

ANTARCTIC



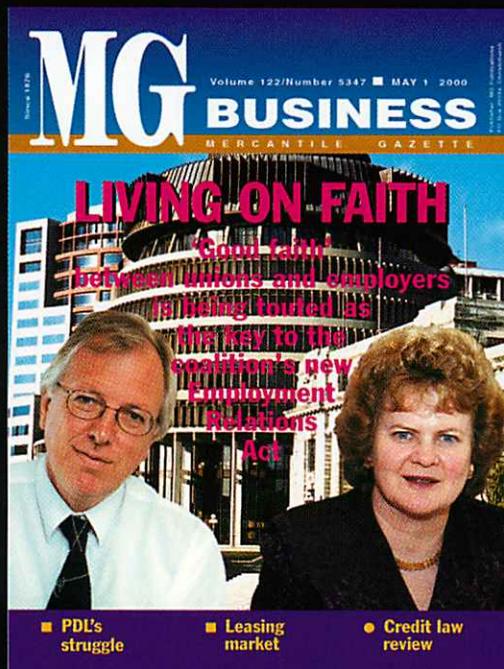
The Journal of the New Zealand Antarctic Society Vol 17. No. 3, 2000

CLASH OF THE SUPER-CONTINENTS

■ ICE CAMP
NO PICNIC

■ RETURN OF
THE PIONEERS

FOR PEOPLE IN BUSINESS



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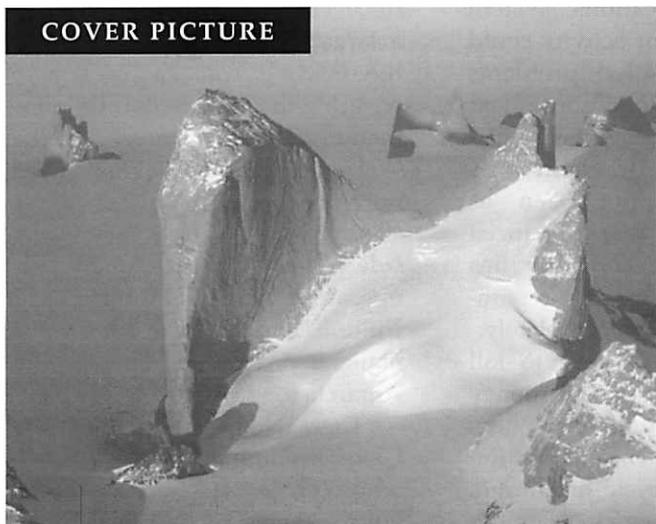
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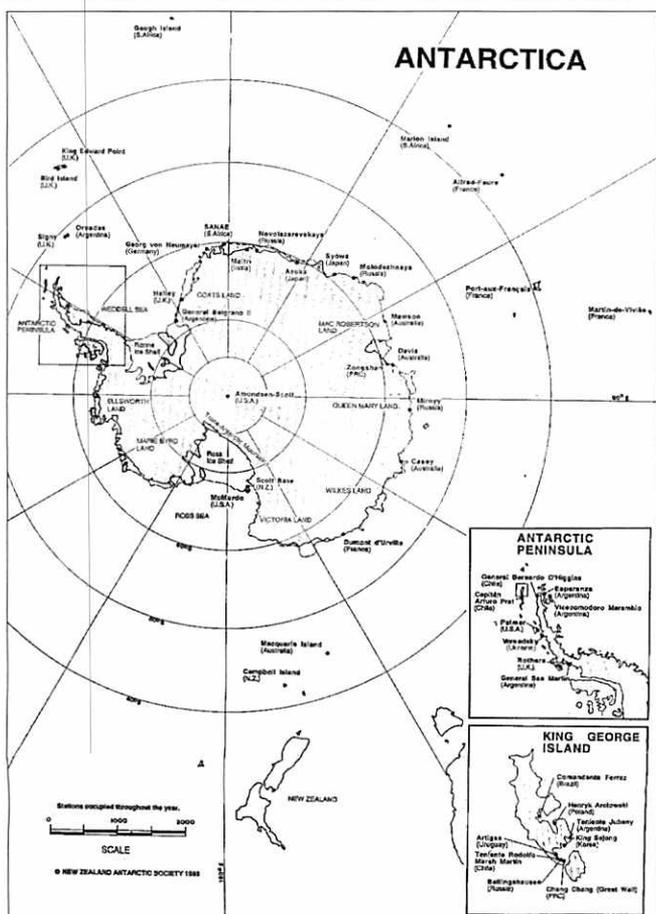


