

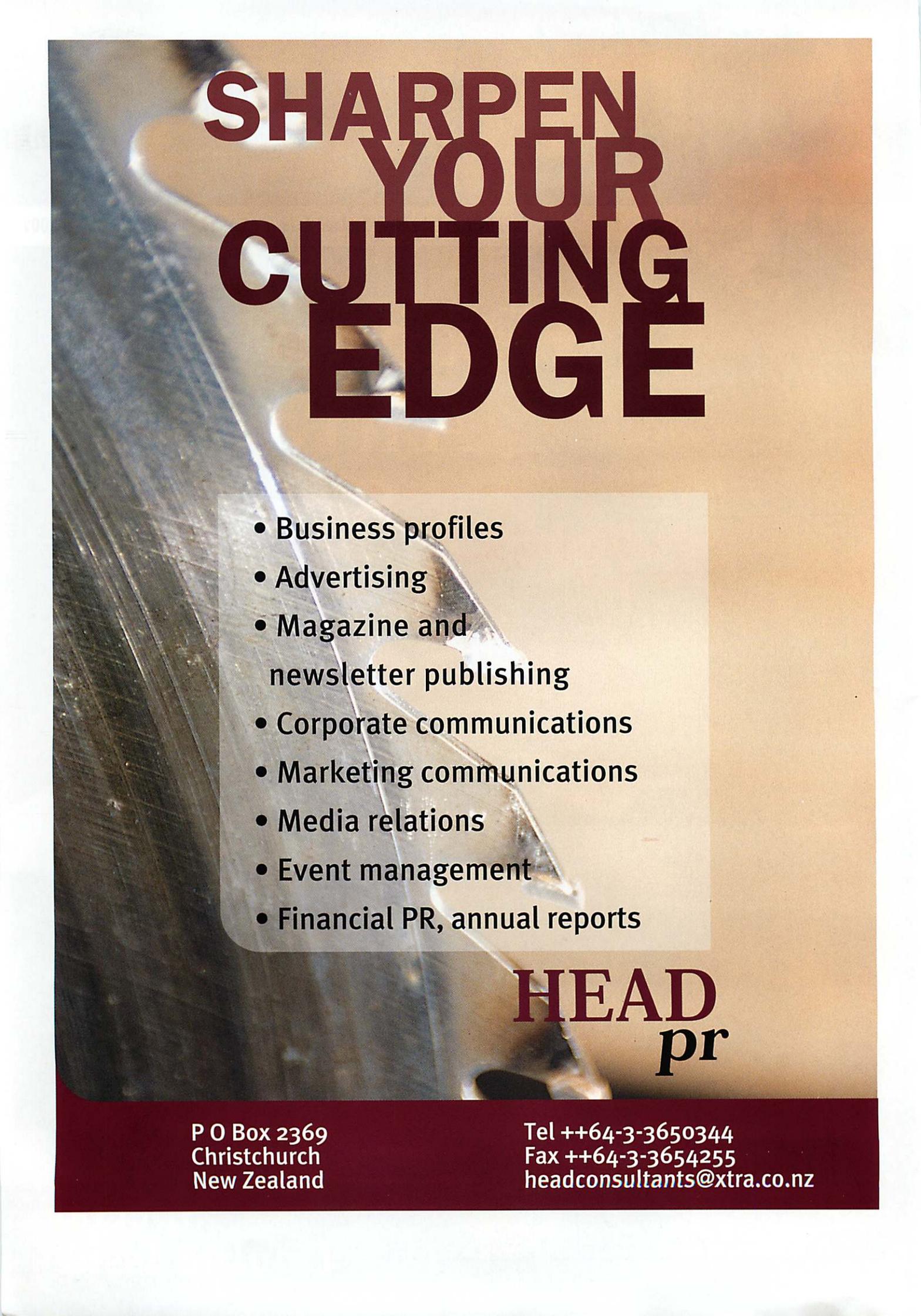
ANTARCTIC



The Journal of the New Zealand Antarctic Society Vol 20, No. 1 & 2, 2002

Expanding Antarctic Science

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COVER PICTURE



Cover photograph: Iceberg encountered by "The Antarctic Sea Kayaking Expedition" in the Antarctic Peninsula in 2001 (see article in Antarctic Vol 18. no 3 & 4, p. 58, and cover Vol 19, no 2). Photo: Graham Charles.

Volume 20, No. 1 & 2, 2002

Issues No. 180 and 181

ANTARCTIC is published quarterly by the New Zealand Antarctic Society Inc., ISSN 0003-5327. Please address all publication enquiries to Warren Head, Publisher, 'Antarctic', PO Box 2369, Christchurch, or Tel 03 365 0344, Fax: 03 365 4255, Email: headconsultants@xtra.co.nz Printed by Herald Communications, 52 Bank Street, Timaru, New Zealand.

Call for articles

We invite readers to submit articles for *Over My Shoulder*, a series relating to past experiences in Antarctica. The aim is to record memories in print so that they are not lost to the future. Contributions from any country will be accepted.

Topical discussions on Antarctic themes are also welcome.

Please send to: The Editor, New Zealand Antarctic Society, PO Box 404, Christchurch 8015, New Zealand.
Email: marga@chch.planet.org.nz
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Expanding Role in Antarctic Science

Antarctica New Zealand is proceeding at some pace to take a significant role in several new and exciting scientific endeavours, the chairman Chris Mace says in the 2002 annual report of the organisation.

Although the Antarctic Arts Fellowship programme continues to significantly lift understanding and support for the Antarctic. Scientific research continues to be the principal driver of New Zealand's Antarctic and Southern Ocean programme.

ANDRILL is a new Antarctic drilling programme which New Zealand has been asked to project manage, the Latitudinal Gradient Project is also being managed by Antarctica New Zealand and we are working on a comprehensive study of the biodiversity of the Ross Sea Region," he says.

The November 2001 publication of the Ross Sea Region 2001: A State of the Environment Report for the Ross Sea Region of Antarctica has received international acclaim and provides a blueprint for the development of such work on the Antarctic Continent and in Southern Ocean.

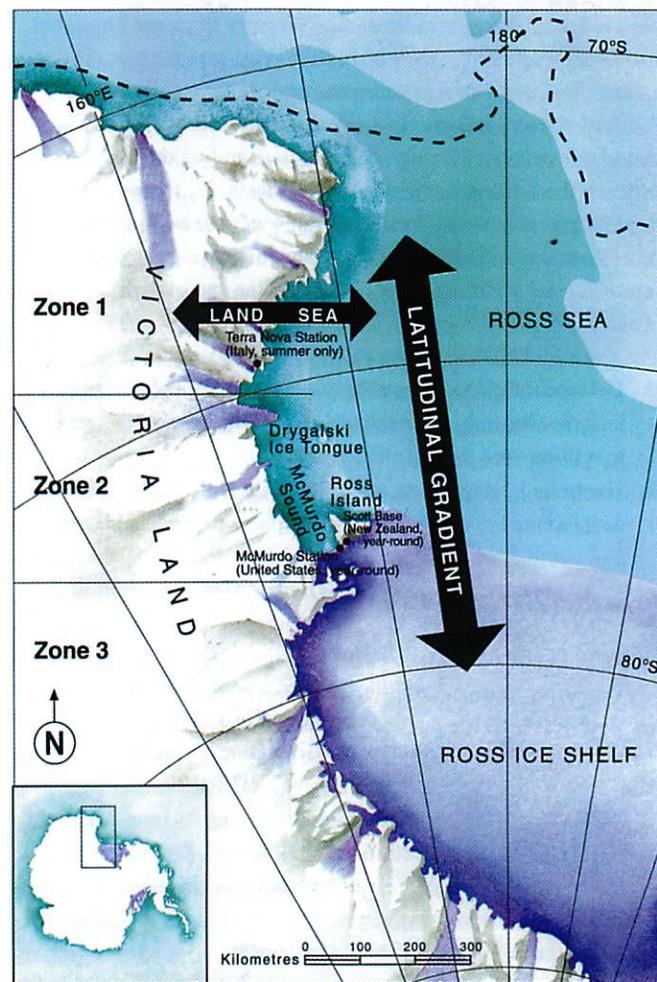
Antarctica New Zealand also provided ongoing support for the Antarctic Heritage Trust's programme to preserve the historic sites in the Ross Sea region and during the year hosted a visit by HRH Princess Anne to commemorate the centenary of Robert Falcon Scott's first expedition and to launch the Trust's international fund-raising appeal.

Dr Basil Walker and Dr Ron Heath completed their terms as board members. New appointments by the New Zealand government are Francis Small and Paul Hargraves.

This year was the final year of involvement for Antarctica New Zealand's chief executive, Gillian Wratt. She spent eight years with New Zealand's programme on the southern continent including six years as chief executive, steering the organization from being part of a government department to an independent Crown Entity.

In her annual review, Wratt says it was very satisfying to see the bold step taken by New Zealand in 1997, to begin an environmental report come to a successful conclusion. The Antarctic Treaty nations had discussed Antarctic state of the environment reporting at Treaty meetings for a number of years, expressing concerns as to the need for it and its costs and processes. The Ross Sea SOE report was mostly written by New Zealand scientists, with contributions from other nations active in the Ross Sea Region (notably the USA, Italy and Germany). It had funding support from the New Zealand Ministry of Foreign Affairs and was project managed by Antarctica New Zealand.

A summary of the report's findings was provided to the Antarctic Treaty Consultative Meeting at Warsaw in September 2002.



Map of Victoria Land. Courtesy Antarctica New Zealand.

Along with the continued Scott Base refurbishment of the Hatherton laboratory and the 3A accommodation area, a new sewage treatment plant has been commissioned (see story). "We are now in the process of developing plans for a heated field preparation and storage facility to enable better support for future field research projects", says Gillian Wratt.

On the science front, Antarctica New Zealand supported another busy season with a range of projects covering sea ice physics, atmospheric chemistry, geology and geophysics, ice sheet dynamics, penguin and seal biology, terrestrial biology and marine benthic research.

The science strategy was reviewed in preparation for a 3-year science support bidding round this year. Wratt claims that since the establishment of Antarctica New Zealand "we have seen a two to threefold increase in the high quality science we are supporting." Several large multi-year *projects are underway*. Additional government funding was provided in the 2002 Budget to enable the organization to contribute to the infrastructure and operational support of the Latitudinal Gradi-

ent Project, a multidisciplinary approach to ecosystem and environmental studies along Victoria Land. The three national programmes (Italy, New Zealand and USA) that have scientific bases in the region have conducted separate workshops on the concept.

Good progress was also made, says Wratt, with the Ministry of Fisheries in planning for the Ross Sea Marine Biodiversity Research programme. There are plans for a dedicated research voyage using the National Institute of Water and Atmospheric Research vessel *Tangaroa*, in collaboration with the Italian research vessel *italica*, in 2004.

Gillian Wratt has been succeeded as chief executive by Lou Sanson, who was Conservator of the Southern Conservancy of the Department of Conservation for seven years.

Also departing from Antarctica New Zealand are communications manager Vivienne Allan (joined 1999 and is now with the Canterbury District Health Board) and the environmental manager Emma Waterhouse (joined 1993 and is now with the NZ Ministry of Fisheries).

The operational presence in Antarctica cost \$6.0m of the \$6.95m total costs. Income for the year ended June 2002 was \$7.2m (2001 actual \$6.6m) and operating surplus was \$255,000 (\$205,000).

Total taxpayers contribution on funds was \$6.22m (\$5.96m). Current assets are \$2.51m (\$2.97m) and fixed assets \$4.36m (\$3.62m). Current liabilities are \$655,000 (\$632,000).

The Antarctic science expense from four public science funding contributors was \$7.25m, to which Antarctica New Zealand logistics supports of \$4.3m can be added, resulting in a total \$11.55m.

The funding contributors are:

- The Public Good Science Fund (Foundation for Research, Science and Technology \$3.2m),
 - Marsden Fund (the Royal Society \$700,000),
 - University grants (Vote:Education \$3m),
 - Bio-Ross (Ministry of Fisheries \$350,000). \
- Warren Head.

34 Science Events

Antarctica New Zealand supported 34 science events in the 2001/02 Antarctic season. The events were spread across the five science themes of Antarctica New Zealand's science strategy, ranging from research on sea ice information to research on human expectations and perceptions of their experiences in the Antarctic environment. The scientists supported came from four Crown Research Institutes and seven Universities in New Zealand. Their international collaborations spread across 14 countries. It is because of this diversity in individuals, organisations and funding agencies that New Zealand can participate at a "world-class" level in Antarctic and Southern Ocean science.

State of Environment Report

In November 2001, Antarctica New Zealand, in association with the New Zealand Ministry of Foreign Affairs and Trade, published Ross Sea Region 2001: A state of the Environment Report for the Ross Sea Region of Antarctica.

This, the first comprehensive state of the environment report produced for any region of Antarctica and the Southern Ocean represents over three years of work by more than 20 leading authors and other experts.

The report includes over 250 pages of detailed information about the state of the atmosphere, terrestrial, and marine environments of the Ross Sea region and the activities that occur there.

National and international reaction to the report has been very positive. Antarctica New Zealand is pursuing opportunities to promote the report and its findings, to facilitate action to address the key issues and challenges, and to contribute to the Antarctic Treaty System discussion on the development of a state of the environment report for the whole of Antarctica.

The achievements of New Zealand's science strategy for Antarctica and the Southern Ocean over the last four years are analysed in a new companion science document to Antarctica New Zealand's Annual Report.

Five Antarctic science themes were developed for this science strategy, focusing science undertaken in Antarctica around broad outcomes rather than narrow disciplines of research.

In detail the five Antarctic science themes deal with Antarctica as a global barometer, the Southern Ocean, life in extreme environments, human influences in/on Antarctica and the connections between Antarctica and New Zealand.

The companion document includes an international investigation in Antarctica's past response to climate change as well as a report about the direct human impacts in Antarctica, in particular impacts on ice-free regions of the Antarctic, says Dr Dean Peterson, Science Strategy Manager of Antarctica New Zealand.

The institute also reports on the research into the understanding of "extremophiles" in the Antarctic inland waters. Research that New Zealand and international collaborators are conducting to understand the role Antarctic sea ice has in relation to the Southern Ocean and world climate is summarised in an article on the following page.

Sea Ice 'Crucial to Climate'

Based on the latest research, climatologists now consider sea ice to be crucial in the regulation of the planet's climate. Biologists also believe it to be the driving force behind the biological productivity of the Southern Ocean, says Dr Tim Haskell of Industrial Research Ltd.

The Southern Ocean and the Antarctic pack ice, along with the associated atmosphere and biota, are part of a complex interactive system each exerting a perceptible influence on the other. These potential feedback processes may play a significant part in global climate change.

Sea ice undergoes one of the largest annual changes on the Earth's surface extending between a minimum of around 4 million sq km in late autumn to a maximum of around 19 million sq km in late spring. At times, sea ice covers up to 7% of the Earth's surface.

The New Zealand Sea Ice Group's work, involving scientists from Victoria, Auckland and Otago Universities assisted by overseas collaborators and managed by Haskell, is focusing on the physical processes that determine the extent and the concentration of the ice cover. The project's goal is an understanding of the processes involved in the break-up of a sea ice sheet.

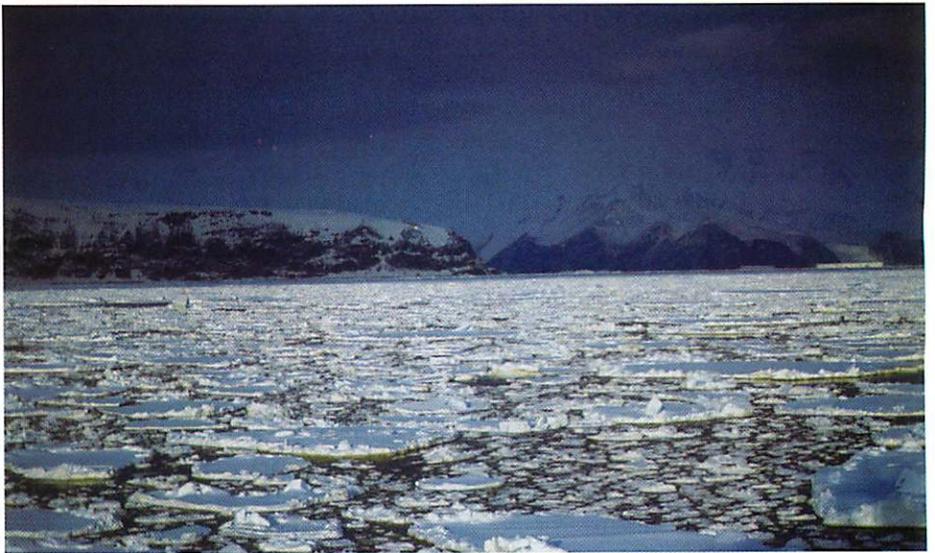
The group has divided the research into two parts. First they have to model the strain field induced in sea ice subjected to ocean waves and secondly model the response of the sea ice to this cyclic forcing.

Sea ice consists of pure ice platelets with inclusions of liquid brine. This brine may be enclosed in sub-millimetre scale pockets, or may be in channels that can extend almost right through the entire 2m thickness of the first year sea ice sheet, connecting tortuously with the underlying sea water.

Properties of the ice sheet depend crucially on the liquid content of the sea ice, which in turn is a function of temperature and salinity. Consequently all modelling of sea ice must be supported by a knowledge of the basic physical properties of the ice. Conventional methods of measuring physical properties of sea ice involve removing the ice from its natural surroundings. To overcome this limitation, a team from Massey University has used a specially constructed Nuclear Magnetic Resonance (NMR) apparatus to measure brine content and brine mobility.

In 1999 the New Zealand Sea Ice Group returned to Antarctica with a new NMR apparatus, based on a specially developed compact and portable spectrometer. This new system has become the nucleus of a New Economy Research Fund (NERF) project with the objective to develop a portable NMR system for industrial use. It's one of the interesting developments that science research can bring about, says Haskell.

One of the parameters with fundamental importance to heat exchange between the ocean and the atmosphere in polar waters is thermal conductivity. The Victoria Univer-



sity of Wellington team have been making high-resolution measurements of the temperature field in sea ice in winter and spring. Analysis of this data shows the effective thermal conductivity of the ice-brine mixture and its dependence on temperature and structure. It has produced results close to the values predicted thirty years ago.

The first accurate measurements of the thermal conductivity of sea ice and its dependence on temperature and depth were published in 2001, Haskell says. To enable further research a joint NZ-USA programme has begun, seeking to provide climate modellers with a way to relate thermal conductivity to ice temperature. The next few years' plan is to begin an investigation of horizontal heat flow by similar techniques.

Further studies conducted by members of the New Zealand Sea Ice Group include detailed measurements of the random-walk transmission of light through sea ice, finally establishing the depth and seasonal dependencies of the scattering length for light in sea ice.

The results provide a way to estimate the intensity of the light field in and under sea ice, that can be applied to understanding the growth of algae in the polar environment.

Haskell also reports about research on the mechanisms of platelet growth, a part of the programme being extended to determine the relationship between ice growth processes and the underlying oceanography of the Ross Sea.

A group from the University of Otago is developing a model for refrozen cracks which are a feature of land-fast sea ice sheets. This has already provided a model for fatigue failure of sea ice. Combined with information obtained from the modelling of wave propagation in sea ice sheets, this has led to a model for sea ice break-up under the influence of the marine wave field.

The group has developed mathematical methods to calculate how abrupt changes in thickness, or in the material properties of sea ice, affect the propagation of ice-coupled waves.

