

COVER



Erik Bradshaw dimbing the Northanger Wall, Paradise Bay, Antarctic Peninsula.

Photo by Christine Ryan.

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Please address all publication enquiries to:

PUBLISHER Warren Head
'Antarctic Magazine', P.O. Box 2369,
Christchurch 8015, New Zealand
Tel (03) 365 0344, Fax: (03) 365 4255
Email:headconsultants@xtra.co.nz

EDITOR Michelle Rogan-Finnemore
P.O. Box 404, Christchurch 8015,
New Zealand
Email:michelle.finnemore@canterbury.ac.nz

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An unnamed peak above Paradise Bay, Antarctic Peninsula, gives Christine Ryan some challenging conditions.
Photo by Erik Bradshaw.

Climbing in Paradise

By Erik Bradshaw

I squint into the horizon, trying to determine whether the white breaking waves are innocent foam or small icebergs. We are sailing flat out into the Drake Passage in a 54 foot sail boat and hitting ice much larger than a refrigerator could lead to our demise.

The weather is not helping - it started nice enough as we sailed out from the Melchior Islands in the Antarctic Peninsula, but within 3 hours we are in a gale with fully reefed sails and everything battened down. The wind is coming from the northeast and has set up a 3 metre swell at right angles to the prevailing northwest swell. The result is the boat lurching awkwardly from wave to wave, sometimes running along their crests and sometimes falling into what feels like a bottomless hole. It continually amazes me that the boat stays upright through it all.

The wind picks spray off the top of the waves that turns to sleet and stings the exposed skin of my face. Frequently a wave slams into the side of the boat sending sheets of water over me, adding to my soggy, numb hands and feet. I'm not sure what will come first, the end of my watch, sea sickness, or mild hypothermia. Is this really a holiday, an escape from hard work and a chance to relax?

There are 7 of us aboard the sail boat *Northanger*, a steel ketch specially designed for sailing in the high latitudes. Since its construction in 1982 the boat has sailed the Northwest Passage, wintered over in the Arctic (in Ellesmere Land), been capsized and dismantled once, visited the Antarctic 6 times and South Georgia twice. Greg Landreth and Keri Pashuk are the intrepid owners who see this lifestyle as a lot better than being stuck in an office!

It's 15 March 2006 and we have just spent the last 5 weeks climbing, exploring and being entertained by wildlife in the Antarctic Peninsula in the area around Melchior Island, Anvers Island, Paradise Bay, Booth Island and as far south as Vernadsky Base.

Five of us flew from New Zealand to Ushuaia in Southern Argentina where we joined up with Greg, Keri and the boat. Bruce Dowrick and Swenja Stellfeld (Wanaka), Matt Evrard (Christchurch) and Christine Ryan and I (Queenstown) made up the motley crew, with only Bruce ever having sailed on any decent sized ocean before. We spent 4 days stocking the yacht up with food and a healthy supply of good Argentinian wine. From there we sailed through the Patagonian Channels and across the Drake, taking 6 days. This crossing had us joking about the 'Drake

Lake', although not too loudly!

Arriving in the Antarctic was mind boggling for the 4 of us who hadn't been there before. It looked just like pictures we'd seen, totally surreal with enormous ice cliffs looming straight out of the ocean and comical penguins. Being on a small yacht gave us an intimate experience, unlike that of passengers on large cruise ships. We were really amongst the icebergs and seals, quiet and slow enough to hear the whales spouting and seals breathing as they swam.

The boat gave us a warm and dry haven to base our land forays from – a source of seemingly endless gourmet meals produced with great regularity by all the foodies aboard. It's not the ideal place to sort gear for expeditions though – everything is tucked away in nooks and crannies around the boat, it's dark below and there is very little room to spread things out and make sure you've got all the equipment you might need. Constantly clambering over and around the other bodies on board tests the patience of all involved. As a living environment, imagine a cross between a caravan and a small mountain hut, fine until you put it into a freezing environment and prevent anyone getting off for several days at a time! It certainly requires a large amount of tolerance and adaptability.

Getting off the boat is a challenge in itself, with several factors to consider. First, the weather and sea have to be calm enough to launch the inflatable off the side of the boat. This is a job for at least 3 people – one to manage the winch and two to handle the dinghy. You can't really leave the dinghy unattended in the water for any length of time as curious seals have been known to have a chew on them, rendering them completely useless for anything except patching gumboots. Secondly, you have to turn yourself into a "michelen man" with your flotation suit – basically a full body lifejacket that makes any kind of movement more akin to the gait of a penguin than an able-bodied person with two decent legs. Thirdly, you have to have a driver willing to drag themselves away from their wine/coffee/scrabble

game and out into the cold to drop you off. And last but not least, you have to be able to get ashore. Given that much of the coastline is vertical ice cliffs, this last point is not trivial. There is also the heaving swell to think about, requiring nimble feet and good timing to get ashore safe and dry.

While a yacht is a fantastic way to get across the Drake Passage without requiring a whole lot of fuel, it does have its limitations once you're down in the iceberg zone. The *Northanger* has one advantage over other yachts in that it has a retractable keel that can be raised in order to get into shallow anchorages beyond the reach of large icebergs. This is an important tactic as icebergs are one of the major hazards for a small boat in this area. Anything larger than a couch can cause damage, even at very slow speeds. In two of our anchorages, we had to rapidly launch the dinghy to fend off large icebergs (one much larger than the boat) that were threatening to squash us against the rocks. The technique is to nose the dinghy up to the iceberg and rev the engine. For an age it seems as if the iceberg is never going to move, but gradually it starts to inch away. Once you get it into an appropriate current or wind, it drifts away and we breathe a sigh of relief. It doesn't help when it's pitch black and below zero outside!

The other major factor to consider with a yacht is the wind – an anchorage that is sheltered when you arrive might not stay that way for long. We often had an anchor out and 4 mooring lines to ensure that we didn't get blown around too much if the wind changed in the night. Getting mooring lines out is not always straightforward – one instance in Dorien Bay saw Matt and Greg out in the dinghy, fishing below the surface for a rock to get a line around. Suddenly the large, grey-black head of a Leopard seal popped up not a metre from the dinghy, looking poor Matt in the eye as if to say 'you are my dinner'. Next instant, it was on the other side of the dinghy – this was a little too much for the lads and they gunned the dinghy back to the relative safety of the yacht. Before they got there, the Leopard seal again poked its head up

between them and the yacht, just to show who was really in control!

One of the bonuses of travelling by yacht is the community of people you get to meet – not only the other yachties but also the welcoming staff at the bases in the area. We had lovely evenings with staff at Port Lockroy listening to the old gramophone, playing pool at Vernadsky with the Ukrainians and dining with the French-Canadian crew on the *Sedna IV*. This inspiring team of wildlife and natural history film-makers is wintering over in the Melchior Islands to produce a documentary about the effects of global warming on Antarctica.

We were lucky with the weather and squeezed in quite a few climbs, including first ascents of a rock buttress on Mt Wandel (Booth Island) and Mt Cloos. We also climbed Mt Luigi – the high point on Wiencke Island. We had an amazingly clear and calm day for our climb and were rewarded with stunning 360 degree views of mountains and ocean. Other places we climbed in Paradise Bay it seemed as though we could have been the first people ever to set foot there – Antarctica is still a place that gives you the feeling of being a great explorer in an untouched land. It's something that's rare in this world and we feel privileged to have experienced this awe-inspiring land of great contrasts.

To share more of our stories and view photos, visit our website <http://www.bigadventures.co.nz>



Erik Bradshaw and Christine Ryan run their own business IBIS Technology, a software development company specialising in reservation systems for the tourism industry.

Awards give Antarctic fish specialist freedom to pursue research

By Maria De Cort

University of Canterbury postdoctoral research fellow Dr Victoria Metcalf has received national recognition as a female ambassador for science.

Dr Metcalf (Biological Sciences/Gateway Antarctica) was awarded the 2006 Zonta Science Award at a ceremony in the Grand Hall of Parliament Buildings, Wellington, New Zealand in June.

New Zealand Prime Minister Helen Clark presented Victoria with her prize which comprised a cheque for NZ\$10,000, airfares for international travel and the Zonta Science Medal designed by Wellington sculptor Tanya Ashken.

The Zonta Science Award was established in 1990 and is awarded biennially by the Wellington Branch of Zonta, the international organisation of professional women. It promotes science as a career for women as well as providing encouragement and recognition for those already working in scientific fields.

Award convenor Sharon Nelson-Kelly said the judging panel looked for an outstanding woman scientist who would be able to use the award to further her career, but also a person who contributed to her community and could be an advocate for women in science.

"We want a role model for other women scientists who will demonstrate the rewards of entering into the science field and Victoria certainly shows all these attributes."