*Dramatic Scenery of Dunning-Maud Land.
See story page 55. Photo: Peto Cleory.*

Volume 17, No. 3, 2000

Issue No. 170

ANTARCTIC is published quarterly by the New Zealand Antarctic Society Inc., ISSN 0003-5327. Editor Vicky Hyde
Please address all editorial enquiries and contributions to Warren Head, Publisher, 'Antarctic', P O Box 2369, Christchurch or telephone 03 365 0344, facsimile 03 365 4255, e-mail headcon@chch.planet.org.nz.
Printed by Herald Communications, 52 Bank Street, Timaru, New Zealand

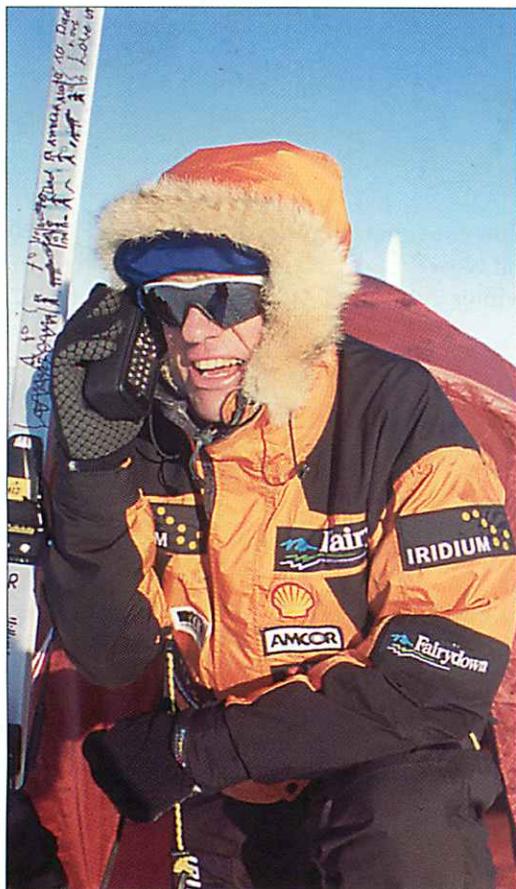


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Due to a shortage of space, the second part of David Yelverton's "The Riddle of the Antarctic Peninsula" will be printed in Vol. 17 No 4.

IRIDIUM FAILURE A BLOW FOR COMMUNICATIONS



Iridium phones were given a high profile in the Ice Trek expedition led by Peter Hillary.

The loss of the Iridium satellite-based communications system and a peak in solar activity could mean communication problems for Antarctic expeditions next season. The telephone system had proved useful for southern travellers but had not been as successful in attracting financial support, and the company has filed for bankruptcy in preparation for closing down completely.

Expeditions will have to fall back on using high frequency radio communications, but these are likely to experience disruption due to the solar cycle maximum. At least four groups are planning crossings of Antarctica next season and a number of other expeditions to the South Pole are also in preparation.

According to the "Antarctic Non-government Activity News", Iridium provided a very effective way for field groups to keep in touch with their base camps and headquarters, providing quick, generally reliable, access, important to the smooth running

of program support, especially in the event of emergencies or when a large number of groups are in the field. It was also a key to ensuring the reliable flow of information that could be used on the Web sites that most expeditions now need to maintain as a standard part of the commercial side of their ventures. Many tour operators have also purchased Iridium handsets, as have most national programme operators in Antarctica.

There had been hopes that ICO Global Communications (ICOGC) would have its satellite-based voice, data, fax and messaging system up and running in time. This appears unlikely as the first of its 12 planned satellites was lost in a launchpad explosion in March, and it too is experiencing financial difficulty.

Most satellite communications systems do not cover Antarctica or have bulky communications units unsuitable for traverse teams who look for the lightest possible systems available.

WHALING CHALLENGED

Japanese "scientific" research into minke whales in the Southern Ocean Sanctuary continued to cause protest, both personal and political, this season.

In December, Greenpeace activists in inflatable boats chased a Japanese whaling fleet and blocked a factory ship from loading a harpooned whale from a catcher ship. The activists stated that Japan had breached the United Nations convention on the Law of the Sea requiring countries to cooperate with the International Whaling Commission in the conservation of whales. Limited scientific whaling is permitted within the International Convention for the Regulation of Whaling, allowing Japan to take 440 whales this season.