Ocean wave propagation, scattering and damping in the

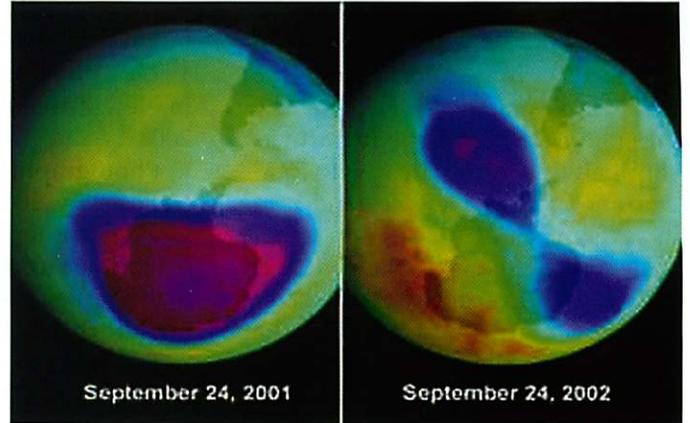
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Smallest Ozone Hole since 1988

Evidence is growing that Antarctica's ozone hole is the smallest it has been since 1988. It is now over two decades since mass spectrometer measurements of ozone density above Antarctica by the British Antarctic Survey led to the discovery of an "Ozone Hole". The Ozone layer is critical to the survival of life on earth as it acts as a shield against damaging ultra violet radiation. Every year scientists of many nations travel to Antarctica to take measurements in September when the ozone layer seems to be at its thinnest. The cold temperatures over the South Pole in August and September lead to the formation of thin clouds in which chemical reactions help gases to rapidly destroy the ozone. Thinning of the ozone layer also occurs at the North Pole but it is not considered to have the form of a hole.

Scientific results from Antarctica over many years have shown a steady increase in the size of the ozone hole that has led to global concerns about the use of chlorofluorocarbons and halons in refrigerators and hairsprays. These substances are responsible for breaking down the structure of the ozone molecule and cause depletion of the ozone layer.

For the last six years the hole above Antarctica during September has been over nine million sq miles in area. This year it was only about six million sq miles and was in the



form of two smaller holes. Paul Newman of NASA's Goddard Space Flight Center said "This is the smallest ozone hole since 1988, but that's still a lot of ozone loss."

The small size of this year's ozone hole appears to have been caused by unexpectedly large weather patterns in the stratosphere that have pumped ozone into the south polar region and warmed it up. Stratospheric weather over the pole during September is normally placid, allowing a large ozone hole to open up. But this year's warming of air has reduced the ozone loss, and two small holes have been created rather than one large one.

US Bulldozer to Find Land Route to South Pole

In early October, safely packed into a mammoth C17 Globemaster 3 aircraft, a D8 bulldozer was flown south to McMurdo as part of the US Antarctic Program. The 34 tonne machine took over half of the aircraft's 55 tonne capacity, contributing to the largest load ever flown to the ice. The machine was accompanied by 10 tonnes of steel beams and 10 tonnes of equipment for the Italian Base at Terra Nova Bay. Normally, loads as large as the bulldozer would be taken south by ship at the end of the season, but the American Program was keen to get the machine into action as early as possible.

The bulldozer will be used to find a way from McMurdo Station across the Ross Ice Shelf, up one of the outlet glaciers that drain the Transantarctic Mountains, and across the Polar Ice Cap to reach the American Base at the South Pole.

The reconnaissance trip will be part of an attempt to

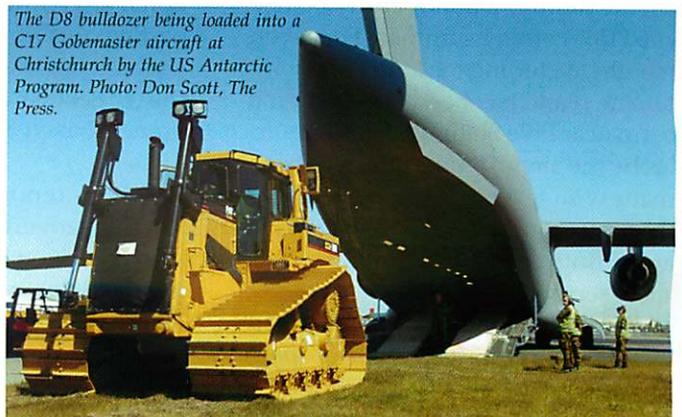
reduce South Pole Station's total reliance on air transport. The route the bulldozer will follow could be the same one used by Sir Edmund Hillary's tractor party during the Trans Antarctic Expedition of the mid 1950s. Part of the route is heavily crevassed and ground-penetrating radar will be used to locate the crevasses in front of the tractor train. The D8 will be used to bulldoze snow into the crevasses and to build ramps and cuttings through rough areas.

The rebuilding of South Pole Station has put tremendous pressure on C130 Hercules flights from McMurdo over the past few years. Last year there was a shortage of Hercules flights for various reasons, and Pole Station was not resupplied as fully as intended. This season there will be six LC-130 ski-equipped aircraft dedicated to the McMurdo-South Pole flight route and a total of 350 flights are planned.

Continued from Page 4

broken pack ice of the Antarctic marginal ice zone (MIZ) has also been modelled.

Leading a team supported by the US ice breaker *Nathaniel B. Palmer*, Haskell instrumented floes to find the relationship between wave period and wave length. The response of the land-fast ice sheet to a measured ice-coupled wave field of variable amplitudes can be found. The field experiments are making it possible to predict the lifetime of sea ice sheet as a function of significant wave height and sea ice brine fraction. – *Stephanie Klar*.



The D8 bulldozer being loaded into a C17 Gobemaster aircraft at Christchurch by the US Antarctic Program. Photo: Don Scott, The Press.

Artists on Ice

Fabric and fashion designer Fieke Neuman from Dunedin and musician Phil Dadson from Auckland are the 2002/2003 Antarctic Art Fellows. The programme, which is a joint partnership between Antarctica New Zealand and Creative New Zealand, is in its seventh year.

Ceramicist Raewyn Atkinson (Arts Fellow 2000) recently opened her very successful exhibition at the Dowse Art Gallery in Lower Hutt. Her work was complemented by a

poem especially written for the exhibition by Chris Orsman (Arts Fellow 1997). The exhibition will be on tour in New Zealand until 30 November 2003.

Photographic artist Anne Noble (Arts Fellow 2001) presented her first work from her Antarctic visit at an exhibition currently on in Wellington at the Bartley Nees Gallery. Auckland artist Richard Thompson opened his first Antarctic exhibition at the Gow Langsford Gallery in mid-June.

Antarctica Yacht Cup Race

Six syndicates have so far registered for a proposed 23,000 km "round Antarctica" yacht race planned for 2004-2005. A minimum of ten entrants are needed by the race organisers, who will arrange the construction of 10-15 identical 25 metre yachts. The entrants so far are two from Australia, two from the USA and one each from the Netherlands and the United Kingdom. Other syndicates are showing strong interest according to the race Chairman Bob Williams.

The race organisers, Antarctica Cup Pty Ltd based in Australia, have appointed the Fremantle yacht builder "Oceanfast" to construct up to 15 maxi yachts for the race. Each group has to pay an entry fee, and will receive their yacht only two months before the start of the race,

giving a very short time for crews to fine-tune their craft.

The race is scheduled to start in Fremantle December 2004 and the yachts will return there about 45 days later after circumnavigating the Antarctic continent. The journey has been divided into 11 legs, and at the end of each leg the yachts must sail through a narrow "gate" to continue.

Bob Williams said this arrangement, plus the fact that all the yachts will be identical, will mean that the boats will be operating very close to each other and will be able to provide assistance to each other in any emergency. The yachts will be designed to take account of the difficult conditions found in the Southern Ocean, and many of the 14-man crew on each boat will have sailed in those waters before.

Russian Plane Awaits Rescue

The Russian registered Antonov-3 (An-3) aircraft that was stranded at the South Pole last January due to engine failure, will hopefully be rescued this coming summer. For seven months, including the long Polar winter, the plane has been tethered on a berm near Pole Station. Initial enquiries by the aircraft's owners have been made with several air operators about flying in a new engine, technicians and pilots to make the plane once more serviceable.

Fourteen people became stranded at the Pole in January; half of them

part of a private expedition and the other half Russian government officials. Adventure Network International (ANI) flew the seven private participants from the pole at a cost of US\$ 25,000, this being additional to the US\$8,000 already paid to the French-based Polar Circle Expeditions.

Media reports suggest that the Russian government officials were flown to New Zealand by the US National Program at a total charge of US\$56,000.

Big Tour ships a Liability?

Last season Holland America Line's giant ship *Ryndam* carried 2500 passengers to the Antarctic Peninsula over two voyages. In July the shipping line became a full member of IAATO (International Association of Antarctica Tour Operators).

On 11 August 2002 the 55,451 tonne ship found itself in trouble in Alaskan waters, raising concern about a ship of this size being used in Antarctica. The ship lost electrical power while passing through the 10 kilometre wide Lynn Canal in south-eastern Alaska. The on line electrical generator at the time shut down unexpectedly and steerage was lost for about 20 minutes. Because the water was too deep to anchor, the ship drifted until power could be restored. Fortunately the weather at the time was "good". A tug was quickly sent out from a nearby port but the ship regained power and steerage before it arrived. Holland Line insists that the ship was never in any danger, although some dangerous reefs occur in the Lynn Canal. An investigation has begun to determine exactly why the power cut out so suddenly.

A week after this incident, while in the Alaskan port of Juneau, *Ryndam* accidentally discharged "partially treated waste-water" into the sea from its sinks, showers and sewage system. The shipping line believes only about 1,200 litres were discharged, but the USGS suggest the figure may be closer to 18,000 litres. A new Alaskan law regulates discharges from tour ships within three nautical miles of land, and Alaska's Department of Environmental and Conservation (ADEC) is considering fining the company. There has been considerable debate over recent years about the impact of cruise operations on Alaska, after their significant increase.

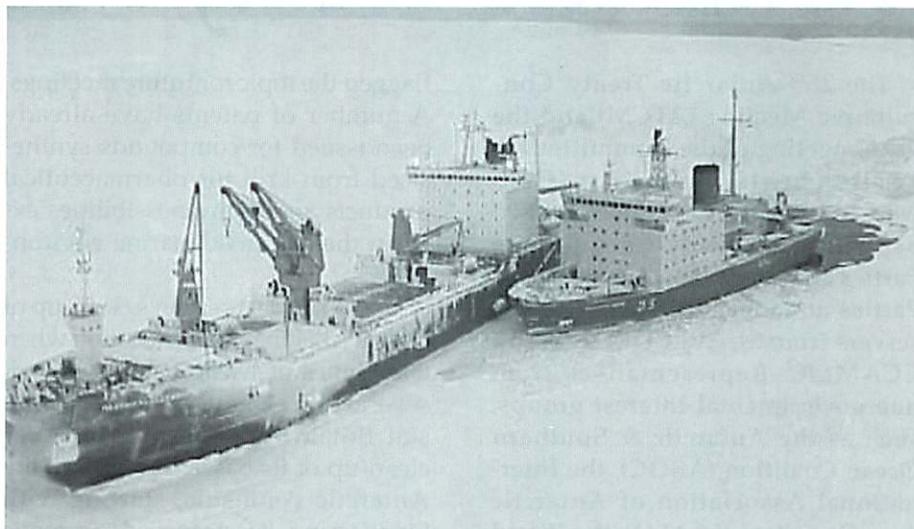
Next season, early in 2003, the *Ryndam* will conduct her third voyage to the Antarctic Peninsula. The questions now being asked are what if the same unexpected accidents happen while the ship is in the Antarctic Peninsula, and what environmental disasters could they lead to?

Winter Ice-Trap for Research Vessel

Antarctica in winter is no place for a ship, as the *Magdalena Oldendorff* discovered this year to its cost. On 11 June 2002 the ship encountered a wide belt of thick ice along the Princess Astrid Coast of Queen Maud Land and, after attempting to escape, become frozen into the ice at Muskegbukta Bay.

The 21,000 tonne Liberian-registered research vessel, built in 1983, is owned by Oldendorff Carriers, Germany, and was under charter to the Russian Antarctic programme. During the 2000/2001 season the *Magdalena Oldendorff* had served as the support ship for the 20th Indian Antarctic Expedition, leaving the party at the Indian Maitri Base before returning to Cape Town. At the end of the 2001/2002 season the ship had revisited Maitri and was later returning from the Novolazarevskaya research base when it found thick ice blocking its route. Most ships are well away from the Antarctic coastline by the end of April, but the German ship had stayed later than usual so that the sea ice would be thick enough to allow some heavy machinery to be unloaded onto it.

The *Magdalena Oldendorff* has a strengthened hull and is ice-class 1A Super certified, which is the highest ice-class in Lloyd's register.



Muskegbukta Bay is considered a safe place due to the low ice thickness and pressure. The ship will not attempt to get out until October at the earliest. It is just over 100 years since the first ship survived an Antarctic winter - the *Belgica* - which became trapped in the ice in 1898.

The ship had already supplied several research stations with food and equipment for the Russian Arctic and Antarctic Research Institute (AARI) and was on its way back to Cape Town. On board were 79 Russian researchers and a multinational crew of 28. The vessel apparently drifted 350 km (218 miles) westwards in the ice

floes, before calling for assistance. There was voluntary food rationing for a time.

On 16 June the South African ship *Agulhas* left Cape Town carrying two South African Air Force 22 Squadron Oryx M2 helicopters. The ship is owned by South Africa's Department of Environment and Tourism, and is operated by SMIT Marine. It has a reinforced hull but is not an icebreaker. The helicopters rescued most of the ship's crew and scientists, leaving only a skeleton staff to man the ice-bound ship.

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Russia Takes Legal Action over Trapped Ship

A German shipyard was to blame for the marooning of a 79-man Russian research mission in pack ice, alleges the head of the expedition Valery Lukin. The expedition required recovery by a South African ship. Legal action was being taken against Motorenwerke Bremerhaven (MWD) for failing to repair the icebreaker *Akademik Fyodorov* at Bremerhaven in time for it to accompany the research mission to Russia's Novolazarevskaya base.

"The *Akademik Fyodorov* was under repair at MWD and was being readied to go to the Antarctic, but during tests (last November), its engine broke down and it couldn't leave

port," Lukin said from his St Petersburg headquarters. "We believe that specialists carrying out the repairs at the shipyard caused the damage to the vessel." He said that the case would come before a Stockholm-based international maritime arbitration panel. The shipyard denies that it was responsible.

The 79 Russian scientists who were airlifted by helicopter from the *Magdalena Oldendorff* to the *Agulhas* arrived in Cape Town to a great fanfare, although Dr Boris Bartashevich, a Russian expedition doctor, told reporters that the vessel had never been in any danger and that the group did not view the operation as a rescue.

Australians to Take to Air in Antarctica

Plans are underway to establish an Australian Air Transport system that will be fully operational for the 2003-2004 season. It will increase opportunities for deep field exploration by Australians in Antarctica. A three engine Falcon 900 Business Jet with space for 16 personnel will fly from Hobart to Casey, landing on a new ice runway 600m above sea level. A CASA 212 airplane, capable of moving 18 personnel as well as cargo, is likely to ferry scientists into the remote interior from Casey and Davis stations. The CASA 212 is reputed to have double the payload and range of a Twin Otter.

Antarctic Treaty Meeting 2002

The 25th Antarctic Treaty Consultative Meeting (ATCM) and the Fifth meeting of the Committee for Environmental Protection (CEP) were held in Warsaw, Poland, 10-25 September. Twenty Consultative Parties and seven Non-Consultative Parties attended, together with observers from SCAR, COMNAP and CCAMLR. Representatives from non-governmental interest groups, such as the Antarctic & Southern Ocean Coalition (ASOC), the International Association of Antarctic Tour Operators (IAATO), the World Meteorological Organisation (WMO) and the World Conservation Union (IUCN) attended as observers.

Russia submitted an Initial Environmental Evaluation report (IEE) in preparation for an upgrade of its ice runway at Novolazarevskaya. There is speculation that the runway may be used for future tourist flights.

Russia also tabled a paper signalling its intent to extend the Lake Vostok drill hole 50 m more during 2003/2004, with further drilling down to the water/ice interface (c. 3663 m depth) in 2004/2005 season and actual lake penetration in 2005/2006. An IEE will be presented. France has been given responsibility for an intercessional group to report and advise the next CEP meeting on key issues such as accidental contamination of the lake, ability to manage an emergency situation, and deformation of the drill hole.

The Czech Republic moved the site of its proposed summer station from Turret Point on King George Island to Brandy Bay on James Ross Island after concerns had been raised about its location. A comprehensive Environmental Evaluation (CEE) will be presented at the next CEP meeting. The Czech Parliament is expected to ratify the Madrid Protocol in January 2003.

Following the application for two patents in the United Kingdom relating to bioactive compounds for pharmaceutical purposes found in Antarctic freshwater biota, the meeting addressed several difficult issues and

flagged the topic for future meetings. A number of patents have already been issued for compounds synthesised from krill for pharmaceutical products and many possibilities exist in the Antarctic marine environment.

Following last season's clean-up of Russia's Bellingshausen Station when 800 tonnes of waste were removed, several other countries are following suit. Britain has begun a major 5-year clean-up of its bases throughout the Antarctic Peninsula, starting with Signy Island. It is proposed to remove disused base facilities in some cases. The estimated cost is four million pounds. Australia raised interesting issues of cultural and heritage versus clean-up. Some old bases are regarded as historic sites, so should they be removed? And who decides the criteria for what is "historical" or not?

New Zealand's Environmental Report on the Ross Sea Region has received wide recognition as a "best practice" example of State of the Environment Reporting (SOER) that should be followed by other countries. Australia has expressed concern over the costs and currency of information related to SOER and has developed what they see as a compli-

mentary low-cost web-based system for monitoring 67 environmental indicators. It was agreed by the meeting that New Zealand and Australia should join forces to produce a paper to be tabled at the CEP VI meeting.

Progress continues on the establishment of an Antarctic Secretariat in Buenos Aires, Argentina, but this may not happen for several years as some fundamental issues about cost sharing will need to be resolved first. The estimated annual cost of the secretariat is US\$650,000, which includes a salary for the Executive Secretary of US\$115,000.

Tourism remains a significant issue for both CEP and the ATCM. A move by the UK to restrict access to Port Lockroy to all but IAATO tour operators was opposed by ASOC. Italy is actively discouraging adventure tourism in the Terra Nova area to avoid any impact on its science programme. France has withdrawn its controversial proposal of a tourist mooring tax for ships.

The development of guidelines for Antarctic shipping was seen as a Treaty priority. IAATO has been a firm advocate of tourism guidelines as it considers most legal mechanisms in terms of the Treaty are not enforceable.

High School Students to Visit Antarctica

Four students from St. Bedes College in Christchurch will visit Antarctica this year, says Antarctica New Zealand.

In addition, a group of educators including Bu Windsor from Mt Cook Primary School, Jane Ellis from Middleton Grange in Christchurch, Jane Abbiss and Murray Fastier from the Christchurch College of Education will also go to Antarctica.

Paolo Bernat who is in charge of the cultural and educational department of the Museo Nazionale dell'

Antarctide in Genoa, Italy, will accompany the New Zealand education Group as part of a joint education project with the Italian Antarctic Programme.

A familiarisation visit to Antarctica will include individual educators from Kelly Tarlton's Underwater World in Auckland, the Antarctic Attraction in Christchurch, the RNZRAF Museum at Wigram in Christchurch and a librarian from the Geography Department at the University of Canterbury.

