of a private expedition Borchgrevink drew criticism and lack of support from Clements Markham of the RGS who was at the time trying to assemble government finance and backing for what became Scott's National Antarctic Expedition 1901-03.

Controversy and jealousy again surrounded Borchgrevink upon his return to England in 1900 and as a

result he didn't receive the recognition he so desperately craved. Long overdue, Borchgrevink's role wasn't officially recognised by the RGS until 1930, only four years before his death.

While Borchgrevink's leadership was found to be severely lacking it should be remembered that, with the Belgica expedition still unaccounted for on the other side of the continent, he didn't have any experience to draw on in planning for an Antarctic winter on shore. In the event everyone agreed Borchgrevink outfitted his expedition well, making good use of sledges, skis and the newly-invented Swedish primus. Such was the state of knowledge that guns were taken to combat polar bears.

Had the Southern Cross not been seriously delayed by pack ice at the entrance to the Ross Sea, it is possible Borchgrevink would not have wintered at Cape Adare, though in his limited experience he had found no fault with it after making a brief landing there on Bull's 1895 whaling voyage. It is likely the expedition would have based itself further south on the Ross Sea coast at a more favourable launching platform conducive to far-ranging sledging journeys. Had this happened it would have pre-empted the discovery of places soon to be the preserve of Scott and Shackleton. Though severely restricted in movement south from Cape Adare and denied access to the Polar Plateau (and hence the South Magnetic Pole), they did pioneer the use of dogs in the Antarctic. The Lapps also ably demonstrated the efficiency of nordic skis when sledging.

Upon return to New Zealand, in 1900, Borchgrevink sent a poorly (cleverly?) worded cable to England stating the expedition was safe (though naturalist Hanson had died in the spring) and that they had reached a record South of 78S. This was immediately misinterpreted by the RGS who thought that Borchgrevink had made a remarkable sledging trip to the interior directly south from Cape Adare. When it was later found that they had only made a short excursion across the flat-topped Barrier in February 1900, when the Southern Cross landed parties on the fringe of the Ross Ice Shelf, this added to the undermining of Borchgrevink's

credibility. In Bernacchi's diary there is some confusion over dates and distances for the two sledging journeys and Bernacchi says his own brief trip went further south than 'Borchy'. (Bernacchi flew a Jolly Roger flag, the emblem of the Thames Yacht Club). No matter, the expedition did discover the Bay of Whales, a crucial gateway to the Geographic South Pole later used by Amundsen.

But, of course, the most interesting part of the book focuses on the winter itself. Bernacchi's diary makes it very clear that Borchgrevink's leadership skills were found to be severely lacking. In fact, Bernacchi thought his leader was bordering on insanity. At 36, Borchgrevink was the oldest of a young team, half of whom were under 25. Though an unplanned expedition first, whereby the entire team grew to intensely dislike its leader, other Antarctic expeditions have since faced strife of this nature. Bernacchi uses his diary to vent his anger and record a catalogue of discord as winter boredom takes its toll in their cramped, dirty quarters. Reporting on various quite serious incidents he calls Borchgrevink the 'individual', 'l'enfant', a selfish beggar with colossal ego', numskull', coward' and a miserable scamp'. Reading Bernacchi's perspective on Borchgrevink's sledging trips (usually with the Lapps) it does seem as if they are the 'fiascos' Bernacchi considers them. It becomes increasingly evident that Borchgrevink was drinking heavily while in the field. In addition, the medicinal brandy was found to be consumed when the ill Hanson desperately needed it. Bernacchi alludes that this problem

led to poor decision-making, needlessly smashed science equipment and non-sensical tirades against expedition members such as Colbeck, whom Borchgrevink dismisses from the expedition. Borchgrevink's speeches at frequent flag-raising ceremonies are all but incoherent. Group morale continues to plummet as Hanson's condition worsens and, understandably, his slow tortured death has a profound effect on everyone.

By now, Bernacchi and the others have lost all respect for Borchgrevink. This is exacerbated by his delusions of grandeur after sledging to Duke of York Island with a load of gunpowder in order to expose his 'Klondyke-size' find of gold (the others all correctly assume his finds are 'fool's gold' pyrites). So keen was Borchgrevink to return from the Antarctic with the prospect of a commercial return for his backers that the gold samples occupied his thoughts for much of the winter.

Towards the end of January 1900, and with the prospect of another dreary winter all but upon them, Captain Jensen landed unobserved from the Southern Cross and silently entered the hut containing the nine sleeping men. As he dumped the mail bag on the table and shouted "Post" their isolation was broken. That First Antarctic Winter' is a valuable testimony to a remarkable milestone in polar history.