The action gained attention with broadcasts of a Greenpeace boat with two activists aboard being dragged up the stern of a whaling vessel. The boat had been attached to a towline

transferring the whale. The crew of the *Nisshin Maru* cut it free, sending it shooting back down the stern ramp. A further six activists dived into the water in front of the vessel, to no response.

New Zealand Prime Minister Helen Clark voiced her disapproval of the whaling and the treatment of the protesters. She also noted that the scientific purpose of the activity was questionable, as it does not appear to meet any critically important research needs.

"New Zealand will be strongly challenging the Japanese programme at the next meeting of the IWC in July," said Ms Clark. "The overwhelming majority of members of the IWC share New Zealand's concerns about the Japanese whaling programme."

Her comments were criticised by Japanese Minister of Fisheries Tokuchiro Tamazawa as likely to hurt New Zealand's image in Japan.

PORT LOCKROY POPULAR

The historic and beautiful area of Port Lockroy was a hit with visitors this season. This picturesque area of the Antarctic Peninsula saw almost 6,000 people visiting from 73 cruise ships this season.

They came, in part, to see the results of an intensive conservation and renovation process at the old British station. The station, used from 1944 as Britain's first permanent base on the ice, was occupied continually until 1962. Originally intended as a secret naval operation, the first winter-over was code-named "Operation Tabarin" after a famous Parisian night club. In 1995 it was designated among the Historic Sites and Monuments recognised under the Antarctic Treaty System and a five-man team worked on conserving the base including New Zealand conservation architect Chris Cochran.

ANTARCTICA NZ DECIDES AGAINST OUTSOURCING

Scott Base services are not to be outsourced, according to a decision by the board of Antarctica New Zealand following nine months of fairly intensive negotiations with proposed service supplier Serco Group (NZ) Ltd.

"The decision in no way indicates a dissatisfaction with Serco," said the Antarctica New Zealand release announcing the fact. "Serco's commitment and approach to the negotiations have indicated that they would have provided a flexible, high quality service."

Serco is part of the international Serco plc which employs 25,000 staff in over 30 countries, supplying facilities management and systems engineering services. It currently manages a number of RNZAF bases around New Zealand, as well as weather forecasting and ATC at McMurdo Station and liaison with Terra Nova Bay.

"The decision is the result of the necessary weighing up of all the costs and benefits."

Those costs and benefits have been under scrutiny since 1997, and several facilities management companies have expressed interest in supplying services for the base. The initial concept was to see how to reduce administrative overheads, improve staffing continuity and gain a greater depth of expertise in specialist areas such as engineering through using a service contractor.

Since May 1999, Antarctica New Zealand has been negotiating with Serco regarding a service provision agreement. By February 2000, the board had decided that the benefits offered under the proposed arrangement were not sufficient to outweigh the risks and thus decided against proceeding with the out-sourcing idea. They also took into account an adverse reaction from some sections of the New Zealand Antarctic community, who expressed concern over the possible long-term effects of outsourcing and its potential to undermine the image of a national programme.



Carol Moseley-Braun

ANTARCTIC 'LIKE CHICAGO' SAYS AMBASSADOR

Chicago winters were good preparation for Antarctica, suggested US Ambassador to New Zealand Carol Moseley-Braun as she prepared to travel to the ice. Appropriately enough, the US Air Force Hercules which took her south was named the City of Christchurch.

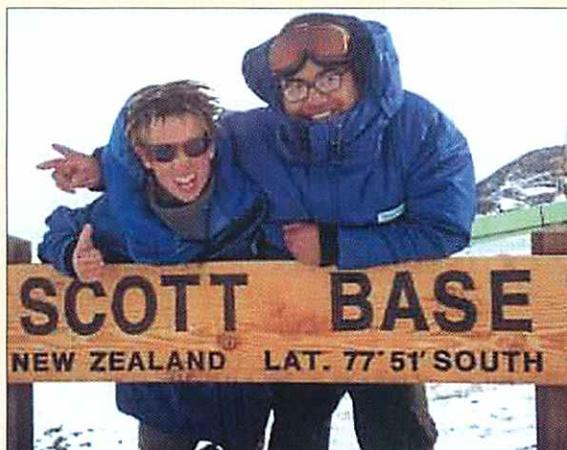
The ambassador had reviewed Antarctic scientific programmes as a senator and was pleased to be able to meet researchers during her four-day visit.