Chief Executive of Antarctica NZ Retires

On 31 July 2002, Gillian Wratt retired after 10 years of dedicated service to the New Zealand Antarctic Programme. Gillian's arrival roughly coincided with the restructuring of the old Antarctic Division of DSIR and the formation of NZAP, the New Zealand Antarctic programme. The previous Manager, Hugh Logan, had left the programme for a position with the Regional Conservancy for Nelson & Marlborough May 1991, later moving to higher positions within DOC and the Government. For over a year Dave Geddis as Acting Manager, ably held the management reins before Gillian was chosen as NZAP Director.

Gillian had a Masters in Business Studies from Sydney University, and a BSc Honours degree in Botany from

Continued on Page 31



Gillian Wratt on the ice during the 2000-2001 summer.

*Winter Ice-Trap for Research Vessel
Continued from Page 7*

In an attempt to rescue the *Magdalena Oldendorff* before the winter progressed any further, the Argentinean ice-breaker *Almirante Irizar* under the command of Captain Benmuyal, left Buenos Aires 25 June, picking up extra supplies from Puerto Galván near Bahía Blanca, including two Argentinean Sea King helicopters from the Second Naval Air Helicopter Squadron. The ice-breaker arrived alongside the German ship on 19 July after punching its way through the ice. For 10 days both vessels attempted to break through the ice together, using the helicopters to scout out open water leads. This proved to be extremely difficult.

The 14, 899 tonne *Almirante Irizar* had been built in Helsinki, Finland in 1978, and had served in Antarctic waters every year since then. It had the capability of breaking through ice up to 5.6 m thick and was kitted out to over-winter with 200 persons aboard. It had the distinction of being the first ice-breaker to have been built with its main engines placed

'one deck up' to provide better open water travel.

The Swedish icebreaker *Oden* had also been requested to join the rescue in case the Argentinean ship was unable to cut a path out through the ice, and had left the Baltic Sea on 28 June, expecting to reach Antarctic waters five weeks later. Before its arrival, however, the ship was ordered to turn around and return home to Luleå.

On 30 July a tough joint decision had to be made by the captains of both ships, the owner of the *Magdalena Oldendorff*, and the Argentinean Navy. Adverse ice conditions, coupled with the German ship's lack of manoeuvrability in very close ice conditions, presented a serious risk to the safety of the ship and its crew. There was also the potential for an ecological disaster.

It was decided to find a safe position in the ice for the *Magdalena Oldendorff* to over-winter, and the bay behind the Trontungla Muskegbukta Peninsula was selected as it provided shelter from winds, marine currents and drifting ice.

Fifteen crew members and one

Argentinean Navy Medical Officer, Lt Juan Carlos Compana, now remain on board the *Magdalena Oldendorff*. Captain Ivan Dikiy is quoted as saying that the mood aboard the ship was good. "To support this, sweets, cigarettes and sometimes a beer will be provided to the crew", he said. Crew members have a library, a gymnasium and 500 video tapes.

After leaving fuel and provisions with the stranded ship, the *Almirante Irizar* then found itself faced with the task of itself escaping across 1200km of ice to reach open water. It followed leads first eastwards, and then turned north, finding that the increased light allowed them to make at least two reconnaissance flights per day. Enduring heavy snowfalls and dense fog banks, the ship finally broke out into open water 7 August, despite predictions that it too would be forced to winter-over in the ice. On 18 August, with a weary crew, the *Almirante Irizar* arrived in Buenos Aires to be greeted by many other vessels and an enthusiastic crowd of 5000.

Anthrax Check at Historic Hut



Scott's Hut (Cape Evans) Photo: Ed Anderson

Samples of soil, organic matter and dung were taken from Scott's Hut at Cape Evans during the 2001/02 Season at the request of Antarctic Heritage Trust, to determine whether Anthrax spores were present. These samples were analyzed by researchers at Waikato University under strict MAF quarantine conditions. With Anthrax in the news, many people were surprised to hear that the preliminary results from the analyzed samples returned positive for Anthrax DNA detection. The preliminary tests were however inconclusive and Professor Roberta Farrell, the lead researcher on the project at the

University of Waikato, recommended further testing and attempted culturing from the samples to determine if viable Anthrax was present. Over the period that the tests were conducted, Scott's Hut was out of bounds to all Antarctic personnel.

Conjecture and rumor have always suggested that Anthrax spores have existed at the site since the time of the Terra Nova Expedition, when animals and foodstuffs brought to the ice by the explorers might have carried the disease. Anthrax is an acutely infectious, but treatable disease, caused by the spore-forming bacterium. *Continued on Next Page*

New Scott Base Sewerage System

The 2002/2003 season will see the commissioning of a new wastewater treatment plant for New Zealand's continuously occupied Scott Base. The plant is the result of more than two years work by Antarctica New Zealand operations and environmental staff with the help of external specialists. While the technology used is not unique, the plant was specially designed in New Zealand to meet the particular needs of wastewater treatment at Scott Base, which produces 17,000 litres of wastewater per day.

The wastewater plant will treat all human waste and grey water (e.g. washing water) by a process of screening, clarifying, biological treatment and finally disinfecting. The plant replaces the old system where human waste and grey water was only macerated before being discharged into the sea in front of the base. Some of the treated water produced by the plant will be recycled for use in the base's flush toilets.

The treated water will be of shellfish and swimming quality and the new system will exceed international agreements for environmental protection that are in force in Antarctica. The existing wastewater outfall appears to have had only a slight and highly localized effect on the environment, but the very small risk of uptake of pathogens or genetic material from wastewater by native organisms was considered potentially serious. Ultraviolet disinfection before disposal of treated wastewater will mitigate this risk.

Shanghai venue for COMNAP 2002

Tourism on the ice was one of the agenda items for the annual meeting of the Council of Managers of National Antarctic Programmes (COMNAP) was held in Shanghai, China, 15-21 July 2002. The Council was established in 1988 to bring together managers of national agencies responsible for the conduct of Antarctic operations in support of science. Membership of COMNAP is open to national organisations responsible for planning and conducting research in Antarctica provided their government is a party to the Antarctic Treaty.

The objectives of COMNAP are to review regularly operational matters and provide expert advice to the Antarctic Treaty Consultative Meeting (ATCM). It also advises the Scientific

Committee on Antarctic Research (SCAR) about science and operations/logistics, and, in conjunction with this body, provides an appropriate forum for discussions on international collaboration in operations and logistics.

This year topics discussed included the impact of tourism on national programmes, air operations over the continent, waste disposal concerns and environmental training.

The meeting accepted the proposal for the COMNAP secretariat to remain in Hobart.

The next COMNAP meeting is planned for 7-11 July 2003 in Brest, France.

Several meetings followed the COMNAP meeting and acronyms

abounded. First off was the SCALOP Symposium (Standing Committee on Antarctic Logistics and Operations). This included presentations on over winter psychology, honesty in Antarctic medicals highlighted by problems caused by non-disclosure by Antarctic staff, telemedicine, environmental power (solar and wind) and infrared imagery for crevasse detection.

There were also presentations on CEDAT (Coordinating Group on Education and Training), CENMAN, ELG and TANGO (Tourism and NGO Working Group). The meetings ended with a series of COMNAP/SCAR presentations that highlighted several current scientific research projects.

Canterbury Museum to Manage Heritage Database

Antarctic Heritage Trust has contracted Canterbury Museum, Christchurch, New Zealand, to establish and manage a database of the artefacts associated with the Antarctic huts and depots under the Trust's care.

The Antarctic Heritage Trust is focused on conserving the legacy left in the Ross Sea region by the first explorers. This includes the huts left by the early 20th century explorers Scott and Shackleton, which have huge international heritage significance.

The Trust has launched an intensive fund-raising campaign with the aim of restoring these huts, and the artefacts associated with them for future generations to enjoy.

Antarctic Heritage Trust Executive Director Nigel Watson says, "A vital part of this process is recording all the artefacts that are involved and any information relating to them.

"Canterbury Museum holds the world's premier institutional collection of Antarctic artefacts and has the expertise to establish and manage the Trust's artefact data."

The task involves recording and tracking of the condition, locations, description, classification and materials of every artefact in the huts and depots in Antarctica managed by the Trust.

A conservator and polar historian will travel to Antarctica this summer to continue the task of recording information about each of the artefacts located at the historic huts.

Approximately 600 artefacts were documented over the 2001/02 summer season at Cape Royds and have been entered into the new database.

The types of artefacts involved range from cases of Frys Chocolate, tins of C&E Morton Ltd tripe and onions, tea-towels and dog harnesses. Watson says the artefacts have decayed or rusted considerably over the years and are in dire need of treatment.



Doug Rogan, Canterbury Museum Collections Manager – Documentation (left), explains the database to Antarctic expert David Harrowfield (right).

Canterbury Museum Collections Manager-Documents, Doug Rogan, says this is a perfect opportunity for two organisations, with responsibility for collecting, preserving and researching natural and cultural heritage, to contribute their respective strengths. It will greatly enhance the public profile and accessibility of heritage Antarctic objects.

Canterbury Museum installed a collection software database in June 2001 for its own Museum collection with funding from the Lottery Grants Board.

The Lottery Grants Board has also provided funding for data entry operators who have keyed an initial 200,000 database records, relating to items within the Museum's collection. In the end there will be more than 2 million collection items available.

Each database record has a digital photograph attached to it. It is expected to take ten years to add all ar-

tefacts to the database, which will be invaluable to the Museum for collections management, security and improving public access to collections.

Anthrax Check at Historic Hut Continued from Previous Page

terium *Bacillus anthracis*. It was believed that Anthrax spores could have survived over all these years even in the extreme Antarctic environment.

Testing of six samples at the National Centre for Disease Investigations was unable to culture viable anthrax from the samples. Further testing on samples collected this coming season is scheduled as part of a scientific study. In the meantime, University of Waikato and Ministry of Health experts concluded from the results that the chances of viable anthrax existing in Scott's Hut are negligible. The Hut has therefore been reopened to Antarctic personnel.

A Flutter with the Heart of the Antarctic

By Colin Monteath

"Come in laddie and warm yerself by this roarin' candle"
The Goon Show – The Treasure of Loch Lomond.

Despite the blizzard raging off Ross Island we knew there wouldn't be a second chance to leave the *Frontier Spirit* and establish our base camp at Cape Royds. With icy pellets peppering the windscreen, the helicopter tilted then lurched violently from the deck, disappearing in seconds into a swirling wall of sleet. From Cape Bird we juddered 30 cautious kilometres around a coastline choked with heaving ice floes, gingerly feeling our way down to the surface near Shackleton's hut amid plumes of blowing powder snow. With summer already on the wane in mid February and storms increasingly frequent, the five of us used our climbing ropes to secure the helicopter and our tents to the volcanic scoria at the campsite. Raucous calls from moulting penguins emphasised our proximity to the most southerly Adélie colony.

From the outset it had been a wild idea. Over the 30 year history of Antarctic seaborne cruising no ship had ever entered the Ross Sea twice in a single summer. So, in 1990, when Quark Expedition's *Frontier Spirit* (now called *Bremen*) decided to orient its maiden season around a voyage to Douglas Mawson's *Home of the Blizzard* hut at Commonwealth Bay and then two visits to the Scott and Shackleton huts on Ross Island, the Australian adventurer Mike McDowell and I immediately decided to embark on a small private expedition. We planned to leave the ship on the first cruise into the Ross Sea, reboarding several weeks later when the vessel returned from New Zealand with another load of passengers. Driven primarily by a desire to climb in the Dry Valleys of southern Victoria Land, we also wanted to make an ascent of Mt Erebus if time

permitted. (In 1988, Mike McDowell and Greg Mortimer became the first Australians and I the first New Zealander to climb Vinson Massif, Antarctica's highest peak.)

There was only one catch. To reach the Dry Valleys from Cape Royds, we needed a helicopter to cross the 80 km of open water between Ross Island and the mainland. When Japan's premiere wildlife photographer Mitsuaki Iwago and his television director Kosaki offered to pay the hefty bill for both the jetranger and the Australian pilot Leigh Hornsby, Mike and I grinned to each other. We then rushed into Hobart to advise the Australian Antarctic authorities of our intentions and to buy a year's worth of supplies. Although the expedition was planned to only last three weeks, we had to cater for the possibility of the ship not returning to pick us up, forcing us to spend the winter on Ross Island. I bought a fishing line in case the food ran out!

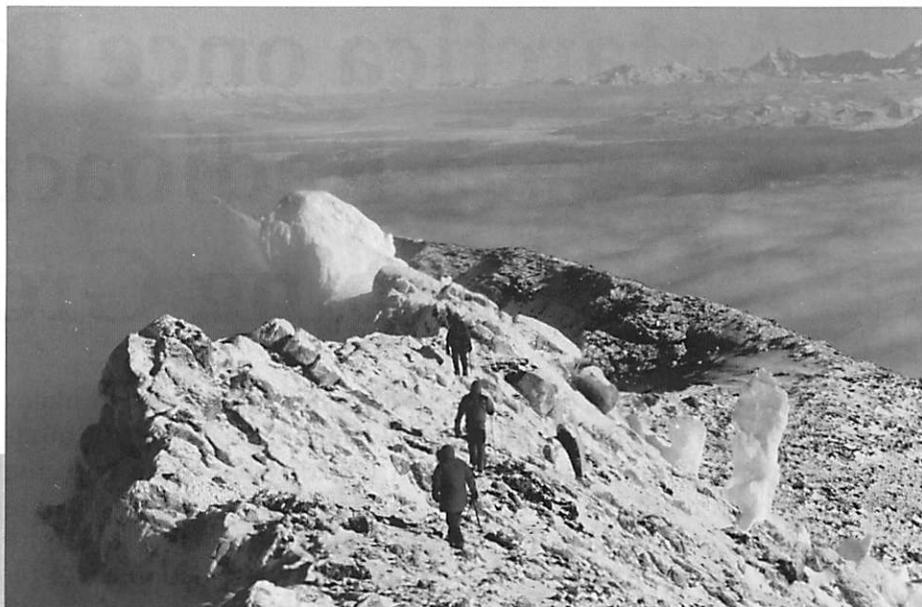
Cape Royds, the most inspiring historic site in Antarctica, was cast into the limelight following Ernest Shackleton's 1907-09 British Antarctic Expedition. The official account, *The Heart of the Antarctic*, documents the journey from Royds across the Ross Ice Shelf to discover the Beardmore Glacier, gateway to the South Geographic Pole. Though Shackleton turned back on the Polar Plateau 180 km short of the pole, the explorer's sterling effort was lauded in Britain, rewarding him with a knighthood. Frank Wild had stood beside Shackleton at the furthest south, cementing a relationship that led to Wild's participation in the *Endurance* expedition. While it may seem curious that Shackleton was the first to try and haul loads across a soft Ice Shelf with ponies – animals that need to pull all their own food compared with huskies that, when other food is finished, can eat each other – it should be remembered that he was also the first to experiment with the precursor of modern tracked vehicles.

Meanwhile, on a 1600 km sledging journey north from Royds, the wandering South Magnetic Pole was reached by a party led by Shackleton's men, geologists Douglas Mawson and 50 year old Edgeworth David, and Alistair Mackay. (At the Magnetic Poles the compass needle stands vertically as opposed to the Geographic Poles that mark the axis of the earth's rotation.) Completing the first ascent of the 3794 m Erebus in March 1908, the two remarkable Australians Mawson and Edgeworth David were able to collect unique crystals from the crater rim of the active volcano steaming away on their doorstep.

Back in the 1980s, when I worked for the New Zealand Antarctic Research Programme, I have fond memories of spending time in Shackleton's ice-sheathed hut during a blizzard. The musty smell of reindeer sleeping bags pervaded the drift of my mind while the clutter of cherished artefacts was barely visible in the heroic glimmer. I daydreamed, listening to the ghostly chatter of Frank Wild and Ernest Joyce in the *'Rogue's Retreat'* as they cranked up the Albion printing press (with a candle underneath to keep the ink warm). Yarning the night away in a fug of pipe smoke, they turned out pages for *Aurora Australis*, the first book written, illustrated, printed and bound in Antarctica. Wind worried the hut all night – the bleached timbers creaking and groaning like Shackleton's ship *Nimrod* wracked by the Ross Sea. And then a husky howled.

Leaving Mitsuaki, Kosaki and Leigh in camp, Mike and I skittered over the Barne Glacier to Cape Evans so we could meet and discuss plans with American Keith Swenson and his four Greenpeace teammates snug for the winter at World Park Base. From here, the next morning, Leigh whisked us across McMurdo Sound to a campsite high in the Asgaard Range. Autumn snow blanketed

Right: Mike McDowell and Greenpeace team-members on the crater rim of Mt Erebus. McMurdo lies under low cloud. Photo: Colin Monteath.



Left: Fumeroles on Mt Erebus silhouetted against a McMurdo Sound sunset. Photo: Colin Monteath.

much of the Wright and Taylor Dry Valleys. A glorious week was spent in windless conditions climbing easy though spectacular sandstone peaks such as Brunhilde. We also went for long cold walks from a campsite under Mt Dido in the Olympus Range to marvel at massive icefalls cascading from the Polar Plateau. With the United States and New Zealand science programmes shut down for the winter, it was a special feeling to scramble along an ethereal ridge and realise that, as the only people in the entire 3000 km long Transantarctic Mountains, this must be where the world ends.

Back at Cape Royds, in early March, Keith Swenson and Vojtek Moskal joined Mike and I to make a two day ascent of Erebus. The four of us cramponed across oceans of wind-sculpted sastrugi and clawed our way up searingly-white snowfields that merged into rocky gullies near the top. Swaddled in down jackets, the three hour circuit of the crater rim in

a temperature of minus 45 °C was just bearable due to a complete lack of wind. Beneath us, McMurdo Sound was engulfed by a blanket of backlit cloud as the sun plummeted behind the 4000 m summits of the Royal Society Range. Two hundred metres below our perch, through billowing clouds of steam and sulphurous gas, we managed a brief, exciting glimpse of Erebus's molten lava lake. For me, this brought a vivid recollection of three science expeditions that I had taken part in during the 1970s. On one crazy escapade, a combined US-NZ-French expedition in 1978, I abseiled down the 100 m wall of the Inner Crater to within a whisker of the bubbling lava lake.

Before commencing our descent to Cape Royds, the four of us crossed to a cluster of 20 m high chimney-like fumeroles and hacked our way inside the ice towers for a sauna in the hot soil. Crawling outside again from the balmy atmosphere inside the fumerole, our moisture-laden cloth-

ing froze instantly into suits of armour. Anticipating an imminent rendezvous with the ship, we clanked rapidly downward, taking only six hours from the summit to the sea.

With the camp all but dismantled, and our garbage and human waste packaged for removal to the ship, we eagerly awaited the *Frontier Spirit* rounding the headland, slicing through a stained-glass sea. Normally when climbing in remote places I am getting further away from my family. This time, as I boarded the helicopter for the last time, the reality finally sank home that my wife Betty and daughters Denali (13) and Carys (10) were getting closer by the minute. After years of being left behind while I roamed the continent they were actually here, on board *Frontier Spirit*, experiencing the wonders of Antarctica for themselves. I'll never forget the sparkle in their eyes as the helicopter engine wound down and I crossed the heli-deck to hug them.

Antarctica once Proposed as a Radioactive Dumping Ground

Recently declassified documents released by the Ministry of Foreign Affairs and Trade (MFAT), and their transfer to the New Zealand National Archives, show that 30 years ago American scientists planned to use the Antarctic icecap as a tomb for the world's radioactive waste. The documents, received by New Zealand in the early 70s, include a letter from the New Zealand Ambassador to Washington, the late Lloyd White, who urged New Zealand to think carefully about a response, especially considering the world's rather suspect nuclear safety record at the time.