Colin Monteath was for many years field manager with the New Zealand Antarctic Division before establishing his own photographic and publishing agency, Hedgehog House. — Ed

FORTY YEARS ON ICE

BY CHARLES SWITHINBANK

Reviewed by Arnold Heine

In 1997 Charles Swithinbank published his first book "An Alien in Antarctica" in which he described his involvement in six Antarctic expeditions, generally in the Ross Sea sector. His second book "Forty Years on Ice" was published this year and further documents his work both in the Arctic and the Antarctic. But more of that later.

I first learnt of Charles' work while I was wintering over at Scott Base in 1959, assisting Al Stuart, an American glaciologist (who was also living at Scott Base as there was not yet a scientific component of the US McMurdo Station), and from time to time in digging the snow mine out on the McMurdo Ice Shelf. At that time one of the few published sources of Antarctic glaciological research were the reports of the

Norwegian-British-Swedish 1949-52 Antarctic Expedition. These were indeed helpful to me as sources of information when I became part of the North Victoria Land Traverse as the assistant glaciologist.

During the 49-52 Expedition, Swithinbank worked with the experienced Swedish glaciologist Dr Valter Schytt and fellow Britisher Gordon Robin. In early 1952 Swithinbank, together with other members of the Expedition, headed back to civilisation and he spent the next four years writing up the scientific results of that Expedition for an Oxford doctorate. From then on 'the die was cast' and Charles Swithinbank devoted his whole life to the study of ice, in either the Arctic or Antarctic.

Even after his retirement as Head of Earth Sciences in the British Antarctic Survey towards the end of 1986, and being only 60, Swithinbank continued his ice studies. He then worked with Giles Kershaw (Adventure Network International, ANI) in seeking out 'blue-ice' wheeled aircraft landing sites, and the establishment of the ANI base at Patriot Hills, now a well-known starting point for overland trips to the South Pole.

"*Forty Years on Ice*" is a splendid record of his work from 1966 until 1988. I found each chapter full of day to day detail and exciting reading. For instance, his descriptions of the "Manhattan" voyage (a giant tanker) through the North West Passage, of an excursion under the Arctic sea ice on board the nuclear-powered HMS Dreadnought, and of flying in a RAF Comet 4C jet across Arctic glaciers and sea ice at an altitude of 150m to test new laser altimeters, are all compulsive reading. His book is written in the popular science style so that his experiences on many of these trips as an invited advisor are lively yet useful historic records of significant polar events.

"*Forty Years on Ice*" has many colour photographs and several maps to complement the chapters as they unfold. Endnotes relate details of events and people in each chapter, together with a useful Glossary of mainly glaciological terms. As well there is a list of References, really a Bibliography of publications, for those who want to follow up more

detailed accounts of events and scientific work in which Swithinbank took part, or background information on places he visited.

Although I have a continuing interest in polar glaciology and maybe biased in my reading, I am sure a great number of *Antarctic* readers will find *Forty Years on Ice* a splendid addition to their polar libraries. Charles Swithinbank has indeed been fortunate to achieve so

much in his lifetime and we can only thank him for his generosity in sharing with us his wide range of experiences.

Arnold Heine, a well known Antarctic scientist with DSIR, first went to the Antarctic in 1956, and the following season joined New Zealand's first official Antarctic field party to Cape Hallett. — Ed

LETTERS TO THE EDITOR

Dear Editor,

With reference to Vol 15, No. 4 of '*Antarctic*', I found the feature 'The Riddle of the Antarctic Peninsula' extraordinarily difficult to understand. This was partly due to your rather savage editing, (e.g. removal of any reference to Falmouth in the third para) and partly to the absence of any map. Even the map in the Dec 1997 issue did not mention Cape Framnaes, Sidney Herbert Sound, Admiralty Sound etc.

I am not a professional grumbler but I really found this all too complicated, despite the fact that I have been in the area.

Sincerely,

Angus Erskine

Edinburgh, SCOTLAND, 28.4.98

At the time of the article in question, it was felt that the omitted section was not essential to the story. This was the only section affected for reasons of space. The Editor wishes to thank Mr Yelverton for submitting his articles and apologises for any distress caused. Please refer to the addendum at the end of Part III in this issue which hopefully addresses the issues of concern. — Ed

Dear Editor,

The interesting series, 'The Riddle of the Antarctic Peninsula' tells us that Sir Hubert Wilkins was 'a Canadian aviator.' The reference appears on page 18 of the Vol. 16, No. 1 issue of 1998. Wilkins was born at Mt Bryan East, South Australia, on 31 October 1888. Though associated with US interests in polar exploration (particularly with Lincoln Ellsworth) he retained his Australian citizenship,

of which he was immensely proud. Though some of his pilots were Canadian or had flown in Canada and Alaska, it is difficult to imagine this great Australian as 'a Canadian aviator.'