Dr Metcalf said it was an honour to receive the award, especially as it not only recognised her as a scientist but as a leader and role model. Dr Metcalf plans to use the award



Victoria Metcalf at a recent Antarctic conference displaying her poster on Antarctic fish research.

money to further her current FRST (Foundation for Research, Science and Technology) funded project on Antarctic fish.

"I am investigating lipid transport in Antarctic fish as a first step to understanding how they metabolise fat and adapt to cold. The long-term aim of this study is to see how they have adapted to cold in the past in order to give us an insight into how they will cope with global warming.

"The award will enable me to travel to Boston to spend two to three months working in the laboratory of Professor Bill Detrich, a leading Antarctic fish biochemist and molecular biologist at Northeastern University. I am really looking forward to working with him and strengthening existing collaborations."

In addition to the Zonta award, Dr Metcalf also recently learned of her success in winning two other awards, the Antarctic Science Bursary, worth £4000 (NZ\$12,100) which is an international award made annually by Antarctic Science Ltd, a charitable company that produces the *Antarctic Science Journal*, to a promising young scientist working at postgraduate or postdoctoral level in Antarctic-related scientific research, and finally, a fellowship of up to US\$10,000 from the Scientific Committee on Antarctic Research (SCAR). Only five of these are awarded worldwide each year. SCAR is a committee of the International Council for Science and is responsible for the initiation, promotion and co-ordination of scientific research in Antarctica.

SCAR'S 29TH MEETING A SUCCESS IN HOBART

The organisers of the combined SCAR (Scientific Committee for Antarctic Research) and COMNAP (Council of Managers of National Antarctic Programmes) meetings in Hobart during the period July 8 to 19, 2006, were pleasantly surprised to attract some 850 registrants from 32 countries, including 120 student attendees from 15 countries. 750 abstracts were submitted for the SCAR Open Science Conference which was held during the meetings on 12, 13 and 14 July. The Open Science Conference was a flurry of activity, with 13 parallel sessions running, and 39 separate themes. Hundreds of posters were also presented. Ian Allison, Kate Kiefer, and the Australian Antarctic Division were congratulated on the excellent organisation of the meeting.

The SCAR Fellowship awards for 2006-7 were announced during the meetings. Stephanie Konfal will go from Ohio State University to the

University of Modena, Italy; Nobue Kasamatsu will go from the National Institute of Polar Research in Japan to the Australian Antarctic Division in Hobart, Australia; Olaf Eisen will go from the Swiss Federal Institute of Technology to the British Antarctic Survey in Cambridge, England. Victoria Metcalf will go from the University of Canterbury in New Zealand to Northeastern University in Boston, USA; Barbara Villoslada will go from Cordoba University in Argentina to the Universidade Federal do Rio Grande do Sul in Brazil.

SCAR also elected new officers, announcing as new President, Dr. Chris Rapley, Director of the British Antarctic Survey. Chris has recently been much involved in developments surrounding the International Polar Year (IPY), having chaired the ICSU/WMO Planning Committee for the IPY, and now being a member of the ICSU/WMO Joint Committee for the IPY, which is charged with implemen-

tation. Chris will be joined on the Executive Committee by newcomers Dr. Sergio Marensi, Director of the Instituto Antartico Argentino, Dr. Antonio Meloni of the Instituto Nazionale di Geofisica, Roma, and Dr. Zhanhai Zhang, Director of the Polar Research Institute of China. Dr. Chuck Kennicutt of Texas A & M University remains as Vice President, and Dr. Jorn Thiede, of Alfred Wagner Institute, as Past President. Dr. Thiede was elected an Honorary Member of SCAR.

At the meetings, delegates welcomed Denmark and Portugal as new Associate Members of SCAR. Delegates also endorsed the move of Bulgaria and the Ukraine from Associate Membership to Full Membership. Membership now comprises 34 national Members (30 Full and 4 Associate) and 8 Union members. This widening of the SCAR family will bring with it an even wider engagement of the scientific community in SCAR's research activities.

CHRISTCHURCH CELEBRATES ANTARCTIC LINKS

Antarctica's isolation and breathtaking beauty has inspired many generations of explorers, scientists and artists to undertake amazing journeys in their lives.

A vast majority of these expeditions begin in Christchurch, a city known worldwide as the gateway to Antarctica.

To celebrate the Canterbury / Antarctic connection, the Christchurch City Council will launch the Christchurch Antarctic Festival 2006 which will run from Friday 29 September until Sunday 1 October.

Christchurch will play host to a wonderful production for fami-

lies called *Antarctic Fantasy*, and will also hold many lectures, films and events aimed at educating the public on the many wondrous aspects of the southern tip of the world.

Included in the list of topics to be covered in lectures is a history of the Sub Antarctic Islands, as well as the issue of whether or not tourism should be allowed into untouched areas.

During the three-day festival the public will also be able to view wonderful, breathtaking films shot on the ice. One of the greatest outdoor explorers of all time, Robert Falcon Scott will also be celebrated during the festival when the New Zealand Antarc-

tic Society's Canterbury Branch members lay a wreath at Scott's statue to celebrate his courageous and adventurous spirit, and the many other men and women who have had the courage to explore Antarctica.

Explore the history, science and culture that have been a part of Christchurch for over 100 years, further details can be found at www.antarcticfestival.co.nz or phone 643 941 6877.

Gilbert appointed CEP Chair

New Zealand's commitment to, and leadership in, environmental management was evident at this year's Antarctic Treaty Consultative Meeting (ATCM) in Edinburgh by two events. First, Antarctica New

Zealand's Environmental Manager, Dr Neil Gilbert was appointed Chair of the Committee for Environmental Protection (CEP). Second, a New Zealand paper calling for action to prevent invasive alien species establishing in Antarctica, tabled after the recent workshop in Christchurch, met with agreement from the countries in attendance.



Dr Neil Gilbert (left) in the Dry Valleys during an inspection of protected sites in Antarctica, undertaken in conjunction with John Shears (middle), British Antarctic Survey's Head of Environmental Office and Dave Bresnahan (right) McMurdo Station's National Science Foundation representative.

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Environmental protection has always been a central theme of the cooperation between the Antarctic Treaty parties. The CEP is the advisory body to the ATCM on the implementation of the Protocol on Environmental Protection to the Antarctic Treaty.

"This appointment puts New Zealand in an ideal position to continue to influence the development of en-

vironmental measures to ensure the sustainable future of Antarctica. Climate change, rapid advances in technology, especially in the transport sector, and increasing visitor numbers to Antarctica are placing significant pressure on the natural environment," said Dr Gilbert. "Chairing the CEP will ensure the focus of workshops, like the recent Non-native Species in the Antarctic Workshop, remains at the forefront of discussions about the future management and protection on the continent."

Despite Antarctica's inhospitable environment, non-native species introduced by tourists, scientists and explorers were posing an ever-increasing threat to the continent's fragile ecosystems. The Workshop, co-convened by Antarctica New Zealand, the University of Auckland and the University of Canterbury, hosted by Gateway Antarctica in Christchurch in April, took an in-depth look at current risks, future management options and the devel-

opment of policy advice to ensure Antarctica's environmental future remains free of invasive plants, animals and micro-organisms.

"Antarctica has long been considered as an isolated continent with a harsh environment. So the general perception has been that we don't need to worry about non-native species. We know better now," Dr Gilbert told BBC News. "There are more and more people going to Antarctica and we know that people, ships and planes carry plant seeds and other non-native species. I think we can say with some confidence that the [treaty] meeting has recognised this as a really important issue, that there is a need for research."

On the basis of the presentations and the discussions at the Non-native Species Workshop, Dr Gilbert said New Zealand had offered a number of recommendations for consideration by the CEP at its Edinburgh meeting.

These recommendations include giving the issue of non-native species in the Antarctic priority attention and adopting a "zero tolerance" approach; improving understanding of, *inter alia*, existing biological and genetic diversity, species distributions, and biogeographic zones through dedicated research; understanding the potential implications of a warming climate, and identifying high risk areas and ecosystems.

"The Workshop recognized that prevention is more effective than response, and that the potential loss of scientific, wilderness and other values set out in Article 3 of the Protocol, is too great to leave to chance," said Dr Gilbert. "Wherever possible, non-native species concerns should be built into existing procedures and practices; notably Environmental Impact Assessment (EIA) procedures and the protected areas system and a set of comprehensive and standard-

Continued to page 29

ANTARCTICA - THE GREAT INTEGRATOR OF SUCCESS

More than 130 key stakeholders attended Antarctica New Zealand's annual conference, which was hosted by Victoria University of Wellington in July. The conference was opened by Minister of Conservation, Hon Chris Carter, and featured keynote speakers, scientific and cultural presentations and poster sessions. As well as celebrating wider collaborative links within the scientific community, the event also showcased the newly-formed Joint Antarctic Research Institute, a formal alliance between Victoria University of Wellington and GNS.