The original proposal for the Antarctic as the world's dumping ground was made by Professors Ed Zeller, Gisela Dreschoff and Ernest Angino of the University of Kansas. Since 1943 America had accumulated 300,000 tonnes of high-level radioactive waste that was being kept in cooled containers while the Atomic Energy Commission looked for a permanent disposal site. The scientists suggested nuclear waste could be embedded in a solid glass matrix and left on the ice cap in containers, which they estimated would sink into the ice at a metre a day. They calculated that it would take five years for the containers to reach the underlying bedrock, where they would remain for millions of years.

A paper written by these American scientists entitled "Antarctica – a potential international burial area for high-level radioac-

tive wastes" outlined the major problem that was facing the modern world; what to do with the radioactive waste that was being generated by nuclear reactors. Since 1944 there had been 14 reports of leaks involving 1300 tonnes of nuclear waste. They pointed out that a disposal site had to be safely isolated from the biosphere for about 250,000 years, must be safe from sabotage or accidental entry for the same period of time, must be safe from natural disasters such as earthquakes, hurricanes, floods etc., and "must not destroy or prevent the use of a potentially needed resource for the future". The Antarctic ice cap, with its lack of flora and fauna, its designation as an international territory accessible to all, seemed the ideal locality. Added to this was the concept, at that time, that the ice cap was an isolated entity and sealed the bedrock beneath it.

Modern research has told us otherwise. Lakes are present between the bedrock and the thick icecap, and with some sub-ice cap areas well below sea level, there is always the potential for some kind of leakage into the surrounding oceans. At present there is great discussion about whether the largest of these sub glacial lakes, Lake Vostok, should be drilled into or left in isolation. Hearing about the historic concept from which containers of radioactive waste could have ended up in Lake Vostok is enough to make today's scientific and political communities shudder. On May 1,

1973, a resolution "On the Disposal of High-Level Radioactive Materials in Polar Ice Sheets" was endorsed by the Glaciology Panel of the Committee on Polar Research of US National Academy of Sciences – National Research Council. The resolution included the "the urgent need to investigate thoroughly the geophysical basis for, and implications of such an ice sheet disposal scheme, so that its feasibility can be evaluated, and its merits properly weighed against alternative methods of storage". Although the Antarctic Treaty prevented nuclear material being brought to Antarctica, Zeller, Dreschoff and Angino believed that there was scope for amendments to the Treaty legislation.

It appears that there were enough checks and balances in those days for the proposal to quietly sink out of sight after discussion that claimed the entombed waste could "trigger a series of catastrophic events" including the melting of the icecap, a global rise of sea level and the contamination of the oceans around Antarctica. Over the years the world has become much more environmentally concerned about the purity and quality of the Antarctic and Arctic environments, and with the Madrid Protocol firmly in place and an increasingly effective Treaty management structure, there is little chance that the polar ice caps will ever now be considered as potential locations for global nuclear dumping grounds.

NZ Post Antarctic Research Scholarship Awarded

Christine Elliott, a PhD student in geography from the University of Canterbury is this year's recipient of the New Zealand Post Antarctic Research Scholarship.

She will conduct research on improving the understanding of the effectiveness of rock weathering processes along a moisture gradient on the Victoria Land coast.

Improving knowledge of the rate at which rock weathering occurs will help scientists understand how landscapes evolve, which has links with research in climate change, says Antarctica New Zealand. This research is particularly significant in Antarctica where the ecosystem is fragile and rates of change are very slow.

There are two more major components to research that Elliott hopes to complete. The first is to identify the individual weathering processes that operate along the Victoria Land coast moisture gradient and the second is to estimate the rate at which rock breaks down into soil.

This Antarctic season, Elliott will concentrate on fieldwork near Lake Vida in the Victoria Valley, which is situated approximately 1.5 hours by helicopter from Scott Base. She will also complete fieldwork at Marble Point on the Antarctic coast.

Air temperature, relative humidity, wind speed and direction as well as solar radiation will be recorded as part of the fieldwork. Data will also

be collected on the surface and subsurface temperature and moisture levels of selected rocks. Close up photographs of the rock surface will be taken at the beginning and end of the research. Collected rock samples will be subjected to simulated climatic cycles to estimate weathering rate on return to New Zealand.

Two visits to Antarctica will be made this season, the first for three weeks in October when initial weather and rock strength observations were scheduled and equipment set up to automatically record the surface and subsurface temperature and moisture content of rocks.

A second visit will take place in January to collect the temperature and moisture data as well as dismantle the remaining equipment at each site.

New Zealand Post has supported post-graduate Antarctic Scholarships since 1995. Each scholar is presented with \$10,000 by New Zealand Post, which allows the recipient the opportunity to conduct research in Antarctica.

Past New Zealand Post Research Scholarship winners have studied topics as diverse as sea ice distribution using satellite imagery, the formation of Antarctic beaches, a study on whether the poultry virus (IBDV) could be found in Adelie Penguins, and the physical make up of glaciers in the Antarctic.

weights onto them until they woke up. They discovered that the penguins were twice as difficult to wake up in the afternoon compared to the morning, and needed a greater number of 100 gram weights hung on them to rouse them. It appears as if the birds can sink into a much deeper sleep when the activity of the colony drops off in the afternoon.

*Emperor Penguins.
Photo: Margaret
Bradshaw.*

Cape Crozier Sighting of Penguins

The sighting of Emperor penguins at Cape Crozier, Antarctica, gives some hope to scientists and penguin researchers that fears of severe penguin losses due to the break up of icebergs at the end of last season may have been unfounded.

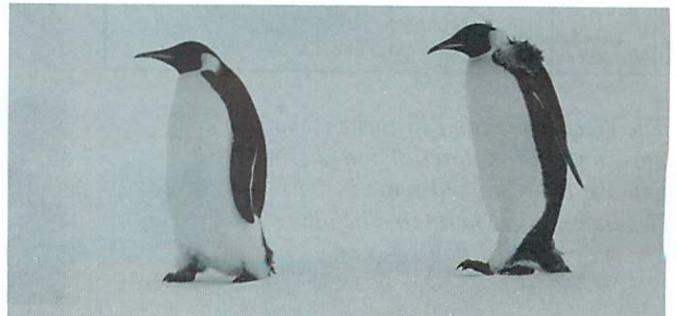
Chief Executive of Antarctica New Zealand, Lou Sanson says the penguins were sighted on a return flight to Christchurch from McMurdo Sound in late August as part of the normal Win-Fly Antarctic flight programme.

"The penguins were photographed by an American research photographer on board", he says. The US C17 aircraft had flown over the Cape to enable US scientists on board to check whether the penguins were there. While it was impossible to determine numbers, the fact that they were at the Cape was a positive sign.

"We can now hope that the Emperors have had a successful breeding season over the winter", he says.

Penguin researchers flown into Antarctica at the start of the summer season are assessing the Emperor penguin colony at Cape Crozier. There were fears expressed at the end of last season that both the Emperor and Adelie penguin colonies in the Ross Sea Region had been severely affected by the calving of icebergs which had made it almost impossible for the penguins to search for food. This caused the death of penguin chicks, and has the potential to block their traditional breeding grounds.

"There are usually 1000 pairs of breeding penguins at the Cape. Interest in the potential plight of the penguins in Antarctica has been enormous worldwide", Sanson says.



Snoozing Penguins

A French science project has shown that it's not just the human older age group who enjoy an afternoon snooze. Gerard Dewasmes and Nathalie Loos of the University of Picardie-Jules Verne, France, have found that King penguins also enjoy a deep afternoon snooze. In the course of their research, Dewasmes and Loos crept up to sleeping birds in a large penguin colony in the Subantarctic Crozet Archipelago to hang a succession of 100 gram

US-NZ Team Dates the Rise of the Trans-Antarctic Mountains

An American geological party had better luck this season getting into the remote Reedy Glacier area compared to last year, when they were unable to leave McMurdo due to bad weather and logistic concerns.

The Reedy Glacier lies at 85°S, not far from the South Pole, and is one of the large outlet glaciers down which the East Antarctic ice cap drains through the Transantarctic Mountains. The five person geological party comprised Principal Investigator Paul Fitzgerald (ex-New Zealander) and Suzanne Baldwin of Syracuse University, US, Simon Kline, student, Jarg Pettinga, University of Canterbury, NZ, and Graeme Dingle, an experienced polar and mountain adventurer from New Zealand.

The main objective of the expedition was to gather information that would contribute to better determining the date when the Transantarctic Mountains became uplifted to their present form. The Transantarctic Mountains form the western flank of a major rift system, the down-faulted central part of which underlies the West Antarctic ice cap and the Ross Sea floor.

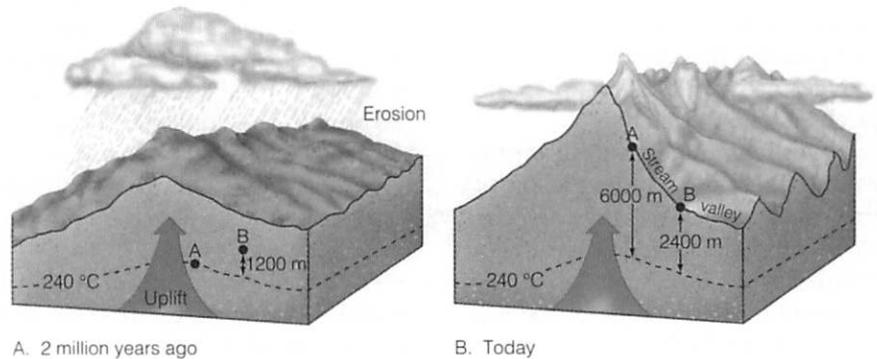


Diagram explaining fission trackages and uplift.

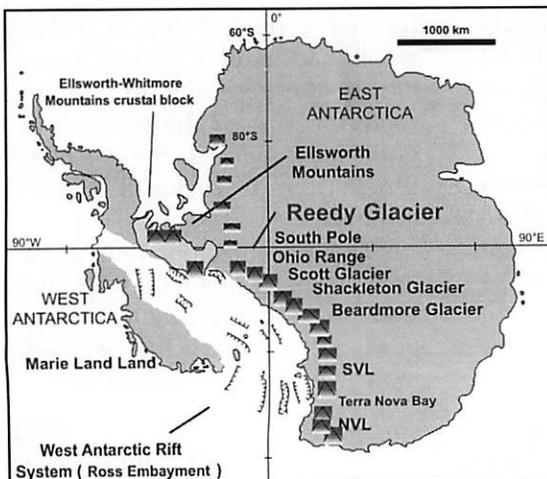
The plan was to obtain reliable geological information about long-term rates of landscape change in the Transantarctic Mountains. When part of the earth starts to rise it is attacked by erosion and carved into mountains. This process cools the rocks as they are uplifted towards the surface, and thus the time of cooling indirectly dates the time and rate of uplift. To this end the party collected numerous rock samples for low temperature thermochronology and took a wide range of structural measurements.

Most of the final information from the specimens will come from a technique known as fission track dating.

The principle behind this technique is that the specimens contain built-in "uplift clocks". All rocks contain some minute crystals of certain minerals that include radioactive isotopes and the decay of these isotopes causes slight damage to the crystal structure.

The radioactive particles leave tracks in the crystals called fission tracks, which can be seen at very high magnification. Under the high temperatures below the ground surface, the fission tracks become annealed or "filled in" as soon as they form, and disappear. But when the temperature drops below a critical level as the rock

Continued on Page 26



The West Antarctic Rift System shown crossing West Antarctica and passing into the Ross Sea embayment. The Transantarctic Mountains lie along the rift's uplifted flank.

At Cohen Nunatak, L-R Jarg Pettinga, Graeme Dingle, Jason Petula (visiting teacher), Suzanne Baldwin and Simon Kline. Photo: Paul Fitzgerald.



Research Ship *Tangaroa* Revisits Antarctica

By John Parsloe

Late last January (2002) I joined the National Institute of Water and Atmospheric Research Limited (NIWA) research vessel *Tangaroa* in Wellington for its fourth visit to Antarctica. It was an opportunity to revisit Antarctica and further expand my horizons.

The *Tangaroa* had been chartered to the Japanese National Institute of Polar Research (NIPR), for a 30-day Oceanographic Primary Production Research Voyage in the Antarctic Sea-Ice Zone during February and March 2002, sailing from Hobart. This was to be a small part of a much larger and ambitious Southern Ocean research programme around Antarctica initiated by NIPR under the leadership of Professor Mitsuo Fukuchi. His deputy, Dr Tsuneo Odate, was to be the Cruise Leader/Chief Scientist on the *Tangaroa* voyage.

The National Institute of Polar Research (NIPR) is the central research institute for implementing the scientific and logistic programmes of the Japanese Antarctic Research Expedition (JARE), which comes under the auspices of the Japanese Ministry of Education, Science, Sports and Culture. The current expedition (JARE-43) was part of a multi year marine scientific programme using not only New Zealand's *Tangaroa* but also research vessels from Japan and Australia. This research programme continues for at least another two Antarctic summer seasons.

The previous season I had been the Ice Pilot on the *Sir Hubert Wilkins*, a small Australian owned Ice-ship that had been chartered to collect American Ann Bancroft and Norwegian Liv Arnesen at Cape Royds after their crossing of Antarctica on skis (see *Antarctic* Vol.18 No.2, p. 29). It was partly as a result of that successful experience that I was later contracted to *Tangaroa* in the dual role of Ice Pilot and 3rd Mate.

Tangaroa's visit to Antarctic waters was becoming a regular summer



Tangaroa near the Possession Islands in the Ross Sea 2001. Photo: John Mitchell.

occupation for the master, Captain Andrew Leachman, and his New Zealand crew, who had been on the ship's previous three visits. Only two of the previous voyages had entered the sea-ice zone around the continent. The first visit was in February/March 2000 while on charter to the Australian Antarctic Division for a geosciences study between 64 and 68 South. The second visit was in February/March 2001 to the Western Ross Sea on a hydrographic and biodiversity study for New Zealand (see *Antarctic* Vol.19 No.2, p. 132). On both these voyages Bob Graham, master mariner, had been contracted as Ice Pilot. His experiences at sea in polar regions was impressive with at least 17 seasons under his wide belt. Mine was only a narrow piece of fishing twine in comparison! From sea-ice records, there was unlikely to be heavy pack ice in the waters to be visited this season (northwards from the coast of Terre Adelie).

After leaving Hobart on 6th February, scientific data was collected while under way along the 140 longitude line, from 47 South to the ice edge near the French base of Dumont

d'Urville (66 40'S). Various oceanographic fixed study stations were occupied along the 140 meridian, mostly south of 61. The aim of the voyage was to evaluate the production of gases, such as methane, which are thought to be closely related to global warming and the processes of downward sinking from the surface productive layer of the sea to mid-and deep layers. The main objectives were: (1) a process-study of primary production, (2) production of greenhouse gases in relation to biological processes of primary and secondary production, (3) growth of zooplankton and krill and (4) settling processes from the surface production layer down to mid-deep layer. Core studies of these objectives had also been carried out this Season on three other scientific cruises, namely the *Aurora Australis* in November/December 2001, the *Hakuho Maru* in January and the *Shirase* in late March.

Inclement weather followed the sighting of the first iceberg (62 30'S). This type of weather was to last the remainder of the voyage – dull, heavy grey days, when fog, mist, falling

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The Scottish National Antarctic Expedition 1902-04

Part I: Repulse in Weddell's Polynia

By David E Yelverton FRGS

a letter dated 14 February 1901:

*Dear Mr. Bruce,
I am afraid I replied angrily when you announced your expedition to me: for I feared that your proceedings would divert funds from the national expedition which was and is in much need. But I can now see things from your point of view and wish you success. Mr. Armitage tells me that you have married and I send my congratulations on the happy event.
I shall be at Dundee in March for the launching of the Discovery; and I hope I shall have the pleasure of seeing you then.
Ever yours sincerely
Clements R. Markham*

Editor's note.

The 30th of October 2002 marked the centenary of the departure of William Bruce's Scottish National Antarctic Expedition from Troon, Scotland, on the Scotia. The following article is the first of three instalments on the expedition written by Antarctic Historian David Yelverton. Further background on William Bruce's Antarctic ambitions, including seeking to be on Scott's Discovery Expedition, is provided by David Yelverton's book "Antarctica Unveiled".

It was as surgeon aboard the *Balaena* in 1892 that the young Scotsman William Spiers Bruce, then 24 years old, had first fallen under the spell of the Antarctic. As a medical student he had assisted Sir John Murray in the preparation of the Challenger Expedition reports. From that privileged insight into the world of Nature had germinated the fascination with the science of the oceans that dominated his enthusiasm both in 1892, and when he first applied to Sir Clements Markham for a post on the Discovery Expedition in 1899. It was the marriage of that passion with the lure of the sea that only Ross and Weddell had penetrated that spawned the Scottish National Antarctic Expedition, which sailed from Scotland in November 1902.

Bruce's enthusiasm had led the Coats brothers, Andrew and the younger James of the famous textile firm, to contribute the £36,000 that had made it all possible, and this at first, somewhat reasonably, incensed Markham, given the struggle he was having to raise funds for the British expedition. But, as the justifiably aggrieved Bruce pointed out years later, it was extremely doubtful if the Coats brothers would have supported any but a purely Scottish expedition. Ten months later, on hearing news of Bruce's marriage to Jesse Mackenzie, Sir Clements gracefully apologised in

The following May Bruce formally announced his plan and objectives. Using a Scottish or Norwegian whaler with a complement of six scientists, five officers and 26 crew, the expedition would sail on 1 August 1901 for Port Stanley. From there it would sail south-east to the 60th parallel and turn south on Weddell's 30°W meridian until they met the east coast of "Graham's Land" in a high latitude. The chart appended in the June 1900 *Scottish Geographical Magazine* (journal of the Royal Scottish Geographical Society) was based on Sir John Murray's 1895 theories on the outline of the supposed continent which, as it showed, led Bruce to expect they would reach land in about 82°S.

There a shore party with himself, four other scientists and two "workmen" would be landed to make year-long observations to complement those of the other expeditions. In the austral spring they would make sledge journeys with dogs on the inland ice. Like Nordenskjöld's ship, theirs too would be sent back to sound, trawl and dredge around

South Georgia and then return for overhaul to the Falklands or Buenos Aires during the winter. In the spring she would return with fresh supplies to pick up the shore party and explore coasts they could not reach on their sledge journeys.

The shore party would then return with the ship unless funds allowed a third season. Provisions for three years would anyway be landed on the first voyage, and for two more on the second, as an insurance against the ship being unable to reach them as planned. Magnetic observations would be carried on ashore but not on board, as the ship's typical whaler construction would be quite unsuitable on account of much use of iron.

However Bruce's road to finance had proved a two steps forward, and one backward process, as the truth about costs gradually emerged. Few beyond the Coats brothers were inspired to give generously on account of his unflinching emphasis on the priority of science, rather than any attempt to reach the Pole. At that stage (June 1900) £10,000 had been secured, but by the time the money to cover the original estimate was raised it proved only sufficient to cover a single year's operations. So, in November 1901, the planned winter station had been abandoned in favour of a summer meteorological station and a single attempt to push south on Weddell's track, leaving Scotland in November 1902.

Bruce had wanted the *Balaena*, but the price was too high, although the ship he eventually bought looked like a case of false economy by the time she was fit for the Antarctic. Guided by Nansen and Colin Archer, he had bought the Greenland whaler *Hekla* for £2,620. After she had reached the Ailsa Shipbuilding Company's yard at Troon, via the Caledonian Canal early in 1902, George Lennox Watson, the Glasgow naval architect who designed the racing gaff cutter *Britan-*

nia for King Edward VII when he was still Prince of Wales, offered his services free of charge, but said bluntly that the ship would best be towed out to sea and sunk.