Note: If anyone is interested in reading more of Hubert Wilkins' life, suggest Chapters 2, 5 and 6 of my book, 'Moments of Terror: The Story of Antarctic Aviation'.

David Burke

Burradoo

AUSTRALIA, 7.6.98

Dear Sir

May I be permitted to comment on a statement published in *Antarctic* Vol 15, No. 4 on page 83.

During the course of a review of the musical 'Great Scott' the claim is made that Debenham was the first Australian explorer scientist to visit Antarctica.

Surely this distinction must go to Louis C Bernacchi of the Southern Cross who wintered over at Cape Adare, 1899-1900 and later joined the Discovery 1901-04 expedition.

Although born in Belgium 1876, he arrived in Tasmania 1883. If the reference was meant to read Australian-born then I have no quarrel with it but if Bernacchi was not an Australian by the reviewer's definition then neither was Douglas Mawson who was born in Britain.

As Frank Debenham visited the Antarctic first in 1911, I'm afraid that he was not able to claim the reward of priority.

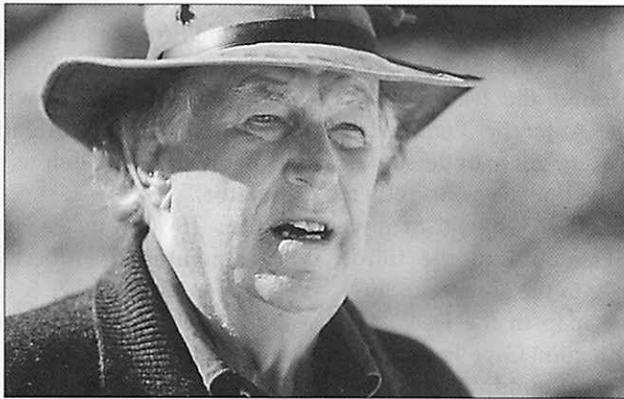
Baden Norris

Antarctic Curator

Canterbury Museum

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With thanks to TVNZ, *Antarctic* is able to offer all of our readers the chance to save \$20 on their purchase of the collectors video set of the "Hillary — A View from the Top" Series. The epic documentary series was recently screened on New Zealand television. Epics 1&2 and 3&4 have been amalgamated onto two videos to provide a comprehensive package of the outstanding programme.



This Antarctic special double video set is available to readers of *Antarctic* for only NZ\$59.95 plus postage.

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Payment by Visa is also accepted by the Society. To do this we require your Visa card number, the name that appears on the card and the expiry date.

ICAIR TO HAVE NEW LINKS WITH UNIVERSITIES

Continued from page 31

ICAIR has UNEP-GRID status (United Nations Environment Programme - Global Resource Information Database) and the organisation is involved in a number of Antarctic related business projects that will be of interest to universities. One project of which is the preparation of the State of the Environment Report on Antarctica for the United Nations General Assembly in New York every two years.

Others include two big projects for the Ministry of Environment. One is on wetlands and the other is providing information management strategies for the environmental performance indicators programme (EPI).

ICAIR also prepares management strategies for the US, Italy and NZ on protected area management plans in the Ross Dependency. This particular project has been underway for the past four years and is on-going. The organisation also co-ordinates mapping and GIS projects as well as PGSF (public good science fund) funded research.

While some aspects of the business may be shelved, such as the Internet services, the possible restructuring is seen as a positive move for the future of the organisation. However, it is uncertain whether ICAIR will be able to retain its name.

PHILATELIST WANTED

The New Zealand Antarctic Society is looking for a stamp and postcard enthusiast to assist with enquiries. For details please contact Mr Bob Park on tel (03) 389 4121.

TRIBUTE

MIKE PREBBLE

Continued from page 40

November 1979. I took over from Mike at Scott Base and he stayed at McMurdo Station to coordinate the recovery operation with the Americans over the next two weeks or so. Not a pleasant experience but again one where Mike showed his abilities in handling even the worst possible situations.

Mike Prebble will be remembered with great respect by all of us who knew or worked with him in the Antarctic, the friends he made when he studied at Cambridge and the British Antarctic Survey, and we share our loss with members of his family and many other of Mike's friends around the world.