The Conference theme, *Antarctica - the great integrator*, focused on the most fundamental aspect of our existence on the ice – our ability to work together.

"It's a theme that highlights the continual development and strengthening of strategic alliances, both on

the ice and at national and international levels," said Antarctica New Zealand CEO, Lou Sanson. "Inspiration, innovation and determination may have got us to the ice initially, but it has been integration that has allowed us to remain and to flourish there. Every aspect of what we do in Antarctica is influenced by the contribution of someone else. Integration is an essential element of our scientific, environmental and logistical success in Antarctica."

In addition to the conference programme, Antarctica New Zealand also hosted two half-day workshops, focussing on the Latitudinal Gradient Project (LGP) and ANDRILL.

"With the LGP heading into its fourth operational year, this workshop provided an opportunity to discuss our collective achievements and future plans. These discussions will now form the basis of the Interna-

tional LGP Workshop, being held in Hobart later this year," said Antarctica New Zealand Science Strategy Manager, Dean Peterson.

Just four months out from the initial drilling on the McMurdo Ice Shelf, the ANDRILL workshop was a timely opportunity to discuss science and operational issues, as well as identifying areas for public outreach and education.

"Integration celebrates the work we do collectively, it acknowledges that we are driven to achieve the same goals and visions for Antarctica's future and it reminds us that together, we are greater than the sum of our individual parts," commented Mr Sanson. "The coming season will be one of celebration and acknowledgement of New Zealand's integral role in Antarctica – celebrating 50 years of New Zealand innovation, discovery and integration on the Ice."

NEWS

THREE LEADING ANTARCTIC SCIENTISTS HONOURED

Three prominent Antarctic scientists have been honoured for their outstanding achievements by the Scientific Committee on Antarctic Research (SCAR).

The President of SCAR, Professor Jorn Thiede, presented the awards during the Committee's 2006 meeting in Hobart, Tasmania. The President's Medal for Outstanding Achievement in Antarctic Science was awarded to New Zealand scientist Professor Peter Barrett, who is the Director of the Victoria University's Antarctic Research Centre in Wellington, New Zealand. Professor Barrett is universally recognised as a leader of the geological drilling community in the Antarctic and has been Chief Scientist for several projects investi-

gating the history of the East Antarctic ice sheet. He has done much to communicate Antarctic science to a wider public audience, including through a BBC programme on the history of the Antarctic ice sheet and emphasising its importance in the global context.

The SCAR Medal for Excellence in Antarctic Research was awarded to Professor Paul Mayewski, who is the Director of the Climate Change Institute at the University of Maine in the United States. Professor Mayewski's primary research interests are climate change and change in the chemistry of the atmosphere. He is the founder of a project to reconstruct Antarctic climate and atmospheric chemistry over the last 200 years and the Chair, since

1990, of the Executive Committee, which coordinates this programme.

The SCAR Medal for International Scientific Coordination was awarded to Dr David Walton from the British Antarctic Survey, United Kingdom. Dr Walton has been Chairman of the Standing Committee on the Antarctic Treaty System since 2002; a member of the Steering Committees for the 6th and 7th SCAR Antarctica Biology Symposia and has represented SCAR at 14 Antarctic Treaty Consultative meetings since 1992. He is Editor in Chief of the scientific journal *Antarctic Science* and has contributed to, compiled and edited six books on research in Antarctica.

SCOTT BASE TURNS 50!

As the world gears up to recognise and celebrate the International Polar Year in 2007, New Zealand has an added reason to revel - the 50th anniversary of Scott Base.

"Not only will 2007 be an opportunity for New Zealanders to celebrate our cultural and geographical connection to the Ice, but it will also set the scene for recognising the global importance of New Zealand's involvement in International Polar Year events," said Antarctica New Zealand CEO, Lou Sanson.

One of the main driving forces pressing the New Zealand Government to take action in the Ross Dependency was the New Zealand Antarctic Society. The idea of building a New Zealand base in Antarctica being first mooted in 1953 in a letter from the President of the New Zealand Antarctic Society, Dr R. A. Falla and the Hon Secretary, Mr

A. S. Helm, to the New Zealand Prime Minister. The letter followed the announcement of the International Geophysical Year programme and the British plan to cross the Antarctic Continent.

New Zealand



Aerial view of Scott Base November 2005.
ANZPC: Martin de Ruyter K2 42 05/06.

became officially involved in 1955 when Prime Minister Sidney Holland announced that the Government would support New Zealand's involvement in the Trans-Antarctic Expedition (TAE) and agreed to provide initial funding of £50,000 for the project. And so the almost logistically impossible task was set - to design, construct, transport and establish a base in Antarctica in less than 12 months.

At precisely 1300hrs on 20 January 1957, Captain Ruegg made a short speech before the New Zealand flag was hoisted in Antarctica for the very first time, by the youngest man on board *Endeavour*, 20-year-old Able Seaman Ramon Tito. The flagpole itself was historically significant, for it had been recovered from Hut Point where it had been placed by Scott in 1902-04 and presented to Hillary by Admiral Dufek.

Scott Base is one of the earliest operational bases to be established on the continent. Though it was originally designed for only a short life - to accommodate New Zealand's participation in the International Geophysical Year (1957-58) and the Trans-Antarctic Expedition - it wasn't long before the value and importance of Antarctic research was recognised. On 3 May, 1962, the New Zealand Government announced that Scott Base was to become a permanent Antarctic station. It was to be maintained by the



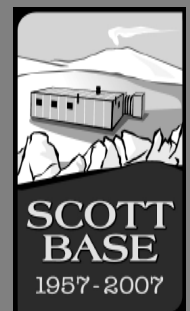
New Zealand flag raised at Scott Base Opening Ceremony.
ANZPC: TAE 385.

New Zealand Antarctic Research Programme (NZARP), under the auspices of the (now-defunct) Department of Scientific and Industrial Research (DSIR).

It is hoped that Prime Minister Helen Clark will accompany Sir Edmund Hillary to Antarctica in January 2007 to attend an anniversary dinner in the original TAE hut at Scott Base and to officiate at the various other events planned to mark the passing of time. A number of celebratory events are planned in New Zealand to celebrate, including an exhibition - opening at Te Papa and travelling around the regions, a gala 3-day reunion event in Christchurch and an exhibition of Antarctic art. New Zealand Post is also producing a commemorative stamp issue.

If you'd like to keep up-to-date with all the upcoming anniversary events, then check out the Scott Base Anniversary website:
www.scottbase50years.co.nz

There is also great information on the history of New Zealand's start in the Antarctic in the library. If you can find a copy "Antarctica" by Helm and Miller (1964) it is the official account of the New Zealand Trans-Antarctic Expedition and makes interesting reading.



John Arnfield Heap

CMG, DIRECTOR, SCOTT POLAR RESEARCH INSTITUTE, (1992-97)

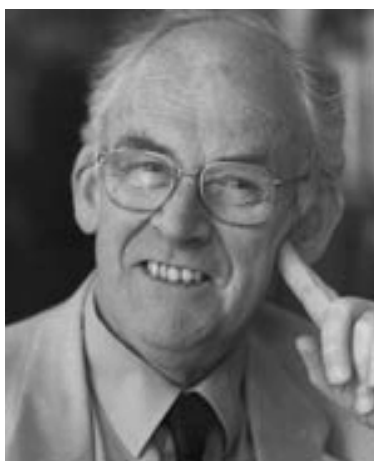
5 February 1932 - 8 March 2006

Polar scientist who argued successfully for a moratorium on Antarctic mineral exploitation.

JOHN HEAP was a distinguished and internationally respected polar diplomat and scientist who contributed significantly to establishing the regulatory frameworks under the Antarctic Treaty to safeguard and protect the vulnerable Antarctic environment, limit exploitation of its marine and mineral resources and to sustain the freedom for scientific exploration.

John was born in 1932 in Manchester, England. His early education at the Quaker-founded Leighton Park School in Reading instilled in him values of equity, tolerance and respect for the individual and a consuming interest in other people.

He studied geography at Edinburgh University and was captivated by the polar regions, leading a university expedition to Arctic Norway in 1953. In 1955 he went to Cambridge as a Falkland Islands Dependencies survey research student at the Scott Polar Research Institute and Clare College. He gained a PhD for work on sea ice in the Weddell Sea, undertaking two Antarctic summer shipboard programmes in 1955-56 and 1956-57, the latter with the Commonwealth Trans-Antarctic Expedition. From 1962 to 1964 he continued research at the University of Michigan, at that time a leading institution in the US for the study of glaciology under the energetic leadership of Jim Zumberge. In 1962-63 he was a member of the University of Michigan Ross Ice Shelf studies project. Heap returned to the UK Foreign Office re-



search department, and headed the FCO's Polar Regions section in 1975 and was administrator of British Antarctic Territory from 1989 to 1992.