In the end over £14,000 had had to be spent replacing almost everything. With new boilers and engines the rebuild turned her into a thoroughly viable ice-ship with an economical speed of 6 knots on 3 tons of coal per day. 140ft long, 29ft in beam and drawing 15ft, with as much as 25 inches of timber sheathing her frame amidships, the outer 2-inch greenheart skin extended down to the keel for the first 18ft, and aft of that down to bilge level.

Following trials in the Firth of Clyde, and renamed *Scotia* - there was no formal launching ceremony - she was at last ready to sail on Sunday 2 November, on which Sabbath her departure with "pipes playing and people singing, not psalms but profane songs such as Auld Lang Syne", as a local paper put it, provoked some criticism.

Crossing from Troon to Dublin's Kingstown Harbour she loaded final supplies during a five-day stay, and sailed from there on 8 November with the laboratory assistant Gilbert Kerr once more playing the pipes on the fo'castle head, amid gun salutes and cheering from the shore with many craft assembled to see her off.

In the hands of Captain Thomas Norman Robertson, now 47 years old, after whom Larsen had named Robertson Island, *Scotia* was across the Equator in 35 days and dropped anchor at Port Stanley on 6 January 1903, after a voyage of 59 days. With magnetic calibrations complete, bunker stocks restored to 200 tons and two years' provisions aboard, all was ready by the 26th, with the deck by then virtually covered with provision boxes, dramatically demonstrating the ship's limitations had the original 3 years' supplies been needed. As they sailed past the lighthouse, Bruce knew that, for all their efforts, it was little more than a month before ships would be wise to turn for home from waters far north of the latitudes he hoped to reach.

That he could start at all was due in part to the persuasive force of his enthusiasm that had led his fellow scientists to follow his example in



Captain Robertson and Dr Bruce in *Scotia's* saloon. Photo: courtesy the Hunterian Museum, Glasgow University.

volunteering to forego their salaries¹. Appalled on hearing of it, Professor Buchanan, Murray's *Challenger* colleague, had led off with a £100 contribution specifically to be used for salaries, and the Coats brothers had given the balance. So, in the end, some £3,000 was released, and the plan to winter in the far south was saved.

Even then there must have been some doubt as to whether there was enough money to fund the ship's sub-Antarctic winter cruise. But the final plan had been decided by the ship's greatest shortcoming — lack of space. According to Bruce there was no room left to stow the timber for the shore party's hut! The provisions he had arranged to pick up at Port Stanley would use up all the deck space. So the plan had been changed for the second time - the ship would have to winter in the far south, and they could all live aboard her.

Theoretically, in ideal conditions, he could make the 1200-mile trip to the 80th parallel in 8 days, so there would still be an ample margin for safety and the oceanography for which he had so carefully equipped the ship. At the same time Bruce must have had some presentiment that all would not be ideal. The Falklanders told him their winter had been exceptionally severe, the consequence of which Larsen, aboard the *Antarctic*, was experiencing that very day as they drifted, locked in the ice and fa-

tally holed, less than 30 miles from Nordenskjöld and the men at Snow Hill Island. (All distances are given in nautical miles).

Barely out to sea on 26 January 1903, the men aboard the *Scotia* had their first taste of typical Falkland seas as the ship rolled 40° each way. Three days out and still hardly south of Cape Horn they ran into their first 'Cape Horner', officially force 10, as recorded by the log. Despite heaving to and dribbling whale oil on to the surface, it soon drove a big sea aboard, sweeping some of the deck cargo overboard, damaging the bulwarks and flooding the cabins and deckhouses.

The gale only lasted a day and was followed by a thick haze out of which their first iceberg suddenly loomed in about 57°S. A collision was only avoided by a hasty turn to port as they crossed the 60th parallel north of the South Orkneys about midnight on 1 February. The next two hours brought an end to their direct advance to the south-east for they came up against tightly packed ice trending away to the north-east. Steaming along it to the south-west, fog made it difficult to see any distance; after some 30 miles they gave up looking for an opening and made an abortive attempt to force a way south. Except for Wilton and Bruce, none of the scientific staff had seen sea ice before.

The swell running into the ice from the open sea had packed its edge into

a tight sea-bar, as Bruce termed it: "over which the seas were breaking, and the effect of the swell was felt well into the ice. Great blocks of ice, many weighing several hundred tons, rolled, tossed, and crashed one against the other. The person most keenly interested was the ship's carpenter [James Rice], who had been employed in the rebuilding of the *Scotia*. Watching proceedings in the fo'-c'sle head, when her bows first charged into this turbulent sea-bar, he doubted if any ship would stand so severe a buffeting. Once through the sea-bar and navigating in quiet waters, though still in heavy and fairly tight ice, he was thoroughly satisfied, as was everyone on board, with the qualities of the ship, and with the skill and sound judgement of her master."

In sight of the South Orkneys at daybreak on the 3rd, Bruce could not resist a visit to the twin-peaked Saddle Island slightly north of Laurie Island, on which James Weddell had been the first to land thirteen months after the islands' discovery.² Surprising even Captain Robertson, the ice they had to break through proved to be over 15ft thick, something never recorded that far north, and an omen of what they might face to the south.

Reaching crystal clear water between ice and shore they could see red anemones in about 25ft of water, but realised that the uncharted waters they were making for were a more important goal, much as Bruce wanted to dredge there. His excitement at landing on that shore, barely hinted at in his expedition log, shone out in his lecture to the British Association in Cambridge after the expedition: "Thus after a lapse of 80 years the foot of Man for a second time trod its shores."

To the east of Laurie Island the direct route was once more barred by yet larger fields of ice and, prompted by the Captain's warnings of the danger they posed, Bruce decided the only thing was to follow its edge eastward to Weddell's 30°W meridian in the hope of an opening to the south.

After nine days and some 500 miles of working east, they were still north of the 60th parallel, now east of Weddell's track and immediately south of the South Sandwich group. Bruce's daily position fixes, with the captain and 1st Mate John Fitchie

double checking with their sextants, caused him to marvel at how they confirmed the position the other two had determined by dead reckoning "I wonder how some liner steering by even points [of the compass] would make her dead-reckoning! Utterly lost I expect; yet the captain and officers of the *Scotia*, all experienced ice men, have a very accurate idea both of course and distance."

At last, early on 15 February, he could see what he had been hoping for — an open sea running away southwards. Aided by northerly winds part of the time, three days brought them through water often "entirely free from ice ... [with] only stray bergs" to cross the Circle. To celebrate, "grog" in the form of good Scotch whisky was served all round, and optimistic calculations foresaw them passing Weddell's farthest south in another four days.

Running south in clear seas for two days, the *Scotia* met the pack once more in 69°39S on 21 February 1903. The whitish sky above the horizon — the 'ice blink' well known to Bruce and the crew — told them it was no mere belt of ice. New pancake ice about 4 inches thick was forming too with the thermometer reading -10°C. Steaming south east through it, they crossed the 70th parallel that afternoon, only to be frozen in 25 miles beyond it in 17°12W. Only Weddell, Ross and Morrell had been as far south in that sea. While there were

penguins about, a sounding of 2540 fathoms made it unlikely they were near to land.

Liberated as the ice broke up the next day, another sounding gave no sign of land, and the thermometer was lower that night than any recorded for February, except by Borchgrevink at Cape Adare. The ice was so well cemented that progress became utterly wasteful of coal, so that Bruce had no alternative but to call off the attempt to get further south. The unpalatable truth was that they were too late: "... what a chance we should have had, had we been even two weeks earlier!" Bruce wrote that night, resigning himself to retreat. (*To be continued*)

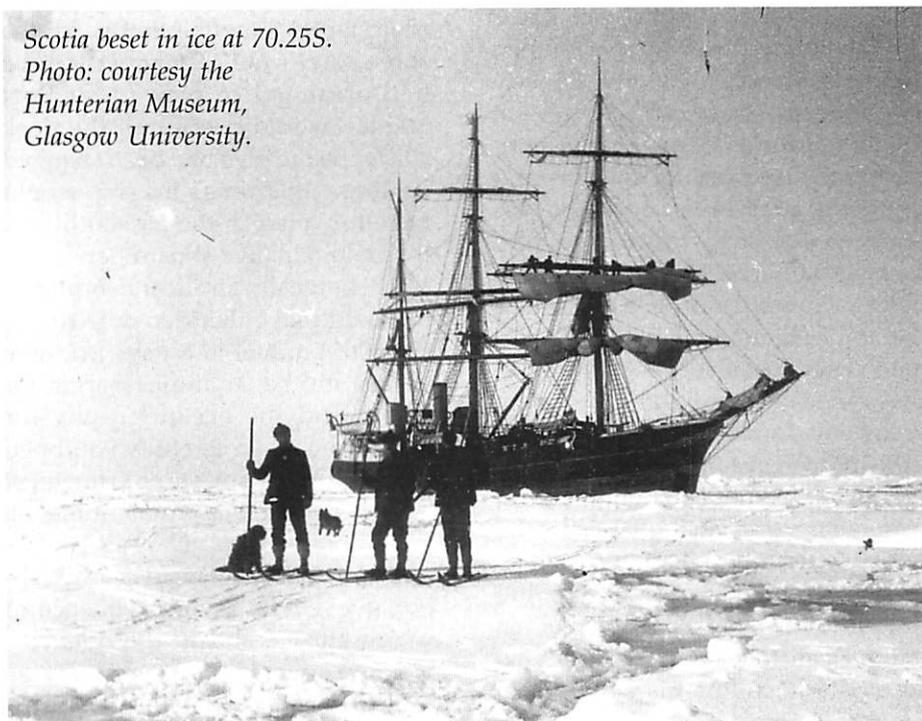
NOTES

1. Taxidermist Alexander Ross, and artist William Cuthbertson, are believed to have refused. Possibly for that reason they did not receive the silver expedition medal Bruce personally awarded to Allen Ramsay and twenty others who served throughout. Two others in the expedition office received the medal.

2. Weddell had landed on Saddle Island from the brig *Jane* in January 1823. Laurie Island, the eastern of the two main islands, was named after the publisher of the chart issued after George Powell in the sealer *Dove* and the American Nathaniel Palmer in the *James Munroe* had discovered the islands on 21 December 1821.

Scotia beset in ice at 70.25S.

Photo: courtesy the Hunterian Museum, Glasgow University.



One Man's Dream:

The Antarctic Expedition of Nobu Shirase

By Mariska Wouters

The Sixth International Geographic Congress, in 1895, had declared 1901 the 'Antarctic Year'. German, Swedish and British expeditions set out for the first real attempts at exploration of the Antarctic continent itself. This was the beginning of the 'Heroic Age', characterised by the 'Big Four' Antarctic heroes: Scott, Shackleton, Amundsen and Mawson, names familiar to most. During the 1957-58 International Geophysical Year (IGY) twelve countries established research stations on the Antarctic continent. Japan was one of these and in 1960 it acceded to the Antarctic Treaty. However, Japan's Antarctic involvement predates the IGY. Coming from a country with no tradition of exploration, Japan's Nobu Shirase, who was a lieutenant in the Japanese Army, was a surprise. At the same time as Scott and Amundsen were making their bid, this Japanese adventurer was also aiming to reach the South Pole. Shirase's expedition was therefore the "odd" expedition during this period of Antarctica's discovery by the European nations.

Nobu Shirase was born in 1861 just before the Meiji Restoration, the first-born son of a Buddhist monk of Jorenji temple of the town of Konoura in Akita Prefecture. Apparently, at the age of eleven, his schoolteacher told Shirase about the Arctic world, and from then on his aim was to lead an expedition to the North Pole. At the age of eighteen, Shirase went to Tokyo to attend a school for priests at Sensoji temple in Asakusa. As he was the oldest son, the expectation was that he would become a Buddhist priest. However, Shirase still wanted to travel to the Arctic and, because he would not be able to make expeditions as a Buddhist priest, he left the school. He entered the army school for military noncommissioned officers. For unknown reasons, he did not join the navy, which would have facilitated his need to get a ship to



Lieutenant Nobu Shirase (left) and his friend Takeda, leader of the scientific staff, on board the *Kainan Maru*. Photo: Reader's Digest.

travel to the Arctic. After graduating from the military training school, he became a professional army officer.

In 1883, Shirase volunteered to join a navy expedition to the Tsushima Islands (Kuril Islands), spending a cold winter there. The following year the party was forced to spend another winter on the island due to the Sino-Japanese war. During this time, three of the six members died from scurvy; the survivors were finally rescued in 1885. This period was significant for Shirase, as it was his first exposure to exploration. From then on, he deliberately volunteered for activities that would assist him in getting experience for any future Arctic expedition. Shirase remained in the army for ten years, after which he retired as lieutenant around 1899.

In 1909, at the age of 48, Shirase was shocked by news that Robert Peary had arrived at the North Pole. He decided he would go to the South Pole instead! In 1910, he petitioned the Japanese parliament for support of his Antarctic expedition but the government delayed answering his proposal. The lack of enthusiasm is perhaps not surprising as Shirase was

unknown. Eventually, journalists began to report about his proposal and newspapers also held campaigns to collect money. In the summer of 1910 a big meeting of supporters was held and "The Antarctic Expedition Supporters' Association" was formed, with money donated by people around the country. This was a new concept to Japan. The official web page of the Shirase Museum refers to the lack of government funding as a major difference between Shirase and the European Antarctic explorers. A drama about an Antarctic expedition was even presented at theatres in Tokyo and Osaka, with the purpose of stirring up public interest and obtaining contributions to support the expedition. Overall, Shirase fought both government and public ridicule and only was successful when a nobleman and former Premier of Japan, Count Okuma, gave him support.

The preparation did not progress rapidly, as the money collected was not enough to buy a big ship and remodel it for the expedition. Shirase wanted to borrow a naval boat, but because he was ex-Army, military ri-

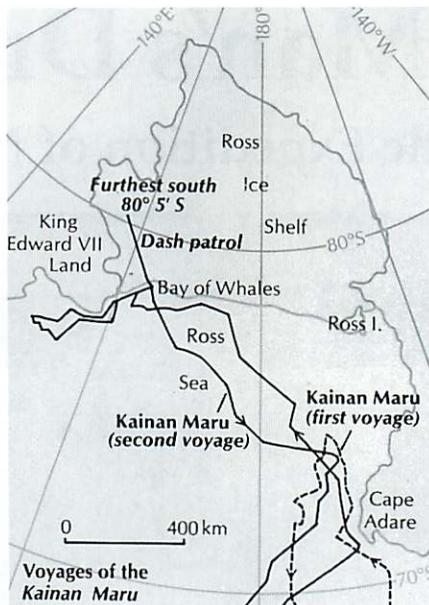
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*One Man's Dream –
Continued from Page 21*

valries delayed him getting a boat for three months. Eventually he acquired a very small three-masted wooden fisherman's sailing ship with a displacement of 199 tons (about one-third the size of the *Terra Nova*) which was named the *Kainan Maru*. As sails alone were not sufficient to navigate in the icy Ross Sea, a used steam engine of 18 horsepower was installed as an auxiliary. The ship was also reinforced with 6-millimeter thick sheet steel mounted on timber supports. In this vessel, Shirase and his 27 men and 29 dogs traveled 58,000 kilometers to Antarctica and back to Japan.

When Japan's first expedition to the Antarctic sailed from Tokyo on 1 December 1910 only a handful of students watched the departure. Shirase had wanted to leave Japan during the Northern Hemisphere summer, as it would take four months to travel from Japan to Antarctica. On the way to the Ross Sea, Shirase spent four nights in Port Nicholson, Wellington, which he reached on 8 February 1911. There he bought 36 tons of fresh water, 32 tons of coal, and supplies of vegetables, tinned meat and fish. From the time the vessel left Wellington on 11 February, the *Kainan Maru* was beset with bad weather. Shirase reached 74°16', but the Ross Sea was too frozen to penetrate, although the coast of Victoria Land was sighted on 6 March. The weather remained atrocious and on March 14, 1911, ice prevented any further advance of the ship in the Ross Sea and Shirase left the Antarctic region.

Shirase did not return to New Zealand, perhaps out of embarrassment, and instead he went to Sydney, where he arrived on 1 May 1911 where the expedition was greeted with suspicion and hostility. Shirase had anchored on one side of the Opera House, on the other side of which the Australian naval base was situated. Initially accommodation was not forthcoming but a resident of Vaucluse granted the party free use of part of his garden to erect a prefabricated hut. The ship's captain, Nomura and several crew members returned to Japan in an attempt to raise additional funds while the rest of the expedition remained behind,



Map showing the voyages of the Kainan Maru and Shirase's furthest south. Map: Reader's Digest.

apparently with little money and food, and living a life close that of beggars. A former member of Shackleton's 1907 expedition, Professor Edgeworth Davis, came to the rescue and his enthusiastic involvement did much to reassure the Australian public. Eventually Shirase and his crew were able to stay anchored at the other side of the naval base. He stayed in Sydney for six months and the following austral spring left for Antarctica in November 1911 for a second attempt.

This time, having received news of Amundsen's and Scott's attempts on the Pole, Shirase had decided to change the objectives of the expedition from the traverse of the Antarctic into that of scientific research and exploration of King Edward VII Land. In fact, while on the way to the Antarctic continent, Roald Amundsen had already attained the Pole for Norway. On January 16, 1912, the *Kainan Maru* arrived at the Bay of Whales in the Ross Sea, one day before Scott's arrival at the South Pole.

A party was sent ashore at a spot they named "Kainan Bay" but because the ice was cut by so many crevasses the party came back on board and the *Kainan Maru* headed off to the west, where they came across Amundsen's *Fram* which was waiting for Amundsen's return from the Pole. Visits were exchanged but any

serious discussion was prevented by language difficulties. The two leaders of the *Fram* and the *Kainan Maru* did not meet until Amundsen visited Japan at the beginning of the Showa period (late 1920s early 1930s) and met with Shirase. Apparently Shirase was still so poor that he had to borrow suitable clothes before he could meet Amundsen.

Where the *Kainan Maru* was moored the top of the ice shelf was about 100 meters high. Shirase apparently wrote, "We were resolved to scale the so-called insurmountable barrier or die". Some sixty hours later, after cutting a zigzag path up the nearly "perpendicular" slope, the men stood at the top. This was the starting point of his so-called "Dash Patrol", which consisted of seven men, two of whom would remain at the edge of the ice shelf as a base camp while the other five would make a dash to the south on sledges pulled by 28 dogs. They started for the pole on January 20, 1912. The trip was anything but a dash as the cold, blizzards, and separation of the two sledges meant that after nine days of traveling 282 kilometers, Shirase and his team decided to turn back to the coast on 28 January. Before returning, the party stood in a row and planted a Japanese flag in the ice at latitude 80°05' South, burying a copper case containing a record of their journey, and naming the snow fields around them the "Yamato Yukihara", or Japanese snowfield. This point was not actually a part of the continent but was a part of the ice shelf in the Ross Sea. Although Shirase claimed all the area of the Ross Ice Shelf within sight, Japan has never taken this claim seriously. Japan's actual arrival at the South Pole was attained fifty-six years later, in 1968, when Masami Murayama and a team from JARE 9 made a return survey trip to the South Pole from Showa station.