By Bob Thomson

Robert B Thomson, OBE, was for many years Superintendent of Antarctic Division, DSIR, and subsequently Director. He is now retired, living in the United States.

Michael Prebble, known to his friends as Mike, was one of New Zealand's foremost 'Antarcticans'.

He made seven trips to Antarctica, in a wide range of roles. His first visit to the continent was in 1960-61 as the youngest member of the well-known expedition led by Les Quartermain. This uncovered and began the restoration of the historic huts at Cape Royds and Cape Evans on Ross Island, bases for the expeditions of the famous British Antarctic pioneers, Shackleton and Scott.

The following summer he returned to New Zealand's Scott Base as a field assistant and principal dog handler for surveying and geological parties. In the 1964-65 summer he was appointed deputy leader of Scott Base, and the following year was promoted to the

MEMBERSHIP

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 interested in some phase of Antarctic exploration, history, development or research.

Annual membership of the Society entitles members to: *The Antarctic Journal*, which 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 Sub-antarctic. It has a world-wide circulation.

Members also receive a regular newsletter called *Polar Whispers*, an annual *Polar Log*, which records the decisions made by the Society's Council at its AGM, catalogues of the Society's mailorder bookshop 'The Polar Bookshop' and occasional brochures from the Society's 'Sales Stall'. Regular meetings are held by the Auckland, Wellington, Canterbury and Otago branches.

You are invited to join - please write to:
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<http://www.icaire.org.nz/news/nzas>

All administrative inquiries should be directed to the National Secretary. Inquiries regarding back issues can be made to the Back Issues Officer, at the above address.

Members should direct other inquiries to their local branch.

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position of officer-in-charge of the base for both the summer and winter periods.

He was again leader of Scott Base in the ill-fated summer of 1979-80, playing a key role in the recovery mission following the tragedy on Mount Erebus when an airliner crashed during a tourist scenic overnight.

In the 1990s Mike was on two tourist expeditions to Antarctica, one as an observer aboard the *Bremen* and the other in 1997-98 as an official representative of the government aboard the *Kapitan Kblebnikov*.

His interest and experience in the Antarctic prompted him to complete a Masters degree in Geography at Victoria University of Wellington in 1966, writing a thesis on New Zealand's exploration of the Ross Dependency 1957-1965. Having been awarded a Rotary Foundation Fellowship, he spent the 1967-68



Mike Prebble, Leader Scott Base,
1979-1980.

period at Darwin College and the Scott Polar Research Institute at the University of Cambridge in England doing post-graduate research on the physical geography of the McMurdo Sound area and the Dry Valleys. Mike was a long-standing member of the New Zealand Antarctic Society, and in 1970 was awarded the Polar Medal for his efforts in Antarctic affairs.

In 1989 Mike joined the Ministry for the Environment in Wellington, where his responsibilities included policy development for Antarctic environmental management.

In ensuing years he served on the New Zealand delegation to several Antarctic Treaty Consultative Meetings and to special Treaty meetings for the negotiations on the Madrid Protocol.

On joining the Royal Society of New Zealand in 1996, as Manager of the Marsden Fund, Mike continued his

Antarctic policy work on behalf of the Society and assisted in its administration of the Christchurch-based International Centre for Antarctic Information and Research.

During his time as a government official Mike also made important contributions to the restructuring of Antarctic administration and the establishment of Antarctica New Zealand; to the development of the 1994 Antarctica (Environmental Protection) Act, New Zealand's ratifying legislation for the Madrid Protocol; to the drafting of guidelines for management of visitors to the Ross Sea region and to the revision of management plans for protected areas in the Ross Sea region.

Mike Prebble died suddenly at Piha near Auckland on 18 April 1998.

[With permission from Paul Dingwall, editor of "Antarctica in the Environmental Era"]

(This book, which is dedicated to Mike, is available from the Department of Conservation, P.O. Box 10-420, Wellington)



The New Zealand Antarctic Society was formed in 1977 to support New Zealand's Antarctic research and to provide a focus for the public's interest in Antarctic exploration and discovery.

Annual meetings of the society are held in the Auckland area. The society also publishes a journal, 'Antarctica', which provides regular news and information on Antarctic exploration and discovery.

Members who receive a regular newsletter called 'The Antarctic' are invited to join the society. The newsletter provides news and information on Antarctic exploration and discovery.

The society's main objective is to promote public interest in Antarctic exploration and discovery. It does this by publishing a journal, 'Antarctica', and by holding regular meetings.

The society's journal, 'Antarctica', is published twice a year. It contains news and information on Antarctic exploration and discovery. The society also holds regular meetings to discuss Antarctic exploration and discovery.

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