In the 1970s world demand was increasing for fish and squid and attention turned to the abundant stocks in Antarctic waters. Signatories to the Antarctic Treaty agreed to negotiate and establish an innovative ecologically based conservation regime.

Heap led the British negotiations but played a wider and influential role. That he was able to work with the environmental lobby more effectively than many other diplomats was thanks to his scientific credentials, track record with the 1982 Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR) and close working relations with experts from the British Antarctic Survey.

In 2000, a 17km-long glacier in Victoria Land, Antarctica, was named after him by the US Committee on Antarctic Names.

His comprehensive knowledge and experience led him to conceive and write much of the *Antarctic Treaty*

Handbook — an essential guide to the complex and growing web of procedures, documentation and practices that had come into force concerning the southern continent, still in use in updated format today. He wrote extensively on Antarctic Treaty matters; Heap's contributions were recognised with his being appointed CMG.

He returned to academia as the director of the Scott Polar Research Institute, a post he held until 1997. Heap also fostered the need to preserve the heritage of Antarctica through conservation of the huts and artefacts of successive expeditions. He became chairman of the UK Antarctic Heritage Trust, he was also chairman of the Trans-Antarctic Association.

*Gilbert appointed CEP Chair
Continued from page 26*

ised guidelines should be developed, aimed at all operators in the Antarctic, based on a "Prevention, Surveillance, Response" approach." The Antarctic Treaty's Committee for Environmental Protection has agreed to make the issue of invasive species a standing item on its agenda and to consider management options at its next meeting, which will be held in India in April 2007.

Reports from the Non-Native Species in Antarctica Workshop are available on the Gateway Antarctica website: www.anta.canterbury.ac.nz

Antarctic Bases No.5

CHANG CHENG - GREAT WALL STATION, CHINA

By Margaret Bradshaw

Great Wall Station lies on the coastline of the Fildes Peninsula at the southwestern end of King George Island, South Shetland Islands. It was the first of two permanent Chinese bases built in Antarctica.

China acceded to the Antarctic Treaty in 1983 and became a consultative party two years later in 1985. Great Wall station was built during China's first National Expedition (CHINARE 1) of November 1984. The

women included in the winter party.

Great Wall Station is resupplied most years by the Chinese Supply ship *Xue Long* (Snow Dragon), which has visited Lyttelton (New Zealand) several times. The ship has a large capacity and is ice-strengthened, capable of breaking through 3m of ice. Over the last few years the ship has been refurbished, increasing research facilities and improving living conditions.

Antarctic map, was published this year, showing many new Chinese place names using Pinyin, a system of using the Roman alphabet for Chinese words. During the season, the expedition also collected more than

Continued to page 40



Above: Widely spaced buildings of Great Wall Station on King George Island.
Top right: Great Wall Station seen from the sea.



Above: Postal cover showing Great Wall Station as seen from the air at the end of the season in 2001.

base was officially opened with the raising of the Chinese flag before a large crowd in February 1985.

Great Wall Station lies close (2.5 km) to the Chile's Eduardo Frei Base, which has a permanent runway that is occasionally used by the Chinese Airforce when flying expeditions from Beijing via Chile. Situated 10m above sea level and comprising 10 buildings, the base normally houses 40 people during the summer season and 14 over the winter.

Women began wintering over during CHINARE 17 in 2001 with two

In January 1989 China established its second base, this time on the Antarctic continent in the Larsemann Hills near the Amery Ice Shelf. The station is not, however, an easy base to supply by ship as there is no reliable anchorage, and sometimes the *Xue Long* is forced to use its engines to maintain position during unloading. During late 2005 China landed its 22nd Antarctic Expedition and completed a successful science programme that included detailed mapping of the Grove Mountains in Queen Elizabeth Land. China's first

EDITOR'S NOTE

This article continues the series on Antarctic Bases begun in 2001, see:

Terra Nova Base (Italy) (now Mario Zucchelli Base), Antarctic 18: p. 78 & 82.

Arctowski Base (Poland), Antarctic 19: p. 167-8. *SANAE IV (South Africa),* Antarctic 20: p. 32. *Palmer Station (USA),* Antarctic 20: p. 54 & 61.

Big Science Adventures - We have a Winner!

Sir Edmund Hillary announced the winner of the Freemasons-sponsored Big Science Adventures video competition. The winners are the Wellington High School team for their video "On the John: Lake Tekapo". The team of students Hannah Newport, Josh Barnes, Joe Russell, teacher Mark Sweeney, and natural history film mentor Melissa Sapietra will depart on the ultimate science adventure – a trip to the Antarctic – in January 2007, the beginning of International Polar Year. Their expedition is part of Antarctica New Zealand's Youth on Ice programme. The Principal Scientist for the team, Dr John Hearnshaw, of the University of Canterbury, was delighted they were the chosen winners.

The winners were chosen from six finalist teams, which each had to make a 10-minute documentary of their week-long Big Science Adventure with New Zealand scientists working in the field. New graduates of the University of Otago Natural History film-making course went along as mentors and assisted with the editing.

The 10-minute documentaries about their adventures were judged by a panel which included David Mace, Grand Master of Freemasons New Zealand and Dr Seddon Bennington, Chief Executive, Te Papa Tongarewa. Speaking on behalf of Freemasons New Zealand, the competition

sponsor, David Mace said, "What a heartbreaking task it was to pick a winner from these incredible documentaries. It was a very close thing. They were all excellent in every respect - their team work, their personal skills, the absolute dedication they showed in completing the documentaries which took some all-night editing sessions in some cases, and their ability to communicate the science story well. They all had a marvellous time on their adventures, and have the satisfaction of having produced a very high class piece of work."

Judge Michael Stedman said, "The Wellington High film tackled a difficult subject in a visually interesting way, with maturity and with good use of sequences and structure. This gave the film a very accessible story and took the audience comfortably into very complex science. The script was very controlled which gave the film a strong narrative, and the use of music supported some very visually interesting camera work."

Full details of the six finalist teams can be found at <http://www.rsnz.org/events/bigsci/> and their ten-minute videos can be viewed at www.hotscience.co.nz

AWARD FOR ANTARCTIC HISTORIAN BADEN NORRIS

Baden Norris, Canterbury Museum's Emeritus Curator of Antarctic History, Honorary Curator of Lyttelton Museum, visiting lecturer at Gateway Antarctica and Life Member of the Canterbury Branch of the New Zealand Antarctic Society received the AC Rhodes Memorial Medal in early August 2006.

The medal honours his contribution to the study and appreciation of history.

The first of Baden's 13 visits to Antarctica was in 1963/64 when he helped clear snow and ice out of the Ross Sea Region's Scott and Shackleton huts and began the process of recording the contents found within those huts. Outside of the Antarctic, he was assistant on an archaeological expedition to the Cook Islands, one of the original excavators of Moa Bone Cave at Redcliffs, and a Lyttelton waterfront worker.

Baden has had a long association with the Canterbury Museum and still takes countless parties of students and other visitors through the Museum's exhibits, including their significant Antarctic collection. He has also written many books and penned numerous articles for newspapers.

The AC Rhodes Medal is an annual award made possible by Paul and Sally Rhodes. The Canterbury History Foundation presented the award to Baden on 6 August 2006 in Christchurch.

(Photo courtesy of Canterbury Museum).



New Zealand Penguin Encounter Opening

Construction is well underway on the New Zealand Penguin Encounter opening on 23 September 2006 at the International Antarctic Centre. This is New Zealand's first combined indoor/outdoor penguin viewing encounter.

It will house up to 26 Little Blue penguins in a naturally themed Banks Peninsula environment. The Penguin Encounter will be accessed on two levels with an 'above ground' platform, an auditorium with a 3m high window, underwater portholes and a 'behind the scenes' tour.

Richard Benton, Director of the International Antarctic Centre, said that the Penguin Encounter has been three years in the planning and is being built in partnership with the Christchurch Airport Company.

"The whole design of the Encounter has been undertaken with advice from local bird experts and in part-



nership with the Department of Conservation and local iwi. Supporting the Encounter will be comprehensive visual and audio visual displays, which are being developed covering penguins' biology, environment, habitat, conservation and cultural issues. The Encounter will also increase awareness of the danger that all penguins face today in the wild and what can be done to protect these birds in their natural environment," he said.

The NZ\$2.5 million Penguin Encounter, which will be built adjoining the existing centre, will open in September this year just in time for the Christchurch Antarctic Festival.

The International Antarctic Centre was built in 1992 and today attracts over 215,000 visitors a year. It has twice been judged the best attraction in New Zealand with a 35% market share of all visitors to the region who chose to visit a paying attraction.