While Shirase was heading towards the South Pole, the *Kainan Maru* left the Bay of Whales and the crew charted the coastline. A shore party was dropped at Biscoe Bay in King Edward VII Land where they reached the foot of the Alexandra Range which had not been seen at close range until that time. The summit of the mountains could not be

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*One Man's Dream –
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reached as a large crevasse blocked the way, but a memorial board was erected to commemorate the journey. The ship then made her way back to the Bay of Whales but it was not until February 2 that the bay could be entered as the wind was against the ship. The expedition left Antarctica on 3 February 1912 and on the way back to Japan they visited Port Nicholson for about a week at the end of February/beginning of March.

The *Kainan Maru* returned to Japan on June 20, 1912. Although the expedition had left in a silent departure, their welcome in Yokohama was a tremendous reception and apparently 50,000 citizens attended a welcoming ceremony. The Antarctic museum in Konoura has displayed artefacts of Shirase's Antarctic expedition, including his passport, which apparently shows: "destination Antarctica via New Zealand".

When Shirase returned to Japan, he had amassed a debt of around 120,000 yen, which took until 1936 to repay. To generate income, Shirase lectured on his Antarctic expedition. Shirase died on September 4, 1946, at the age of 85, his neighbours apparently not knowing that this old man had achieved fame as the first Japanese explorer of the Antarctic.

On the East Coast of the Ross Sea, his name has been given to the "Shirase Coast", and his adventures and fame are remembered in the name of the icebreaker Shirase. Shirase composed a waka, a short Japanese poem, as his farewell effort: "Study the treasures under the Antarctic and make use of them even after my death".

Shirase's expedition, despite earlier misgivings by New Zealand, is commemorated in New Zealand. A permanent display was mounted in 1992 to mark the 80th anniversary of the expedition at Canterbury Museum, Christchurch. Scott, Shackleton and Amundsen's expeditions were already represented there, but there had been no displays about Shirase. The town of Konoura contributed a replica of the *Kainan Maru* to the museum.

WRENCH'S "LINKS OF THE EMPIRE" POSTCARDS

Series N° 3.

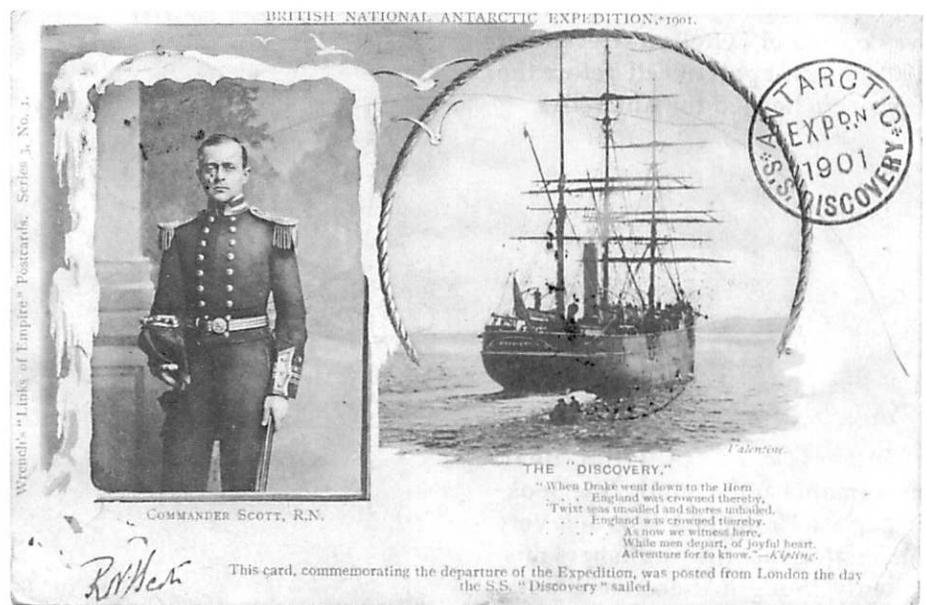
By Paul Wales

To help raise funds for the 1901-04 British National Antarctic Expedition (Robert Scott's first Antarctic expedition) a series of postcards were published by E. Wrench (20 Haymarket, London). In 1901 John Evelyn Wrench, at the age of 19, had met Captain Scott and was able to persuade him to agree to the production of the cards depicting Antarctic scenes.

Originally it was intended that the set would consist of twelve postcards but in the end only four were produced. The set of four could be purchased for two shillings and were

posted back to the subscribers at each port of call. The ports of posting were: London (July 1901); Simonstown, South Africa (October 1901); Lyttelton (December 1901) and Lyttelton (April 1904).

The front of the cards had a S.S. Discovery 'cancellation' applied in London. This is the only known use of this 'cancellation'. The cards were numbered and are shown below. A very full listing (with photos) of early Antarctic postcards can be found in "Postcards of Antarctic Expeditions - A Catalogue: 1898-1958" compiled and published by Margery Wharton.



Postcard No.1. Commander Scott and his ship S. S. Discovery. The card was posted in London when the Discovery departed (July 1901). Below the picture of the Discovery is Kipling's verse:

*"When Drake went down to the Horn
England was crowned thereby,
'Twixt seas unsailed
and shore unhailed,
England was crowned thereby.
As now we witness here,
While men depart of joyful heart,
Adventure for to know."*

Postcard No. 2 Two images of the main deck of *Discovery* superimposed on a map that shows the ship's route from England to Antarctica. (The map shows the ship calling in at Melbourne, which it didn't). Posted at Simonstown, South Africa (October 1901). The quote reads "It is by adventurers that great actions are performed" – Montesquieu.



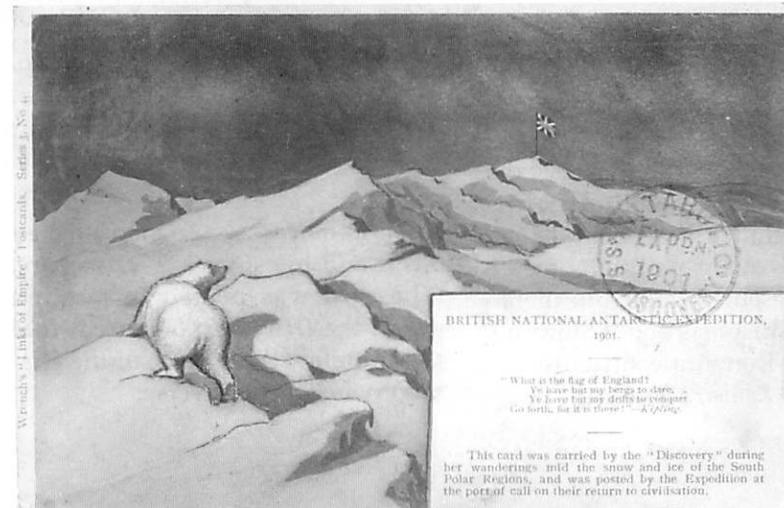
(2a) The address side of No 2 postcard posted at Simonstown on the 5th October, 1901, the day *Discovery* arrived from Cape Town. This card has been hand addressed by Scott himself and is addressed to his sister Kitty in London.



Postcard No. 3 Antarctic explorers pulling a sledge. A list of earlier explorers is also visible. The card was posted at Lyttelton (December 1901), the last port of call before the *Discovery* headed for Antarctica.



Postcard No. 4 A Polar bear, presumably at the South Pole, looking up at a Union Jack flag. It is very interesting that the publishers mistakenly thought there were polar bears in Antarctica (I also have in my collection a poster advertising a welcome home diner for members of the expedition which has a drawing of a polar bear pulling a sledge). The card was posted at Lyttelton on the return of *Discovery* from Antarctica (April 1904). This last card was carried by the ship during its southern travels and, as such, was of great interest to purchasers of the set.



New Borehole Programme to Investigate Past Climate Change

Plans are well under way for a new international drilling initiative, scheduled to start in October 2003, to investigate Antarctica's role in global environmental climate change over the past 65 million years.

ANDRILL, a consortium made up of Germany, Italy, New Zealand, United Kingdom and the USA, has built on the success of the Cape Roberts Drilling programme in the McMurdo Sound area. A steering committee was formed in Columbus Ohio, and an International planning meeting was held at Oxford University in April 2001. Each member country has signed a memorandum of collaborative intent and agreed to an annual membership fee. An additional member is likely to be Japan. Each member country has funded proposals for geophysical surveys, drilling, and scientific support.

The objectives of the project are to obtain high resolution stratigraphic records from key locations in a series of portfolios around the Antarctic continental margin. These will indicate the timing and development of glaciation in Antarctica, climate changes, the evolution and timing of major Antarctic rift and tectonic systems and their associated sedimentary basins, and the means to correlate these with near-ice and Southern Ocean sedimentary records.

The McMurdo Sound Portfolio will be the first to get off the ground. The portfolio includes four seasons of drilling preceded by two to three seasons of geophysical and site surveys. Target areas include the Mackay Sea Valley/Granite Harbour area, New Harbour, the Windless Bight/NW Ross Ice Shelf, and the Southern McMurdo Ice Shelf/Black Island area. Plans are still being formulated, but the first drilling season is likely to be October 2003. Technical evaluation of the Portfolio has been prepared by Alex Pyne, who was intimately involved in the earlier Cape Roberts drilling project (CPR). It was planned to reuse the CPR rig and camp after suitable upgrading.



A seismic team working on the McMurdo Ice Shelf in November 2002 to collect data that will define sedimentary layers beneath the sea floor. Photo: Institute of Geological and Nuclear Sciences.

During the 2001-2002 field season 15 scientists from New Zealand, Britain, America and Germany completed detailed surveys in the McMurdo Sound area. A total line of 40 kilometres of seismic reflection data was collected, from two lines in New Harbour and a line on the Ross Ice Shelf between Ross and White Islands. Gravity surveys were carried out on the sea ice in New Harbour, also between Ross and White Islands, between Black Island and Minna Bluff and between Mt Discovery and Brown Peninsula. A helicopter borne magnetic survey was carried out over the Ross and McMurdo Ice shelves between Ross Island, Minna Bluff and Brown Peninsula, encompassing White and Black Islands. GPS surveys were also undertaken near potential drill sites to monitor sea ice and ice shelf movement. Antarctica New Zealand provided logistical support, while the NSF supported a high-resolution seismic reflection survey in Granite Harbour from a US Coast Guard Ice-Breaker.

The ANDRILL steering committee comprises David Harwood (Chair, USA), Gary Wilson (Secretary, UK), Fabio Florindo (Italy), Jane Francis (UK), Tim Naish (NZ), Frank Niessen (Germany) and Ross Powell (USA).

Irish Science Week

Five BAS scientists (Brian Gardner, Liz Morris, Jo Watkins, Mike Dinn, Julian Paren) travelled to Ireland to give lectures in Tralee during Irish Science Week in November 2002, reports The British Antarctic Survey.

Tralee is the home of Kerry County Museum where a major exhibition of Antarctica is staged having over 65,000 visitors since opening in April 2002. Although focussed primarily on the heritage of Antarctic exploration and the Kerry explorer Tom Crean, BAS has provided exhibits and display material to illustrate the relevance of Antarctica today.

The lecture series was part of the Antarctica Week Programme that also featured guided tours of the exhibition, dramatic presentations of the life of explorer Tom Crean and a weekend celebrating the legacy of Tom Crean.

Scott's First Push to the Pole

The centenary of Robert Falcon Scott's first effort to reach the South Pole was observed at Discovery Hut on Ross Island in early November by members of the New Zealand and United States Antarctic Programmes.

The observance on 2 November 2002 included the recitation of the Prayer of Antarctic Dedication, written and first spoken at Discovery Hut on the 26 January 1947 as part of the American expedition Operation High Jump.

Staff and scientists from Scott Base and McMurdo Station took part in the remembrance.

One hundred years earlier, 2 November 1902, Robert Falcon Scott accompanied by Ernest Shackleton and Edward Wilson departed from Discovery Hut on Ross Island towards the South Pole. Despite the onset of scurvy and malnutrition, as well as the loss of all dogs, the team reached 86°17'S, the furthest south any expedition had reached to that time. The trip had taken 93 days and covered 960 miles.

This endeavour was one of the journeys that Scott's team made as a part of the National Antarctic Expedition. The expedition, launched in July 1893, was due primarily to the efforts of Clements Markham, President of the British Royal Geographical Society. At the Sixth International Geographical Congress in London in 1895, Markham stated, "the exploration of the Antarctic regions is the greatest piece of geographical exploration yet to be undertaken."

Another journey of significance was the Western Journey (29 November 1902 to 19 January 1903) to Victoria Land. This party under the leadership of Lieutenant Albert Armitage reached and returned from the Polar Plateau without incident. The route was used by Scott the next summer and then again by Edmund Hillary in 1957 on his way to the South Pole.

The Royal Society, the British Royal Geographical Society and the Royal Navy became partners in the National Antarctic Expedition. The ex-

pedition's primary goal as advocated by The Royal Society, was to increase scientific knowledge.

The scientific programme for the expedition was ambitious and international in nature, with investigations planned in a variety of disciplines including dredging, seawater sampling, meteorological observation, geology, zoological sampling and a magnetic survey.

The magnetic survey was one of the main objectives of the exhibition. Its goal was to collect and collate observations on compass delineation. This work was done in conjunction with Swedish and German expeditions who carried out similar work in other parts of Antarctica. New Zealand was also involved in the magnetic survey work, the Christchurch Magnetic Observatory managing the collection of observations throughout New Zealand to be added to those of the British expedition. The observations taken on this expedition were used on every chart of the Southern Ocean issued by the Admiralty for the next decade.

Scientifically this expedition was to provide the first proof for the existence of the Antarctic continent as well as locating the South Magnetic Pole. The information and specimens (particularly geological) collected formed the basis for later studies, which demonstrated that Antarctica was once part of Gondwanaland.

These accomplishments were achieved in the face of hardship and loss. Scott and his team had to cope with scurvy, snow-blindness, frostbite, gangrene, blizzards, and the death of two expedition members.

While the National Antarctic Expedition was primarily a British endeavour several international connections were made that helped in the success of the exhibition. These included the support of the Royal Society of Germany, information obtained from the Norwegian Arctic and German Antarctic Expeditions, and the addition of scientific expedition member Louis Bernacci from Australia.

New Zealand, as a British colony of that era, supported the expedition with gifted stores and supplies, providing free docking and wharfage at Lyttelton Harbour, and free tickets on the railways for all expedition members. Canterbury Museum offered facilities for carrying out scientific work and was later rewarded with gifts of samples from the expedition.

The Christchurch Magnetic noisiest contribution by New Zealand to the expedition was the gift of 45 sheep to provide fresh meat for the voyage. Other unusual support included the provision of a headstone for Charles Bonner who died as the result of an accident, and a permanent home for Scamp the Aberdeen terrier dog that Scott brought from Britain on the Discovery but later decided was unsuitable for Antarctic travel.

[Source: *Antarctica New Zealand*]

*Dating the Rise of the Trans-Antarctic Mountains -
Continued from Page 16*

gets closer to the surface during uplift, the tracks are not filled in and remain within the crystal, becoming longer and more numerous with time.

It is therefore possible from the length of the fission track to see how long a crystal or grain has existed since it passed the critical temperature of annealing during uplift. When the altitude of the crystal, now at the Earth's surface, is measured, the rate of uplift can be worked out. Some areas, such as the Southern Alps of New Zealand, are rising extremely fast, over 10 mm a year, although erosion is keeping pace and produces very steep slopes.

The fission track dating that the Reedy Glacier party will perform on the specimens they collected in carefully measured sections will produce a more accurate denudation date for the mountains of this region. At the moment there is some controversy as to the exact time of uplift of the Transantarctic Mountains. Some areas, such as the Ellsworth Mountains, suggest it all happened during the last few million years, while other areas suggest much older uplift and erosion.

IN THE TEETH OF THE WIND

– South through the Pole

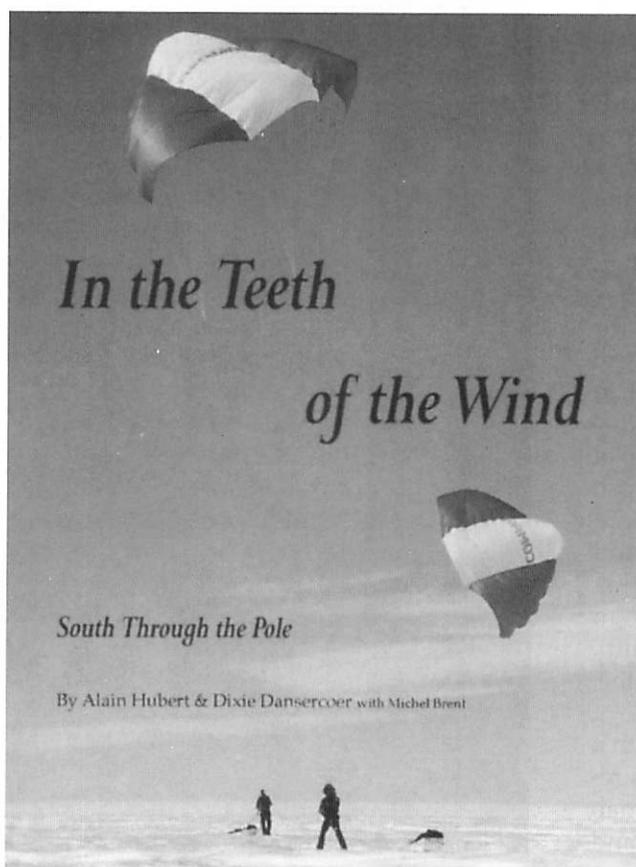
By Alain Hubert & Dixie Dansercoer. Erdschine Press, Norwich 2001,
Bluntisham Books, ISBN 1 85297 066 9. Hardback,
224pp, over 85 colour and b&w photographs, and maps.
£24.95/US\$45.00

Reviewed by
Michelle Rogan-Finnemore

"In the Teeth of the Wind: South through the Pole" is the English-language version of the book "Cent Tors Pour L'Antarctique, La Grande Traversee" first published in 1998. The book retells the story of a planned, unassisted, Antarctic crossing by Belgian explorers Alain Hubert and Dixie Dansercoer using traction sails during the summer season of 97/98. The traverse would take the pair from Dronning Maud Land through the South Pole to McMurdo Sound. Although the duo succeeded in their crossing, they experienced insurmountable problems with their sledges in the early stages of the journey that required outside support, thus rendering their crossing assisted.

The English translation, in most cases quite good, took 3 years after the original work to hit the shelves. That was a little disappointing as it leaves the reader in 2002 reading about an event which had begun (and ended) almost 5 years ago. But, with this aside, the book is a nice easy read that follows two men into the Polar wilderness, together and alone.

On most days the journal entries are benign, but instead of leaving these out, the book records each and every day's events. There are some journal entries, especially by Dixie, that show real emotion and begin to convey what it must be like to be utterly alone. One of his journey en-



tries records some words of support from friends made in Dixie's notebook before the journey began: "Sunshine is delicious, rain is refreshing, wind is bracing, snow is exhilarating. There's really no such thing as bad weather...only different kinds of good weather."

Weather was the pair's major challenge, especially when trying to harness the wind in their sails. The book clearly illustrates the continent's constant power to overwhelm and surprise, even presenting surprises to those, like Alain and Dixie, with extensive polar and trekking experience and the best laid plans. Once they

mastered their sails though, the pair managed to set new distance records at speeds approaching 20 kms/hr. It's on these days that the book lifts you out of your chair and takes you along for the ride.

Apart from the main body of the book, which contained the day-to-day journal entries from the voyage, there are 5 Appendixes. I enjoyed the 5 Appendixes, especially numbers one and three. Appendix one covered the workings and designs of power kites and the advances in technology over the years that led to the development of the sail used in the crossing. Appendix three discusses the essentials of a polar diet including the principle foodstuffs selected for this 99-day/3924 km crossing.