SUCCESSFUL EDINBURGH MEETING

(Source: Antarctic Treaty Secretariat Newsletter)

This year's annual Antarctic Treaty Consultative Meeting (ATCM) was held in Edinburgh, Scotland in July, with representatives from the 28 Consultative State countries in attendance. To set the stage for the International Polar Year (IPY), one whole day of the 29th ATCM was devoted to the IPY. Under the chairmanship of Prof. Chris Rapley, former chair of the ICSU IPY Planning Group, the meeting heard informative and inspiring introductions on the scientific issues to be explored during

IPY and the state of preparations, both for the Antarctic and for the Arctic. A lot of attention was also devoted to the publicity and outreach aspect of the IPY. To mark the political significance of the IPY, the ATCM adopted the "Edinburgh Antarctic Declaration on the International Polar Year 2007-2008".

The rest of the agenda of the 29th ATCM was dominated by environmental matters with eight decisions coming out of the Committee for Environmental Protection (CEP).

The ATCM also approved the financial report and programme of the Antarctic Treaty Secretariat and a resolution on "CCAMLR in the

Antarctic Treaty System" aimed at intensifying cooperation between the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) and the ATCM. The meeting also gave the go-ahead for the full development of the Electronic Information Exchange System, which will provide the Antarctic Treaty parties with a more efficient method to carry out the various information exchange requirements of the Antarctic Treaty and the Protocol for Environmental Protection. Intensive discussions on tourism fo-

Continued to page 40

ANTARCTIC SCIENCE SCHOLARSHIPS AWARDED FOR 2006

Four of New Zealand's emerging science minds have been announced as the recipients of Antarctica New Zealand's 2006 Postgraduate Research Scholarships. The 4 winners' research will contribute to one of three prescribed scientific themes: Antarctic Physical Environments Research; Southern Ocean Research or Antarctic Ecosystems Research.

The total annual value of the Postgraduate Research Scholarship Programme exceeds NZ\$60,000 as scholarship winners are also provided with logistical support to and from Antarctica (if needed), as well as being supported in the field. The programme was initiated in 1994. Since then, 35 masters and doctoral students have investigated subjects as diverse as Antarctic silverfish, McMurdo Sound beaches, sea ice properties, lice on penguins, mosses and lichens, geological formations and Antarctic bacteria.

Tracey Jones (University of Waikato) is the recipient of the inaugural two-year Helicopters New Zealand Antarctic Doctoral Scholarship. The focus of her research is to understand the origins and partner choices of Antarctic lichens. This study will ultimately contribute to a better understanding of the structure of existing vegetation, its likely origins, its relationships to floras outside Antarctica and likely changes if proposed climate change occurs.

Nita Smith (University of Canterbury) is the recipient of the New Zealand Post Antarctic Scholarship. Smith will study the Darwin-Hatherton glacial system

and its response to climate change. Her proposal forms part of a wider research programme - *Dynamics and Change of the Darwin-Hatherton Glacial System* - being run through Gateway Antarctica at the University of Canterbury.

Angela McGaughran (Massey University) and Ed Abdool (Victoria University of Wellington) are the joint recipients of Kelly Tarlton's Underwater World Antarctic Scholarship. McGaughran's research is centred around deciphering the unique evolutionary patterns that prevail in polar environments. This research will contribute to a more comprehensive interpretation of evolutionary history, particularly in extreme environments where unique constraints on life evoke distinctive adaptive mechanisms. Abdool will undertake the mathematical modelling of productivity and biomass along a latitudinal gradient in the Ross Sea. According to his abstract, an area of sea ice more than twice the size of Australia forms annually in Antarctica during winter and melts in summer - a process that is perhaps the most dramatic seasonal change on Earth.

In addition to these scholarships, Tim Hay (University of Canterbury/NiWA) is the recipient of the inaugural Christchurch City Council Antarctic Scholarship which is administered by Gateway Antarctica at the University of Canterbury. Hay's proposal is to investigate bromine explosion events and their relationship to ozone depletion in the coastal Antarctic boundary layer.

WINFLY

WINTER FLY-IN TO ANTARCTICA

The first sunrise over Scott Base and McMurdo Station on Ross Island, heralds the start of flights into Antarctica following four months of winter darkness and isolation down on the Ice. The initial flight of the annual winter flight programme, known as Winfly, departs from Christchurch at 7am Sunday 20th.

Four C17 flights are planned over a seven-day period supplying both the New Zealand and US Bases with science equipment along with fresh fruit and vegetables, mail, new magazines and newspapers and key personnel for the forthcoming summer season.

Scott Base Winter Manager, Vicki Addison, said "the winter team has worked incredibly well together and we are proud of the effort put in. Everyone is indeed looking forward to the arrival of 'freshies' at Winfly but that is tempered with the knowledge that a wonderful winter is coming to a close".

"New Zealand is anticipating one of its busiest seasons ever in Antarctica with the start of the multi-national ANDRILL (Antarctic Drilling) operation with seven people going on the Winfly flight to begin the set-up of the drilling project," said Lou Sanson, CEO of Antarctica New Zealand.

"We will also have a number of scientists who will be focussing on sea-ice dynamics the cause of ongoing Antarctic re-supply and access challenges that both the United States and New Zealand face every season.

A specialist restoration and conservation team associated with Antarctic Heritage Trust has been working through the winter. They are now coming out and a new team is going down.

Mainbody flights start to Antarctica on 3 October.

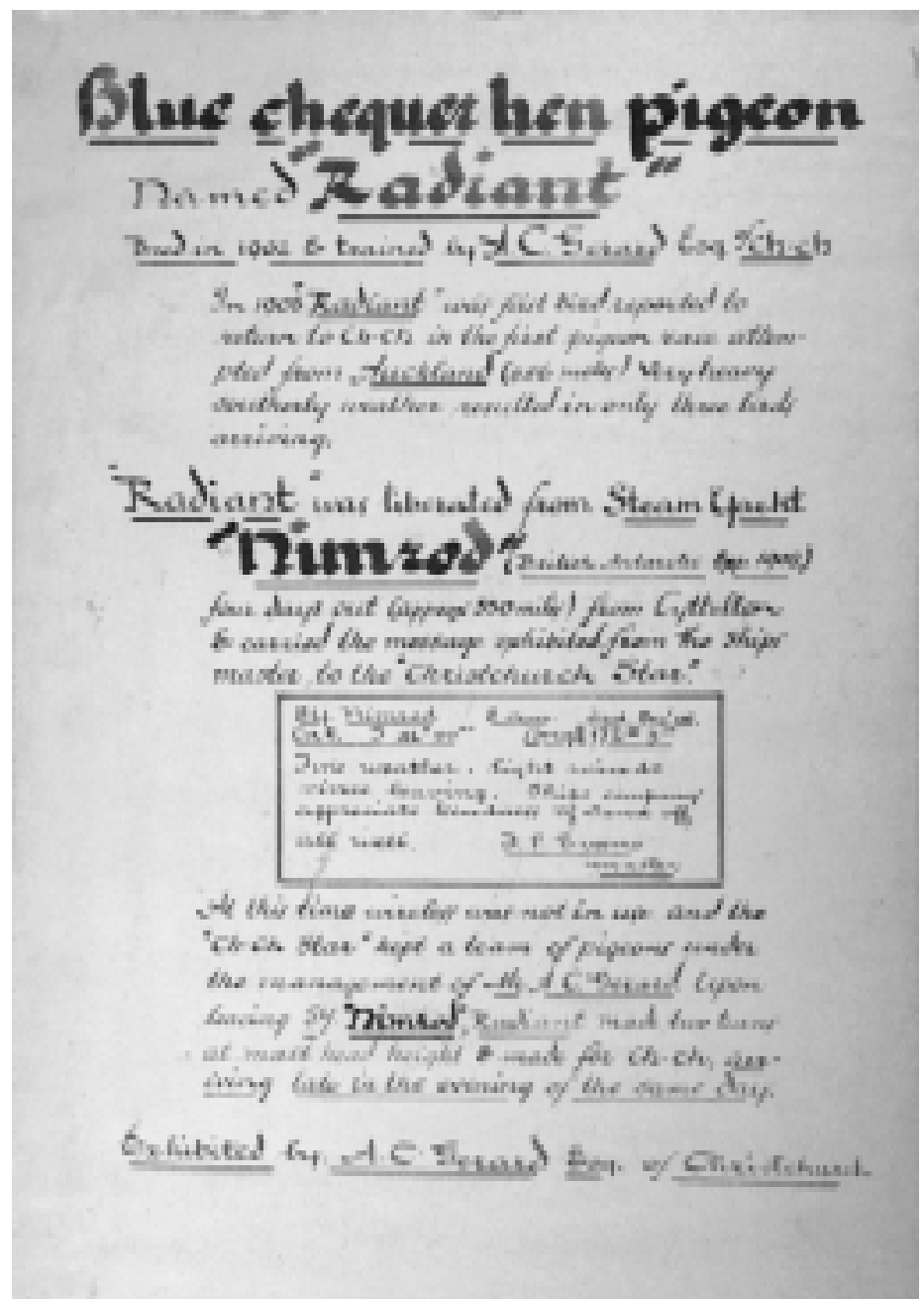
Treasures from Canterbury Museum: Antarctic Pigeon Post

By Natalie Cadenhead

Arthur Gerard was a storeman for the *Lyttelton Times* newspaper in the early 1900's. One of his duties was to look after the office carrier pigeons which were used to bring information back to the newspaper. On race days at Riccarton in Christchurch, a basket of 8 to 10 birds would be taken to the race course and used to fly the race reports back to the office during the day. The reports were written on a sheet of flimsy with a backing of carbon paper. The flimsy was folded, rolled and tied to a ring on the pigeons' leg whereupon the bird would return to the loft in the *Lyttelton Times* building.