If you are an Old Antarctic Explorer, or have always dreamed of being one, then add this book to your collection. If not, the crossing can be viewed online at the www.antarctic.org website, which includes some superb photos by Alain Hubert from this journey and other expeditions.

Michelle Rogan-Finnemore is Project Manager at Gateway Antarctica (Centre of Antarctic Studies and Research, University of Canterbury, Christchurch). She has wintered twice in Antarctica, once at South Pole Station and once at McMurdo Station. Currently she teaches Antarctic Studies at the University of Canterbury.

Charles Burton

13 December 1942 – 17 July 2002

By John Parsloe

I heard Charlie Burton before I ever met him!

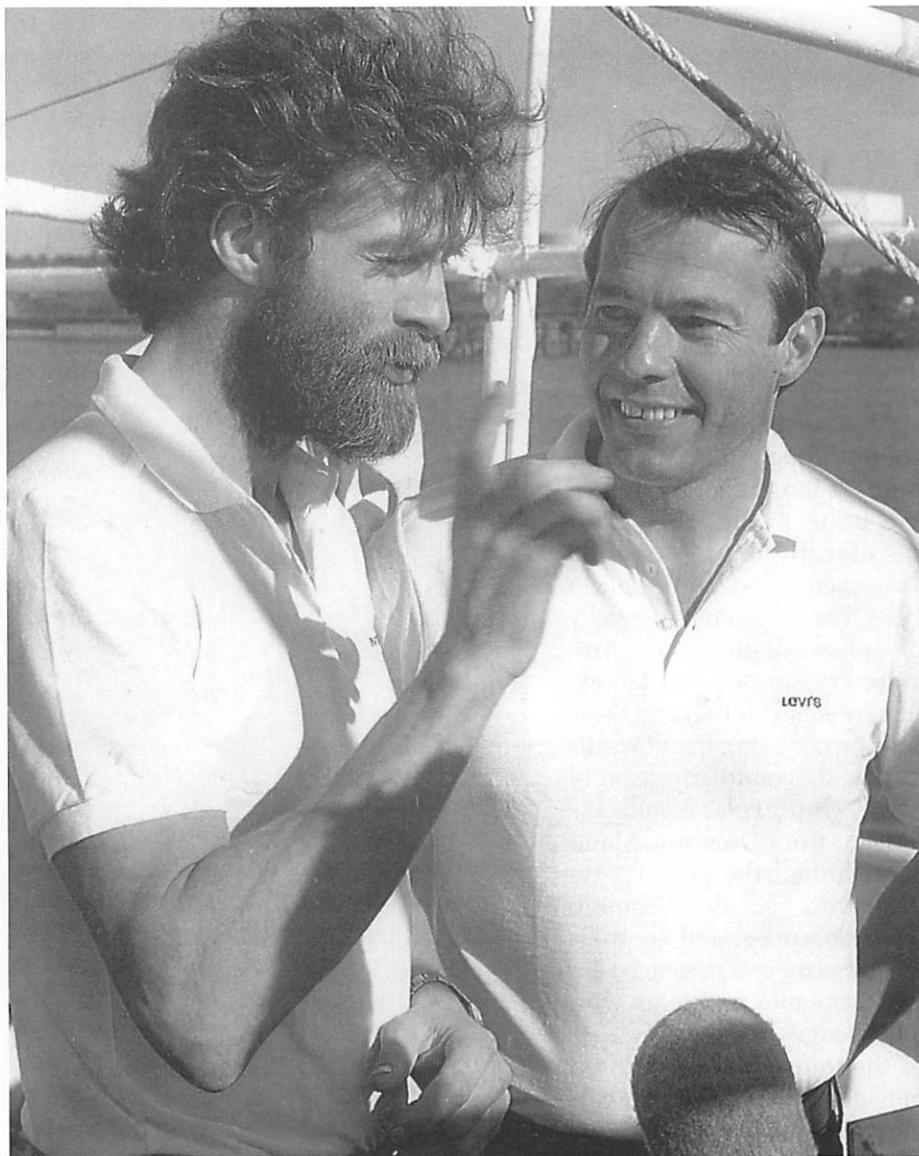
In January 1981, Charlie, Ran Fiennes and Ollie Shepard had just completed the first of the polar legs of their Transglobe Expedition to be the first to circumnavigate the Earth by its polar axis. The Expedition's ageing vessel, the ice-strengthened *Benjamin Bowring* (formerly the *Kista Dan*), was to collect them and their "land group" from Ross Island, McMurdo Sound. For the polar voyage, the vessel had been indirectly chartered by the Expedition to the New Zealand government to carry out oceanographic research work in the Ross Sea. I had been engaged as 3rd Mate/ Science Liaison Officer for the voyage, beginning an interest in the polar regions which continues to this day.

As the *Benjamin Bowring* tied up at the ice wharf beside the American base in McMurdo Sound, to the celebratory strains of a recorded "Land of Hope and Glory", a loud booming laugh from the shore more than equalled the music from the ship. Shortly after I met, for the first time, its creator, Charles Burton.

He proved to be a big man with a very big laugh. Ran Fiennes has referred to Charlie as the toughest man he has ever met, both mentally and physically. Ran's wife Ginny, the Expedition's polar base leader and radio operator, likened Charlie to "a huge black bear whom everyone loved to be near and whose hugs made you feel safe from all your own fears. He was so gentle despite his immense physical strength".

Charlie will be remembered for his polar exploits with the Transglobe Expedition (1979-1982). On return to England, he retired from active polar travel but helped in the planning and preparation for various North Pole trips attempted by Ran Fiennes, Ollie Shepard and ultimately Mike Stroud.

In 1986, Charlie spent a period in New Zealand as the Expedition Leader for Operation Raleigh. At that



Charlie Burton (right) talking to Ran Fiennes after the return of the Transglobe Expedition to Greenwich 1982. Photo: Mobil.

time, I was also working for the Operation in another part of the world. Our paths continued to cross. John Blashford-Snell, the inspiration of Operation Raleigh, wrote, "Charlie's jolly, no-nonsense character did much to inspire all the young venturers in his charge. He felt very strongly about them, especially the less-privileged ones, for whom the venture was a mind-bending experience. Many of them still remember Charlie as a fun-loving, gentle giant, indefatigable and kind, friendly but firm and ever giving all a helping hand".

Before joining the Transglobe Ex-

pedition, Charlie had been working for a security firm in north London, having recently returned from South Africa. Ollie Shepard was already working for the Expedition full time and supplementing his Territorial Army pay by working in the evenings as a barman at a local pub. It was here that another barman, Richard Burton, introduced him to his brother, Charlie. Ollie and Charlie formed a strong friendship and it was not long before Charlie had been persuaded to join the Expedition.

The next four years were taken up with raising the vast amount of equipment needed for the three-year

journey, training, and learning the various skills required. Ran became navigator/leader, Ollie Dr Dentist, scientist and mechanic and Charlie radio operator/cook. All, however, learnt each other's skills in case of mishap on the route. During the nine months of wintering over on the Antarctic continent Charlie came into his own, not only baking fresh bread every day but producing marvellous meals and having an endless source of amusing jokes throughout the polar winter. His only known culinary error occurred prior to this, while crossing the Sahara. By mistake he inadvertently added not onions but white cooking fuel tablets into the food which was eaten by the team without them realising it. It was reported that orange juice and gin followed quickly after!

The job of finding sponsors for the Expedition was split between the three men and Ginny Fiennes. Clothing was part of this requirement, including that for the women members, a responsibility Charlie took on. During this period he met Twink, his wife-to-be, who worked for Berlei Corsetry. They were married in Sydney after the Antarctic crossing.

In 1975 the Expedition's initial snow training commenced in the Cairngorms and the following year they went to Thule airbase in Greenland for their first polar travel. Charlie's great physical strength during this three-month period was invaluable, especially during a series of crevasse incidents that left him with a fear of them. After navigating an ice-fall on the Scott Glacier during the Antarctic crossing, he wrote in his diary: "The descent was hair-raising, too steep for sledges which ran down ahead of the skidoos, often wrenching them sideways and even backwards over wide droopy snowbridges. Some of these bridges had fractures on both sides and were ready to drop into the depths at the first excuse. The descent was a nightmare that I don't care to recall. Ran and Ol were as frightened as I was even if they didn't admit it".

By 1977 the group were in Alert in northeast Ellesmere Island for the first Arctic trials, attaining 83°11.5' North on their first attempt at the North Pole. Charlie's endless hu-



mour proved a considerable asset in making tent life bearable in the extreme cold during this period.

The main Expedition departed from Greenwich on the 2nd September 1979, travelled down through Africa and sailed for the Antarctic from Cape Town. After wintering over in a cardboard hut on the South African side, the Ice Group crossed the continent to Scott Base via the South Pole. The Expedition then rejoined their ship and sailed to New Zealand and on to Australia, United States and Canada. Charlie and Ran were dropped off from the *Benjamin Bowring* about 16 miles from the Yukon River mouth in the Bering Sea (Ollie had returned to the U.K.). Shortly after launching, Charlie's boat was overturned but his cool head saved him from disaster. He and Ran ascended the Yukon River and descended the Mackenzie River

Charlie Burton (at back) shouts to shipboard friends when he and Ran Fiennes reach the Benjamin Bowring following the North Pole leg of the Transglobe Expedition. Photo: Transglobe Expedition.

to the Arctic Ocean. They then drove a fibreglass whaler along the North West Passage coastline, often in thick fog and floating ice, until Ellesmere Island. This they crossed on ski and snowshoe, eventually reaching their wintering over hut on the edge of the Arctic Ocean.

After five months of hard training in the dark, Ran and Charlie set out in February 1982 for the North Pole. Charlie wrote of that time: "We got weaker and weaker until we could hardly pick up the axes to smash through the ice walls. We were shattered. After each patrol to route find we would drag our way back to crawl

Continued on Page 30

Antarctic Science Scholars Announced

Three post-graduate students from Auckland, Canterbury and Otago universities will be undertaking scientific research in Antarctica this season following their selection as this year's Antarctic science scholars.

Joanna Norkko has been awarded the Kelly Tarlton's Scholar for 2002-2003 and will be undertaking research in conjunction with the National Institute of Atmospheric and Aquatic Sciences (NIWA) and the University of Auckland. The team will be testing the responses of benthic fauna to fluctuations in food availability at sample sites around McMurdo Sound.

Christine Elliott from the University of Canterbury has been awarded the New Zealand Post Scholarship.

The primary objective of her research will be to improve understanding of physical rock weathering processes and their effectiveness along a moisture gradient on the Victoria Land Coast. Ms Elliott will be working towards a PhD with the Department of Geography and Gateway Antarctica at Canterbury University.

Pierre-Simon Ross from the University of Otago has been awarded the Sir Robin Irvine Scholarship. He will travel to South Victoria Land to investigate how volcanoes work, using as his model an old volcanic vent complex preserved in the Coombs Hills. He will work under the direction of Dr James White from Otago.

All scholarships are valued at \$10,000.

*Tribute: Charles Burton.
Continued from Page 29*

into the tent. But there is always light at the end of the tunnel and that is what you must think about the whole time you're killing yourself." They reached the North Pole on Easter Day, becoming the first humans to reach both poles by surface travel.

However, the annual break-up of the sea-ice floes caught up with them about three hundred miles beyond the Pole and they were forced to float about on an ever-decreasing ice-pan with melt water soaking them by day and night. Nineteen polar bears visited their tent. Charlie would normally scare them off by banging cooking pots but one proved aggressive and, approaching Charlie, was shot in the ankle when about thirty paces away. It departed.

Eventually the *Benjamin Bowring* got within 14 miles of their floe. I had rejoined the vessel as First Mate for the Arctic pick-up operation, to gain further ice experience. Using light canoe sledges, Ran and Charlie set out through spinning masses of ice islands and floating sludge ice. At one point, Charlie narrowly avoided being crushed between colliding

floes. Then, at 0014 hours on the 4th August 1982 at 80°31' North, 59° West, he and Ran came aboard the ship, completing the global circle with the vessel's return to Greenwich a few weeks later. Ran and Charlie had been travelling together for one thousand and sixty days.

A requirement for the early members of the Transglobe Expedition was to be a member of a Territorial Army unit. Charlie joined the Artists Rifles. Territorial Colonel and surgeon Ian Fraser wrote to Ran Fiennes: "When Charlie joined 21 SAS in the 1970s he proved a brilliant medical student. His laughter would lift our spirits and left one wondering, if you felt down or grisly, what possible reason there was not to be enjoying life. He was an enlightening milestone in my life, never to be forgotten." And Simon Weston, badly burnt in the Falklands conflict, who was on Charlie's Raleigh staff in New Zealand, writes: "Charlie was a truly good man. I especially admired him because he was a doer not a talker."

Charlie Burton will be remembered for his Transglobe accomplishment, his ever-cheerful presence and his passions – Twink, golf and laughing.

NZ Ship "Tangaroa" Revisits Antarctica – Continued from Page 17

snow, rough seas and heavy swells became the norm. However, the work programme was not adversely affected by it. Apart from a distant "blue sky" over the dazzling white continental landscape of Terre Adelie behind the French base Dumont d'Urville, sighting the first berg announced sunless days until *Tangaroa* returned north to the same latitude 15 days later.

A large concentration of icebergs (referred to on board as "iceberg alley") were encountered in the coastal sea-ice zone, from the Terre Adelie coast to approximately 80 nautical miles to the north. At times 100 bergs could be seen on the ship's radar screen within 12 nautical miles of the vessel. Most were aground and *Tangaroa* could continue to work among them safely in the inclement weather. Any pack ice had long since vanished – in fact, none was encountered during the whole voyage, making an Ice Pilot's lot an easy one! This was also the general area for the current position of the South Magnetic Pole, which is moving in a NNW direction at about 8 km per year.

We had a pleasant interlude during a lunch hour break at our southern most station. *Tangaroa* steamed across the Antarctic Circle (66 33'S) into fine calm conditions off the coast from the French base, to get the official photograph of crew and scientific party. Glistening icebergs and the sunlit Antarctic continent behind was the perfect backdrop for all hands mustered on the ship's for'castle deck. Three emperor penguins entertained from nearby bergy bits, obligingly porpoising around the bow of the vessel during the photo session. A delightful sight that was appreciated by all. Too soon *Tangaroa* retraced its track, back into the mist and greyness of Southern Ocean oceanography!

Tangaroa returned to Hobart 7th March to unload scientists, equipment and the products of a very successful oceanographic sampling programme. This was celebrated in style by NIWA hosting a function for all participants at a well-known Hobart waterfront watering hole, appropriately named The Drunken Admiral! *Tangaroa* then returned to Wellington, arriving 16th March.

Remembering Garth Varcoe and Terry Newport

Ten years ago on the 13 October 1992 the New Zealand Antarctic Programme (now managed by Antarctica New Zealand) was deeply saddened by the loss of Garth Varcoe (48) and Terry Newport (31) in a helicopter accident, which occurred 40km from Scott Base in Antarctica. Garth, the technical officer for the Antarctic Programme, was on his 37th visit to Antarctica while Terry was on his first visit as summer carpenter. Air crewman First Class Petty Officer Benjamin Micou, who worked for the American Antarctic Programme, also died in the crash.

Garth began his Antarctic career in 1978 when he joined the Antarctic Division of the DSIR as its buildings and services officer (*see Antarctic Vol 14 (2), p. 72*). He took a leading role each year in preparing new Scott Base staff, teaching them the dangers and excitement of working in Antarctica. In recognition of his contribution to the New Zealand Antarctic Research Programme, Garth was awarded the Polar Medal in 1990. He also received a citation from the United States Navy in 1984 for his assistance in the search for a bulldozer operator missing in a storm. Garth was also active

in conserving the human history of Antarctica, including creation of the original memorial cross for the crash of Flight TE 901 on the lower slopes of Mount Erebus.

Lou Sanson (CEO, Antarctica New Zealand) first worked in Antarctica for Garth in 1982 and remembers him fondly as a person of huge practical skills, a wonderful personality and a very big focus on achieving the best possible outputs for the New Zealand Antarctic Programme that he possibly could. "He has left an enduring legacy here at Antarctica New Zealand which we will always be grateful for."

After traveling around the world for a year Terry fulfilled a long-standing ambition to work in Antarctica. Terry began working at Scott Base in August 1992 and was returning from completing rebuilding the summer research station at Cape Bird when the accident happened.

Terry was renown during his time on Ice for his photographic efforts and his delight in working in Antarctica.

A commemorative service was held on the 13th October at Scott Base in recognition of Garth and Terry.



Garth Varcoe. Photo: Antarctica New Zealand.



Terry Newport.

Chief Executive of Antarctica NZ Retires
Continued from Page 9.

the University of Canterbury. Before coming to NZAP she had been Corporate Services Manager with the newly formed New Zealand Institute for Crop and Food Research Ltd., and before had been Corporate services Manager with DSIR Crop Research at Lincoln. Gillian had brought with her many outdoor interests that helped her well when coping with her many visits to Antarctica, including skiing, tramping and representing New Zealand in white water kayaking.

Four years later, on 1 July 1996, the Antarctic Institute, or Antarctica New Zealand, was established as a crown entity and Gillian was selected as its first Executive Officer. By this time she was on the executive of the Com-

mittee of Managers of National Antarctic Programmes (COMNAP) of which she was later Chairman.

Gillian left Antarctica New Zealand proud of what the Institute had achieved, especially its reputation in environmental matters.

The large numbers of Antarcticans who attended her official farewell function in June emphasised the respect in which Gillian is held within the Antarctic community.

The Society, of which she is a member, wishes Gillian all the best for a new chapter in her active life.

Before coming to Antarctica New Zealand as the new Executive Officer, Lou Sanson was head of the vast Southland Conservancy of the Department of Conservation (DOC) that includes the Fiordland and Rakiura

National Parks, the Catlins Rainforest Park and the New Zealand Subantarctic Islands. Lou has an honours degree in Forestry Science and has wide experience in public sector organisational management and leadership.

He is already familiar with the Antarctic Treaty System and the NGO involvement. His first visit to Antarctica was as a field assistant and driller in a joint USAP/NZAP drilling programme in the Lower Taylor Valley in 1982. Since then he has made several further visits to the continent as lecturer on Antarctic cruise ships.

While overlapping with Gillian to ensure a smooth transfer, in his first two months Lou has already attended the COMNAP meeting in Shanghai and the ATCM meeting in Warsaw.

SANAE IV - South Africa

South Africa was the second signatory to the Antarctic Treaty, signing 21 June 1960, and has one full-year station on the Antarctic continent, and a single summer-only station (E-Base). It also has two Subantarctic Island bases (Gough and Marion). Since its accession there have been several rebuilds of South Africa's Antarctic base, and SANAE IV is the latest, lying 220 km south of SANAE III.

SANAE IV was officially opened 19 January 1997 and lies 200 km from the coastline of Queen Maud Land on Vesleskarvet Nunatak and. Built on a rock outcrop 250 metres above sea level, the base consists of three interlinked double-storey units, each about 14 m x 44 m, raised on stilts 3.5 m above the ground. There is also a double hangar in which vehicles are stored over the winter. During the design stage, CSIR (Council for Scientific and Industrial Research) conducted extensive wind tunnel tests to determine the best shape and size for the structure. The final base design has rounded corners and smooth surfaces to minimise the effect of the wind. The base has a steel frame and walls are made of rigid pre-fabricated foam and glass-fibre resin panels.