Gerard was a carrier pigeon enthusiast, with a successful breeding programme and wins in several long distance races throughout New Zealand. The most difficult races were those that required the birds to fly across Cook Strait or over open water. In 1905 Gerard's pigeon called Radiant won the 486 mile race from Auckland to Christchurch. Another gentleman from Christchurch, Mr. Goldsworthy, was the first to use pigeons to send messages from ships back to shore. He would travel to Lyttelton and work on odd jobs on the various ships that would then take the birds out to sea and release them, whereupon they would fly back to Christchurch.

So what has this to do with Antarctica? In 1908 the British Antarctic Expedition ship the *Nimrod* departed from Lyttelton on its way to relieve Shackleton's expedition in its second season on the ice. The ship was cap-



This certificate was issued on Radiant's return to New Zealand.
 From Canterbury Museum Manuscripts Collection: MS209/2/.

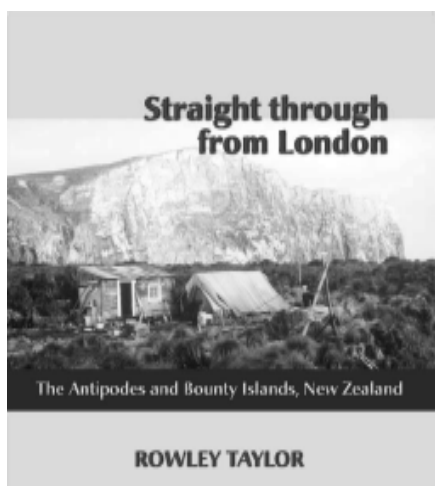
Continued to page 40

STRAIGHT THROUGH FROM LONDON - THE ANTIPODES AND BOUNTY ISLANDS, NEW ZEALAND

Written by **Rowley Taylor** ISBN 9780670034123, 320pp, Hardcover. Review by **Brett Fotheringham**.

The remote New Zealand Sub Antarctic Antipodes Island Group and the Bounty Islands have a fascinating history of exploration, sealing, shipwrecks, castaways and ecological study. Despite this, little has been written about them, possibly because of a stronger focus on the larger and more accessible Campbell and Auckland Islands. This publication does an admirable job to help redress the balance by providing a thorough overview of the history of the islands and their ecology and provides many links with wider New Zealand, Sub Antarctic and Antarctic history.

Thorough, however, does not equate to comprehensive, and this was something of a frustration as it has the appearance of being a full account and the underlying work to achieve this is certainly close. While for most of the 200+ years covered by the book (from their discoveries by Bligh [Bounty Islands in 1788] and Waterhouse ['Isle Penantipode' in 1800]) detailed lists of ship visits are provided but for certain periods there are no lists. Detailed research has led to excellent coverage of the early sealing periods but later coverage is not as complete. In his preface, Taylor records his frustration that "official reports and documents ... cloak a fuller and more exciting story" but the lack of accessing these reports has led to a number of mistakes in both the dates and detail of Naval visits from the 1960's and, particularly in the case of the 1969 expedition (in which Taylor was a member), a lack of an alternate view to lo-



gistics concerns and the groups 'stranding' (perhaps less 'exciting' but hardly less relevant).

Taylor's painstaking work to estimate the changes in abundance of NZ Fur Seals at the islands (and useful explanation that the Antipodes were used more as a seasonal haunt for immature seals) is impressive, but I found it disappointing he did not then attempt to estimate the original size of the breeding colony. This may reflect a natural caution. While the islands are effective oceanic outposts there is a surprising lack of coverage of their maritime dimension including the whaling era (why, for example, whaling was common around other Sub Antarctic Islands but not these), the history and practice of fishing in the area and the political issues associated with resource management in the Exclusive Economic Zone.

Among the many strengths of the book are the considered way Taylor

deals with historic myths and inaccuracies, his empathy with and coverage of the natural environment and the coverage of the research and ultimate wreckage of the *Totorore* with the loss of Gerry Clark, one of the great Antarctic/Sub Antarctic sailors of the modern era, and his crewman Roger Sale.

While recording Commander James Cook voyage in *Resolution* as passing to the east of both the Bounty Islands and Antipodes Island, 1-5 December 1773, Taylor does not then record a fact that bears direct relevance to the book's title: on 7 December, when Cook considered he was at the antipodal point to London, he and his officers drank to the health of their friends there. I am sure that Taylor's friends would happily drink to the publication of this, his first book.

The publication has a softcover, is approximately 400 pages long and includes useful maps, sketches, diagrams and photographs, many of which provide valuable historic insights. The book is available from the publisher, Heritage Expeditions NZ Ltd and would be a valuable add to your Antarctic book collections.

Brett Fotheringham is a Commander in the RNZN. He was the Executive Officer in HMNZS TUI when it visited the Bounty Islands and Antipodes Island Group in October 1990.

Peter Jensen Skellerup

CBE, KNIGHT OF THE DANNEBROGORDENEN (DENMARK), JP

14 January 1918 - 15 May 2006

When Peter Skellerup passed away in May, the City of Christchurch and the Antarctic community, lost one of its most loyal supporters. A past member of the New Zealand Antarctic Society and a Fellow (International) of the Explorers' Club New York, Peter valued his Antarctic association.

Peter's interest in Antarctica was stimulated at an early age. His father, George Waldemar Skellerup, had met Sir Ernest Shackleton and a piece of rock from Antarctica, was proudly displayed at the family home 'Danmark' at 14 Desmond Street Fendalton. Then in 1955, he inherited his father's polar book collection, this forming the nucleus of an important library.

In 1960, and representing Christchurch City Council on the Canterbury Museum Trust Board, Peter began a long association with the Museum. His interest in Antarctic affairs was enhanced when the Board decided to embark on construction of a new wing to commemorate the Museum's centenary and to include in the new addition, a "National Antarctic Centre" with the R. H. Stewart Hall of Antarctic Discovery, the W.S. MacGibbon theatre and a purpose-built library with facilities for visiting scholars.

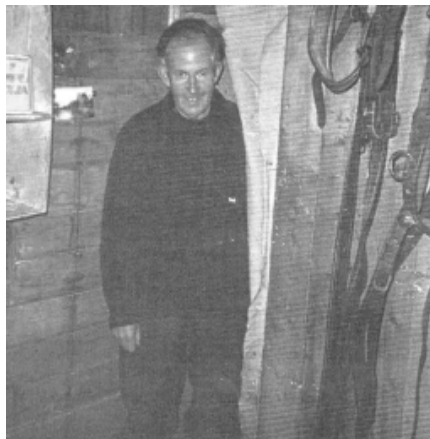
Out of concern for the potential impact tourists might have at Cape Royds, Bob Thomson Superintendent of Antarctic Division DSIR, decided to implement a 'hut caretaker' programme in which two members of the New Zealand Antarctic Society, would travel south for a few weeks in summer, guide visitors through Shackleton's hut, and undertake es-

By David Harrowfield



Above: Peter Skellerup.
Below: Peter in Shackleton's Hut at Cape Royds.

sential maintenance. On September 11, 1969, Peter, who was a member of the Society, wrote in his diary. "I applied for the post as I have always had a strong desire to see Antarctica...As my age is 51, I did not really expect to be selected." Then on October 20 an entry read: "John Claydon rang to say I had been selected from 22 applicants and my companion would be a young zoology student in his final year; Michael Orchard



of Christchurch."

Peter enjoyed his visit and in addition to a detailed report, he went on to publish his private diary. While at Cape Royds, a highlight occurred on November 24. "Went and got my torch to look at Shackleton's wee bunkroom and saw his signature on the head-board of his wooden bunk" he wrote. "Laid down on it for a minute pretending I was Ernest Shackleton... Little sun today, but it has been quite pleasant as have had plenty to occupy myself with." Bob Thomson delighted with the work said: "The success of this 'first' in having caretakers in Antarctica should lead to a continuation of this policy [it continued until the mid 70's] and I hope be a stimulant to the good work of the Canterbury Branch of the Antarctic Society."

Peter Skellerup's first term on the Canterbury Museum Trust Board ceased in 1969, however in 1971 he went on to resume membership on the Board and in April, deposited his polar library consisting of more than 500 books and pamphlets; as a reference collection for the proposed Peter Skellerup Antarctic Library. In October he became Chairman of the Museum's 100th Anniversary Appeal, opened by Sir Edmund Hillary on 10 April 1972 and in 1973 Deputy Mayor and next year, Chairman of the Museum Trust Board, a position held until 1980.

Always keen to see the Antarctic library collection enhanced, he donated in November 1974, \$1000 to establish a purchase fund for Antarctic books. "It's not much" he said modestly, "but I hope to add to it from

Continued to page 40

Sir Wally Herbert Online Gallery

Sir Wally Herbert, who led the British Trans-Arctic Expedition in the first ever crossing of the Arctic Ocean via the North Pole, wintering over en route, and later made the first circumnavigation of Greenland by dog sledge, became UK's best known contemporary polar explorer. He has sledged a total of 40,000 km and spent 15 years in the Antarctic and Arctic, much of it living and hunting with the Polar Eskimos. Also a highly recognised writer and prize winning artist, he has condensed his great experience and knowledge of the polar world into ten books and hundreds of paintings and sketches. Described by Sir Ranulph Fiennes as the world's greatest polar explorer of our times, he was knighted, perhaps appropriately, just on the close of the 20th century.

Wally's first Antarctic experience was as a surveyor for over two years with FIDS (later the British Antarctic Survey) in the late 1950s. His association with the New Zealand Antarctic Research Programme began in 1960 when he was commissioned by the Antarctic Division to buy a team of huskies from Spitzbergen to introduce new blood to the strain at Scott Base. He spent the following 16 months there as surveyor/dog handler/field team leader (a standard combination in those days!) involved in the reconnaissance mapping programme, spending his first season in the region north of the Nimrod Glacier. He will be remembered by those wintering over at Scott Base in 1961 as an entertaining raconteur of "real" Antarctic exploration and characters. In the following season he led the team mapping the Beardmore-Axel Heiberg Glaciers region. The season climaxed with the first descent of the Axel Heiberg since its discovery by Amundsen en route



to the Pole exactly 50 years earlier. He then spent the following 7 months in New Zealand on the cartography of the final maps.

Wally has more recently returned to the Ross Sea – but in the guise as commentator on cruise ships. Although now severely restricted by diabetes, he has high hopes of returning to New Zealand next summer with his wife Marie, herself a distinguished writer, for a bit of R&R – and to continue with a little painting and work on his autobiography.

View some tantalising examples of Wally's 49 photographic reproductions of his paintings for sale through his website, "<http://www.sirwallyherbert.com>"

www.sirwallyherbert.com.

6TH INTERNATIONAL PENGUIN CONFERENCE, HOBART 2007

The 6th International Penguin Conference will be held 3 - 7 September 2007 at the University of Tasmania, Hobart, Australia. The conference organising committee is now calling for papers and posters and the International Steering Committee will select and group oral and poster presentations appropriately to produce themed sessions.

The papers and posters can cover any and all aspects of penguin biology, physiology, and/or conservation, and the submissions will determine the content of the conference and the themes for the sessions. Deadline for submission of abstracts is 30 September

2006. The conference committee is looking forward to seeing many old friends and new faces: everyone with an interest in penguins will be welcomed to Hobart in 2007!



For further information: please contact the organisers at penguins2007@iprimus.com.au.

Big Bang in Antarctica - Killer Crater found under Ice

By Pam Frost Gorder

Planetary scientists have found evidence of a meteor impact much larger and earlier than the one that killed the dinosaurs - an impact that they believe caused the biggest mass extinction in Earth's history.

The 300-mile-wide crater lies hidden more than a mile beneath the East Antarctic Ice Sheet. And the gravity measurements that reveal its exist-

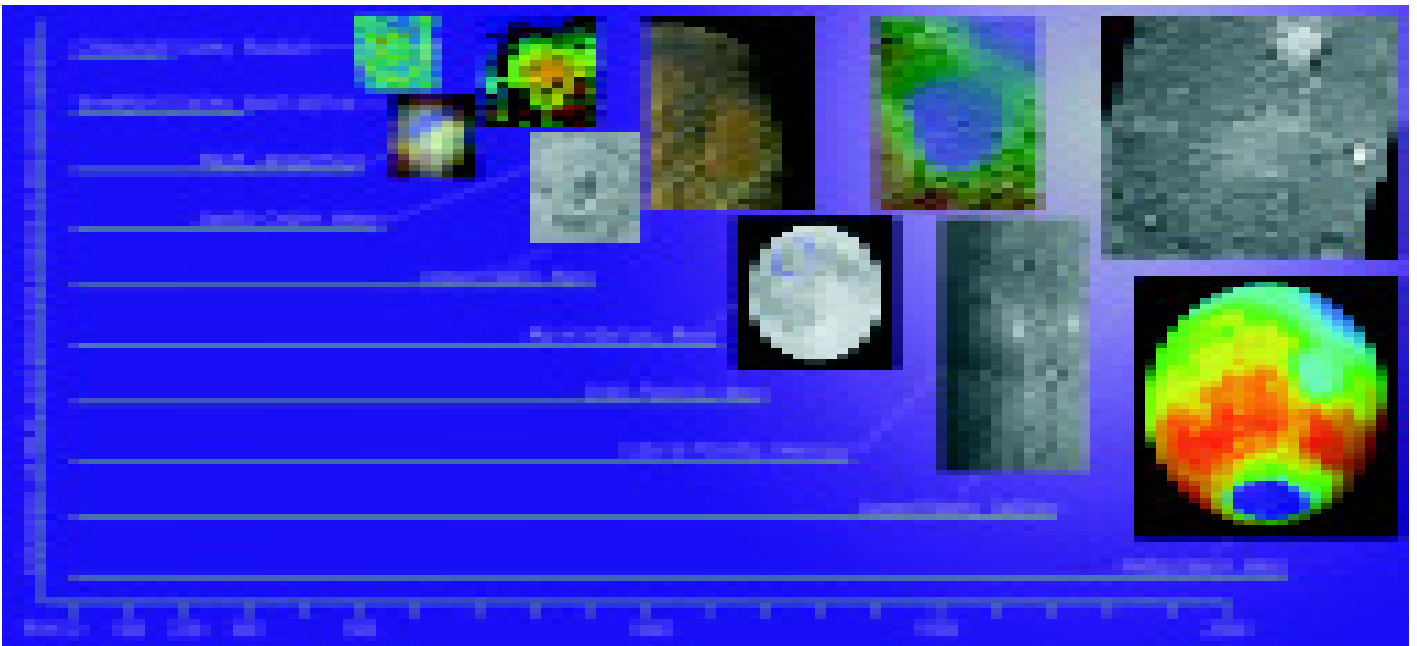
Chicxulub meteor is thought to have been 6 miles wide, while the Wilkes Land meteor could have been up to 30 miles wide!

Professor Ralph von Frese and postdoctoral fellow, Laramie Potts of Ohio State University, USA, the team that discovered the Antarctic crater. They collaborated with other Ohio State and NASA scientists, as well as

risen up into the Earth's crust.

Mascons are the planetary equivalent of a bump on the head. They form where large objects slam into a planet's surface. Upon impact, the denser mantle layer bounces up into the overlying crust, which holds it in place beneath the crater.

When the scientists overlaid their gravity image with airborne radar



Crater comparison: Chart showing where the Wilkes Land Antarctica crater (WLIC) fits in, relative to other known craters on Earth and in the solar system. Image courtesy of Ohio State University.

ence suggest that it could date back about 250 million years, the time of the Permian-Triassic extinction, when almost all animal life on Earth died out.