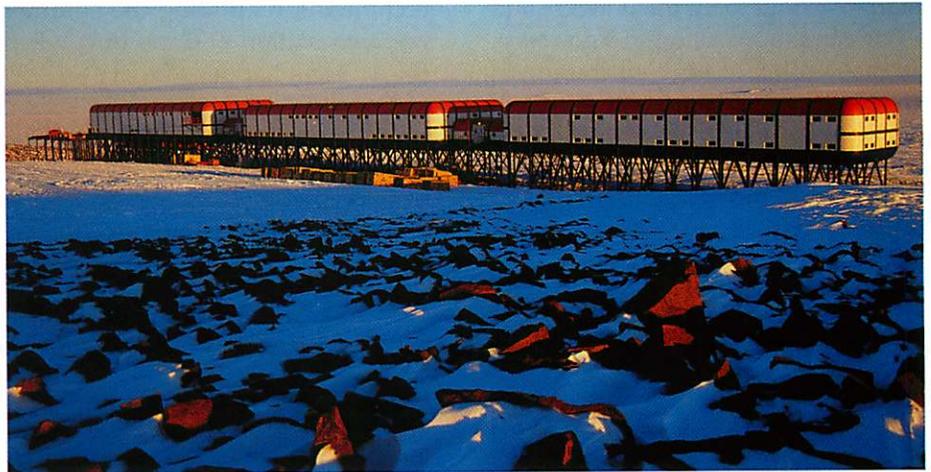
The base has a total area of 3300 square metres, and is able to accommodate 80 personnel during the summer, although usually there are about 60. Over winter the base population is 10, although it can take up to 20 people. Three 250 kW water cooled ADE diesel generators, one of which is spare, supply power, and the interior temperature is controlled by heat exchangers that utilise generator exhaust and coolant heat to warm the base. The generators use 300,000 litres of Polar diesel annually.

Fresh water is made in a remote, manually operated snow melter. Sewage, including field generated waste, is pumped into a sealed effluent treatment plant built as part of the base. After treatment, the effluent, which conforms to standards for release into South African rivers, is discharged over the edge of the nunatak.

The concentrated sewage sludge that remains is containerised for removal to South Africa.

The base has a helipad which has two screw drive lift systems to raise vehicles and provisions from ground level into the base.

Two external views of SANAE IV, January 1997. Photos: Emma Waterhouse. Images courtesy of Antarctica New Zealand Pictorial Collection.



*Below: Main Dining Room with Kitchen in background circa 1990.
– Unknown photographer.*



THE POLE SEEKERS

By Meredith Hooper; Hodder Silver 2000;
paperback; 167 pages. ISBN 0340757345. £3.99

Meredith Hooper has written over 40 children's books, several of them about Antarctica. Below are reviews of two of her Antarctic books. The first is well illustrated and is well suited for 3 – 8 year olds. The second is listed as a "young-adult fantasy novel".

Reviewed by Vicki Hyde

"Beyond all other land, lies the Unknown Land. Hidden. Waiting. The wildest, roughest ocean in the world surrounds it. Mighty icebergs patrol the water, slicing through an unwary ship like a blade through cheese. Blizzards will blind your eyes and bite your tails and beat your fur into frozen sheets...."

Hang on a minute - tails? fur??

Well this is, after all, a tale of a group of ship's rats as they accompany Scott's British National Antarctic Expedition of 1901-4 from England to Antarctica in search of a new land to colonise far from the dangers of the fearsome brown rat.

Meredith Hooper travelled to Antarctica herself to research this novel, as a guest of the Australian Antarctic Division and then later spent time on an ice patrol vessel. Her experience shines through in her description of the physical landscape and the strangeness of the environment there which defies comparison with any familiar part of the world. She also

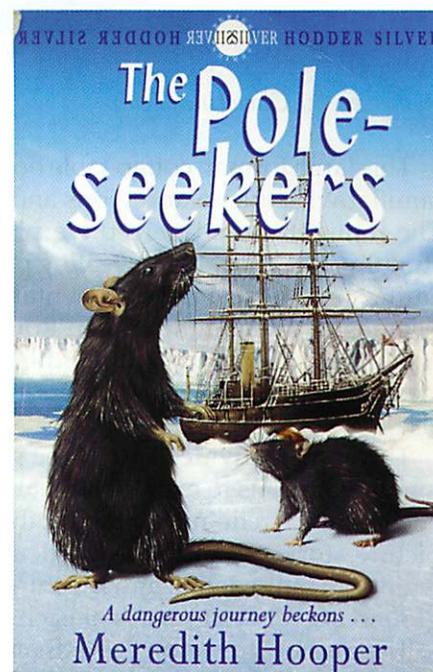
gives a good feeling for the psychological effect of the place. Her main protagonist, the young rat Hackle, notes the following:

"The things you took from this Unknown Country were not physical. They were pictures for the inner eye, sounds for the soul's silence, feelings too deep to express."

But ultimately, what appealed to me about this book was precisely what distanced my nine-year-old son David from it. There is only so much philosophical lyricism one can take at that age, and the characterisation of the rats was not strong enough to really engage the attention of either of us.

It was easy to forget for pages at a time that these were supposed to be more than Scott and his chaps in furrer clothing, particularly when you had rats sending out scouting parties and having rat sing-alongs complete with a rat version of a tea-chest bass. By the time I got to the rat-hauling mission to the South Pole complete with Advance Parties dropping off Depots of food (the capitals are the author's and there are lots of them), I'd had enough.

I guess using rats as characters meant the writer could make her own story-line and characterisation unencumbered by dealing with the historical record, but in attempting to accurately reflect what happened and



how it happened, you end up feeling that she needn't have bothered with the rats. Hooper's writing skills are evident, but this isn't the best approach to appreciate them.

Vicki Hyde has visited Antarctica on an Antarctica New Zealand Media Fellowship. She lives in Christchurch, New Zealand and is Managing Editor of South Pacific Information Services, and also Chairman of the New Zealand Skeptics Society.

Tom's Rabbit: A Surprise on the Way to Antarctica

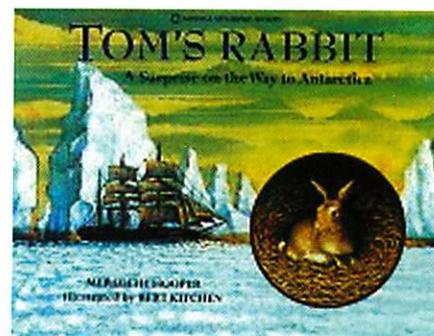
By Meredith Hooper, illustrated by Bert Kitchen.
National Geographic Society 1998. Hardcover, 32 pages.
ISBN 0792270703. US\$15.95

This is a true and warm story based on diaries written by some of Scott's sailors on *Terra Nova*. Tom the sailor tours the ship from top to bottom looking for a warm place for his pet rabbit. This provides the young reader with a tour of the ship, seeing where the sailors eat and sleep, as well as meeting other animals. A cosy spot is found at last and Tom's rabbit

produces a surprise family just in time for Christmas. (Editor)

Reviewed by Bryony Jamison, six years old.

This is a real story. Tom tried to find a nest for Little Rabbit on a ship. The ship is in Antarctica ninety years ago. It is very cold. It is unusual to have a rabbit living in such a cold place.



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Poles Apart

By Galen Rowell, California:
University of California Press 1997
ISBN 0-520-20902-8 Soft cover, 184 pages, maps. US\$45

Reviewed by Christine Ryan

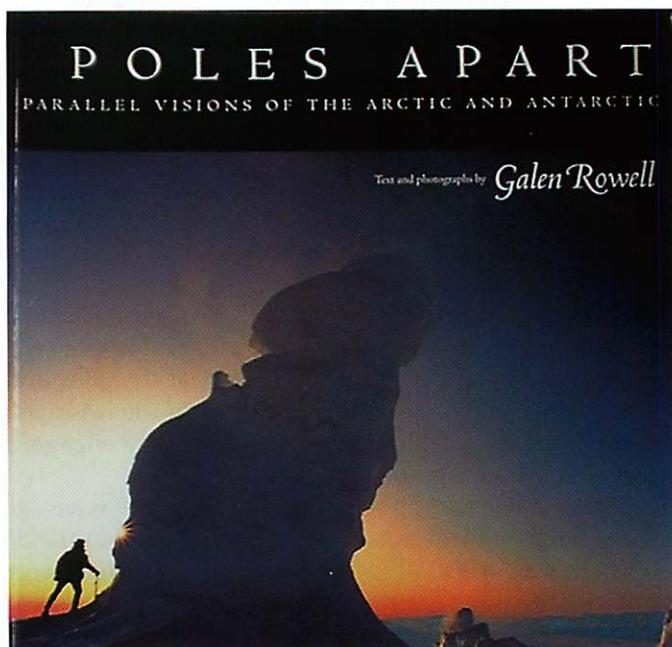
This large format, coffee-table book will inspire those familiar with the polar regions and those new to them. The thoughtful and perceptive photographs are both stunning and shocking, revealing physical, cultural, scientific, historic and environmental facets of both Polar Regions in a new light. Galen Rowell has chosen well his method of communicating the fragility of these environments, appealing to readers at many different levels.

The book is divided into three sections: the first using photographs to explore similarities and differences between the Arctic and Antarctic; the second using short picture stories to examine particular subjects in both regions in more detail; and the third detailing the background and circumstances of each photo in the book.

The author draws on more than 20 years of experience in the Polar Regions, as photographer, explorer, climber and lecturer, in selecting the images for the book. His somewhat drawn out introduction examines the philosophy behind the creation of the book and gives some insight into his character. His concept of comparing the Arctic and Antarctic in order to help the reader define each region is a good one, enhanced by the use of images that often contain some element common to them.

Section one fascinated me, most often in the stark differences between the North and South polar regions at similar latitudes. With photographs on facing pages, Arctic on the left, Antarctic on the right, each with latitude defined, the similarities and differences come alive. A lush green meadow in the North of Canada is in sharp contrast to the icy landscape of glaciers feeding into the sea at the Lemaire Channel. Yet a half-moulted adolescent king penguin shares a similar brown shaggy coat to that of an Alaskan brown bear. The form of the photos being compared is often similar, further accentuating the differences being examined.

Section two delves further into life at the poles, with short picture stories describing some of the culture and wildlife, scientific and historical endeavours that characterize these regions. Endearing images of a polar bear at play with a sled dog are made all the more poignant by the caption describing the sad results of human-polar bear conflict. Shocking too, are the images that show the extent of pollution in the Arctic and the destruction of Siberian tundra by tank-driving Chukchi natives. The contrast of technology and tradition is highlighted in the different stories, sled dogs featuring in one, an all-year indoor playground for Alaskan schoolchildren in another.



Section three was the most interesting for me, and as I browsed I found myself flicking backwards and forwards between the sections frequently to get the background story of each photograph. These detailed essays reveal the lengths gone to obtain each image as well as more detail on the circumstances surrounding the photograph. Hidden in this back section are some of the most interesting facts in the book, and the reader can't help but feel admiration for the photographer as he describes how he got the shot. The challenges of photography in often extreme conditions of light and weather are obvious, while the choice images featured in this book demonstrate Galen Rowell's outstanding ability. For those with a special interest in photography, the camera, lens and film used for each shot are also listed.

Overall, the book is only let down by its two endplates, maps of both poles. While these are sufficient to give some idea of the extent of the Polar Regions and a broad overview of the areas mentioned in the book, they lack the detail that anyone interested in geography might appreciate. However this does not detract from the beauty revealed with great insight by Rowell, while his goal of increasing awareness of these regions and stimulating a desire to see them both protected as the last great wilderness regions on Earth was certainly achieved for me.

Christine Ryan is a New Zealand wildlife zoologist and outdoor adventurer who lives near Queenstown. She is also a partner in the tourism-linked company Ibis Technology.

Dr David Donaldson Wynne-Williams

1946 – 2002

David Wynn-Williams was not only a talented and highly respected microbiologist, but he was also one of nature's gentlemen. He died at the pinnacle of his Antarctic career, as a result of an accident while out jogging near Cambridge on 24 March.

David was born in West Kirkby Cheshire and was educated at Calday Grange Grammar School and Birkenhead Technical College. This was followed by a BSc (Hons) in Botany and Microbiology in 1968 at the University of Wales, Aberystwyth. He then researched for his PhD in Environmental Microbiology awarded in 1971.

Following an expedition to Iceland in 1970 and teaching, he wintered with BAS at Signey Island base in 1975 and 1976. Here he developed a great passion for his polar work. A permanent position with BAS followed and ten summer visits were made to Antarctica. As a guest scientist with the University of Canterbury team with the New Zealand Antarctic Research Programme (NZARP) in 1982-83, he undertook his first field studies in the Ross Sea region, on Ross Island and in the Dry Valleys. His main focus was on cyanobacteria, microscopic algae which inhabit harsh environments such as the Dry Valleys. David was convinced that life may have evolved on Mars before Earth.

Ten years later he was studying terrestrial life on the Mars Glacier Alexander Island, and in 1995-96 he participated in an international expedition to Lake Hoare. Two further expeditions were made to Alexander Island from Rothera Station, in 1997-98 and 1999-2000 and his latest work was undertaken in association with United States, and Italian field parties in the Dry Valleys, Terra Nova Bay and in northern Victoria Land.

In 1980 David Wynne-Williams was awarded the Polar Medal for his contribution to Antarctic Science. He was a Fellow of the Royal Astronomical Society, the Royal Geographical Society and the British Interplanetary Society. He played a leading role in many UK, European and world-



David Wynn-Williams signing the visitor book in the "Harrowfield Polar Room", Christchurch. Photo: David Harrowfield.

wide organizations concerned with microbiology, astrobiology, exobiology and the ESA Mars Express Mission sponsored by the European Space Agency. He had diverse interests beyond those of Antarctica and loved talk-

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Tom's Rabbit: A Surprise on the Way to Antarctica

Continued from Page 33

Tom looks in the black cat's hammock. Then he looks on the parrot's swing. He looks in the hold. He shivers, "Too cold down there," he says to Little Rabbit. He looks in the kitchen. Tom looks everywhere on the ship and finds a warm place for Little Rabbit. At last Tom can be with his friends for a special party. Later, when it's nearly bedtime, he goes to see Lit-

tle Rabbit and she has a surprise for him!

The book has beautifully painted pictures. I have seen the photograph of the pony picture. The other pictures I like are the cat, which has some cotton reels to play with, and the parrot, and the baby rabbits. They are so sweet.

I like this book very, very much.

Bryony, who lives near Christchurch, belongs to a family that has a strong Antarctic interest through her grandfather,

Derrick Hobby, who has been associated with Antarctica since 1960. By the time she was asked to review the book Bryony had already seen the film "90° South" in which she saw the photograph of the pony stalls on the Terra Nova as well as the black cat jumping through someone's arms. She obviously enjoys the role animals play in this story. Our thanks to Bryony's parents, Jenane Hobby and Elwin Jamison, for helping put Bryony's thoughts onto paper.

Dear Editor

I would like to comment on an article in the most recent issue of *Antarctic* (Vol. 19, no. 3 & 4, p. 173) concerning our "Antarctica 2002" meteorite expedition.

First of all I would like to introduce myself as a long-time member of the New Zealand Antarctic Society, and as a scientist with six Antarctic expeditions under my belt. I am the person mentioned in the article as the Expedition Leader.

The article in *Antarctic* is based upon a misrepresentation by Space Adventures, who served as a marketing intermediary for our most recent Antarctic expedition. It is true that most of the participants paid to be there in a "field assistant" capacity, much like Earth Watch, but the article made it sound as if the whole expedition was a "rag-tag" group of tourists floundering around looking for meteorites and adventure. This was not the case. The expedition was sponsored as a partnership between the Planetary Studies Foundation (PSF), which provided the science credibility, and Space Adventures, who provided paying clients to make the trip financially possible. In the end PSF provided the majority of the participants, who included a Ph.D. microbiologist from Austria, noted Antarctic guide and explorer Art Mortvedt. The principal field guide was Roger Mear, and the "tourists" numbered only 5 of the 12-person expedition.

The meteorites, which are currently in various stages of research, are held by the Planetary Studies Foundation for the global scientific community. A preliminary report has already been submitted to the Meteoritical Society for publication. Meteorites from the earlier expedition, "Antarctica 2000", have all been classified and reported in the scientific literature, and are available for additional study to recognized scientists.

Sincerely,

Paul P. Szipiera
President, Planetary Studies
Foundation

Dear Editor

Re: Mt. Markham Discovery Expedition 2002

With much regret, Freddy Markham has been compelled to announce the cancellation of the expedition, for want of adequate sponsorship to protect against costs arising from adverse contingencies.

Announcing his decision in the wake of the training trip to Greenland, and too late for the last issue of *Antarctic*, he wrote: "The cost of a plane from Patriot Hills, the ANI base, to the top of the Beardmore would be US\$198,000. While we have been offered places on a Quark Expedition ship on the way back from McMurdo, the possibility always exists that the ship may not be able to get near the land, even with its helicopter, or that we might simply miss the boat. If that were to happen, we would be faced with ANI coming to get us at a further cost of US\$300,000. Faced with such costs, [in addition to] flights to Patriot Hills and all other expenses, and the fact that we have been unable to secure any other sponsorship, ... I regret that the expedition will not now take place."

May I take the opportunity to point out an error in the report of the expedition's plans in the current journal issue (vol.19 Nos 3 & 4, p142), which referred to the 1902 Southern Journey "manhauling across the Ross Ice Shelf." Scott and his two companions used dogs to haul the six-sledge train, reduced to two sledges when they reached their farthest south.

There is a widespread impression that Scott was locked in the outdated Arctic tradition of manhauling,

whereas he, as opposed to Markham, was in favour of using dogs until the unfortunate experience of their failure on that journey, which in turn caused Shackleton to rely on ponies on the *Nimrod* Expedition.

Interestingly, Dr. Susan Solomon, in her book *The Coldest March*, recently highlighted a further reason for the dogs' difficulties with the sledge train after the transfer of the 11-ft sixth sledge from Barne's party, which halved their rate of advance — they had pulled five sledges with complete success up to that point, always having to wait for the manhauling support party to catch up. As she pointed out, the friction on crystalline Barrier surfaces, at its worst in very low temperatures, but clearly so on the "thick coating of loose ice crystals like fine sand" that Wilson described on 19 November 1902, is a more potent factor than weight. Beyond doubt, that was a factor Scott did not anticipate in changing his plan for Barne to continue to 80°S.

Unfortunately, the recent screening in the UK of the film *Scott & Shackleton: Rivals to the Pole* also contained a statement, by one of the supposedly authoritative interviewees, perpetuating the myth that Scott had learned nothing from Nansen. Referring to the Norwegian practise of killing dogs to feed to others as the load decreased, it was asserted that "the British would never do that", a statement entirely contradicted by Wilson's 15 July 1902 diary entry, describing the planning of the Southern Journey, based on doing exactly that, until there would be four dogs left for the last leg back to the ship.

With all good wishes for the ever increasing success of the Society and its journal.

David Yelverton

Tribute: David Wynn-Williams
Continued from Page 35.

ing to young people about science.

On several occasions, once with Italian scientist Professor Franco Bersan, David visited my 'Polar Room', which he described as "an Aladdin's cave and a trip down memory lane". On one of the visits he recorded how he had restored the

inscription on Shackleton's headstone at South Georgia, using a piece of lead pipe and epoxy resin. "It was a true privilege to do this for The Boss", he said.

David had many New Zealand friends and colleagues and will be sadly missed. He is survived by his wife Elizabeth, an artist, and by their two daughters Cherry and Rosanna.

By David Harrowfield

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.

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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 mail-order 'Polar Bookshop' and occasional brochures from the Society's 'Sales Stall'. Occasional meetings are held by the Auckland, Wellington, Canterbury and Otago branches.

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