The crater, located in the Wilkes Land region of East Antarctica is more than twice the size of the Chicxulub crater in the Yucatan peninsula, Mexico, which marks the impact that may have ultimately killed the dinosaurs 65 million years ago. The

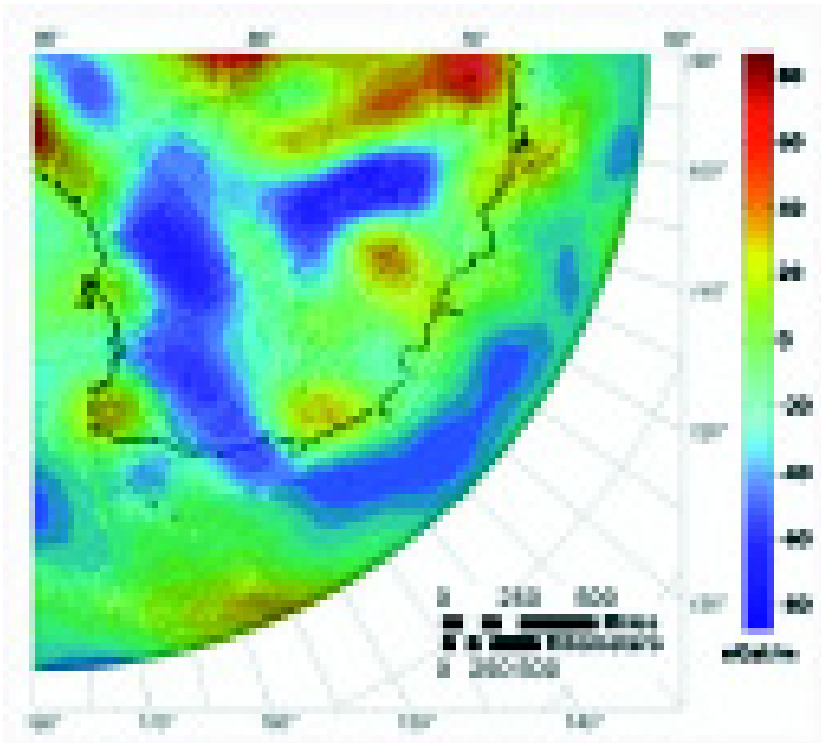
international partners from Russia and Korea. They reported their preliminary results in a recent poster session at the American Geophysical Union Joint Assembly meeting in Baltimore, Maryland USA.

The scientists used gravity fluctuations measured by NASA's GRACE satellites to peer beneath Antarctica's icy surface, and found a 200-mile-wide plug of mantle material, a mass concentration, or "mascon" that had

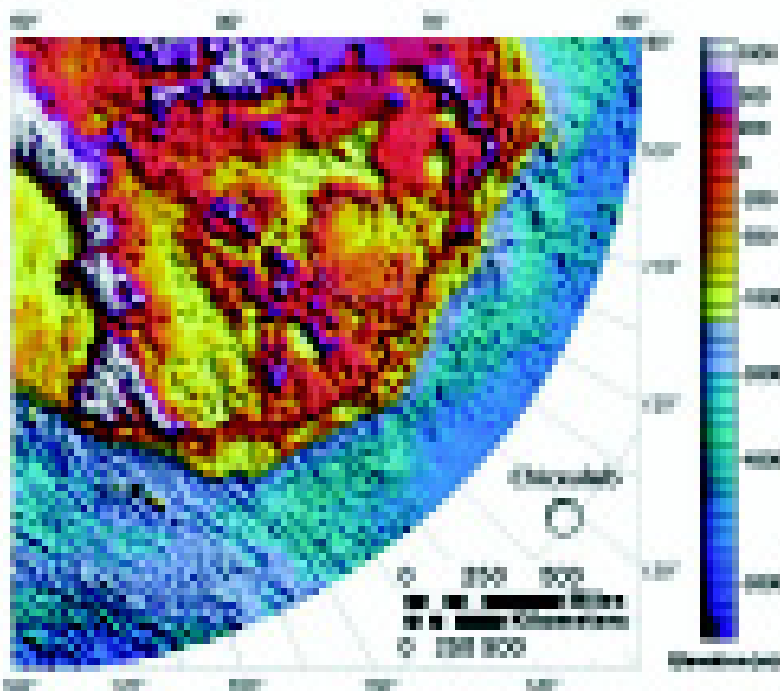
images of the ground beneath the ice, they found the mascon perfectly centered inside a circular ridge some 300 miles wide!

Taken alone, the ridge structure wouldn't prove anything. But to von Frese, the addition of the mascon means "impact." Years of studying similar impacts on the moon have honed his ability to find them.

"If I saw this same mascon signal on the moon, I'd expect to see a cra-



Gravity: GRACE-measured gravity fluctuations beneath East Antarctica. Denser regions appear more red; the location of the Wilkes Land crater is circled.
Image courtesy of Ohio State University.



Airborne radar image of land elevation in East Antarctica. Higher elevations appear red, purple and white; the location of the Wilkes Land crater is circled and an inset of the Chicxulub crater is included for comparison.
Image courtesy of Ohio State University.

ter around it," he said. "And when we looked at the ice-probing airborne radar, there it was. There are at least 20 impact craters this size or larger on the moon, so it is not surprising to find one here," he continued. "The active geology of the Earth likely scrubbed its surface clean of many more."

He and Potts admitted that such signals are open to interpretation. Even with radar and gravity measurements, scientists are only just beginning to understand what's happening inside the planet. Still, von Frese said that the circumstances of the radar and mascon signals support their interpretation.

To estimate when the impact took place, the scientists took a clue from the fact that the mascon is still visible. "On the moon, you can look at craters, and the mascons are still there," von Frese said. "But on Earth, it's unusual to find mascons, because the planet is geologically active. The interior eventually recovers and the mascon goes away." He cited the very large and much older Vredefort crater in South Africa that must have once had a mascon, but no evidence of it can be seen now. "Based on what we know about the geologic history of the region, this Wilkes Land mascon formed recently by geologic standards—probably about 250 million years ago," he said. "In another half a billion years, the Wilkes Land mascon will probably disappear, too."

"All the environmental changes that would have resulted from the impact would have created a highly caustic environment that was really hard to endure. So it makes sense that a lot of life went extinct at that time," he said.

There is still a long way to go to confirm this theory, with more evidence needed to support the claim. The best evidence would come from the rocks within the crater. Since the cost of drilling through more than a mile of ice to reach these rocks directly is prohibitive, they want to hunt for them at the base of the ice along the coast where the ice streams are pushing scoured rock into the sea. Airborne gravity and magnetic surveys would also be very useful for testing their interpretation of the satellite data, they said.

Peter Jensen Skellerup
Continued from page 36

time to time" which he did. A further \$5000 was also given to the Museum building fund and the new wing (since renamed the Roger Duff Wing in recognition of the late Director, Dr Roger S.Duff) was opened by HRH Prince Philip, Duke of Edinburgh on March 4 1977. In November that year Peter presented two rare volumes of Cook's narrative published in 1777 and this gift was followed by a rare early map. In 1978 he was decorated with the CBE for services to the community and was made a Knight of Dannebrogordenen (Denmark) 1st Class, for services to Denmark as Consul-General 1964-1989.

Peter Skellerup's next Antarctic post, saw him take the helm, as inaugural Chairman of the Antarctic Heritage Trust established in 1977, a position he held until he resigned in November 1988. During his time in office, he made financial donations to the Trust and his in-kind support included sufficient 'Butylclad' rubber for the roofs of the historic huts on Ross Island and at Cape Adare. This has stood the test of time and has helped protect the huts.

Peter maintained a close interest in Antarctic matters and frequently spoke with affection, of his trip to Antarctica in 1969, which he regarded as one of the most significant events in his life. In 2003 in recognition of his support for Antarctica, Christchurch and New Zealand, the Skellerup Glacier in the Transantarctic Mountains was named in his honour. He was very proud of this distinction and was delighted to receive from Antarctica New Zealand, an aerial photograph of the Skellerup Glacier.

Peter Skellerup was a modest and kind man with a wonderful sense of humour and one who loved his family and friends. He was also exceedingly generous and was very fond of his city and its citizens. Christchurch and the Antarctic community will be poorer for his passing but richer for his legacy.

Antarctic Bases No. 5
Continued from page 30

5,000 meteorites for research. China intends to build a third base at Dome A, the highest point on the East Antarctic ice sheet, sometimes called the 'Unconquered Pole'.

CHINARE has made four attempts to reach the 4039 high summit of Dome A, succeeding during CHINARE 21 on 18 January 2005 and becoming the first humans to reach this point.

Successful Edinburgh Meeting
Continued from page 32

cused on the issues of permanent infrastructure for tourism and access to Antarctic waters by large cruise ships. **A final report from the ATCM can be viewed via the Antarctic Treaty Secretariat website at www.ats.aq.**

Treasures from Canterbury Museum
Continued from page 34

tained by F.P. Evans who had replaced Rupert England after the first season. On board was the 6 year old female pigeon, Radiant, who was bred and trained by Arthur Gerard.

After four days sail, on 3 December 1908, when the ship was approximately 350 miles from Lyttelton, Radiant was released carrying a message from the Captain to the *Christchurch Star* newspaper.

After circling the mast head twice, Radiant flew towards Christchurch arriving late in the evening of the same day in the pigeon loft of the *Christchurch Star* building.

Canterbury Museum Manuscripts Collection holds the original message received from the *Nimrod*, along with a certificate displayed by Gerard upon Radiant's successful return home.

These documents (reference MS209) may be accessed through the Documentary Research Centre at Canterbury Museum. And Radiant...well, she happily lived out the rest of her days in the carrier pigeon service.

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