WHAT NEXT FOR 'WHAT NOW?'

Antarctica saw one of its youngest visitors recently when 14-year-old Tom Hern travelled to the ice to film segments for the popular New Zealand children's television magazine show "What Now?".

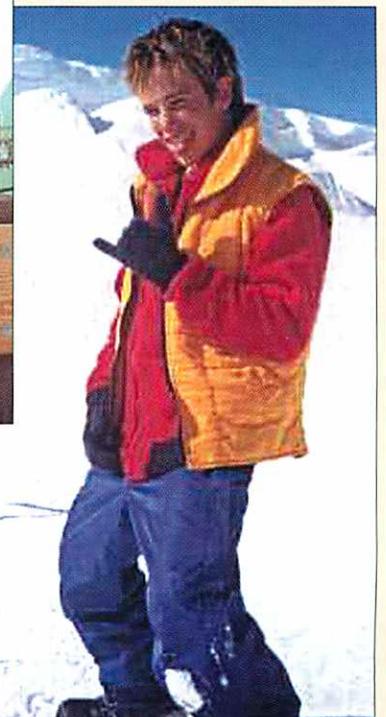
What Now presenter Jason Fa'afai and director Mike Ritchie joined the young reporter on the ice. The visit was used to shoot some links for last year's Christmas show, and then Jason and Tom did a variety of stories about Scott Base, the AFT (Antarctic Field Training) course and areas like Cape Evans and Royds.

Mike Ritchie said that Tom's participation gave them the youth perspective they need for the show. The two-hour programme will focus on Antarctica and give the children of New Zealand an idea of what it is like to live and work there.



Above: What Now reporter Tom Hern and presenter Jason Fa'afai get out of the studio and into the field.

Right: At 14, Tom Hern is one of the youngest people to travel to Antarctica, and certainly the youngest media reporter.



SCOTT BASE SET FOR WINTER

Scott Base is now in winter-over mode with nine staff in residence, four of them having previous winter experience, two with summer experience and three new comers.

Jonathan Leitch, Winter Manager and Base Engineer, is from Christchurch and previously wintered in 1998. His winter tasks will include the rebuilding of the main ablutions block and the hydroponic unit as well as the installation of a new sewer pipe. Jonathan is also involved in JASART (Joint Antarctic Search and Rescue Team).

Chris Bray, Chef, is also from Christchurch and spent the summer of 1998/99 at Scott Base as Chef. Chris will be paying a lot of attention to the hydroponics unit to ensure a good supply of winter greens.

Ewan Paterson, Field Support Officer, previously resided at Mt Cook where he worked for the Department of Conservation before resigning to winter-over. His mountaineering skills kept him busy assisting with field training during the summer and he is a key figure in the JASART team.

Dave Palmer, Carpenter, is from Dunedin and was previously down on the ice in the summer of 1992/93. The abluion block and hydroponic unit rebuilding will keep him busy over the winter. Dave is also a member of the JASART team.

Jan Stratford, Domestic and Base Support, is from Christchurch and previously wintered in 1995. Jan's very varied duties include looking after the hydroponics unit, processing the mail and running the Scott Base bar and shop. Jan is also the Base's First Aid Officer.

Kim Thomas, Science Technician, is from Runanga on the West Coast, and went south at very short notice as a late replacement. Kim will be responsible for maintaining all of the Base's scientific monitoring equipment.

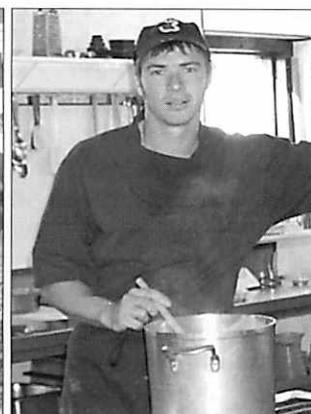
Scott Iremonger, Mechanic, is from Christchurch and has a varied Antarctic background. He wintered at McMurdo in 1994, and for several years was associated with the Kiwi cargo handlers. Scott's job will be to



Dave Palmer



Jan Stratford



Chris Bray



Ewan Paterson



Scott Iremonger



Jonathan Leitch

AT HOME WITH THE BLIZZARDS

Cape Denison, called the "Home of the Blizzard" by Sir Douglas Mawson, has had two more winterers, the third private expedition to spend the winter there in the past five years.

Australians Yvonne and Jim Claypole have seen 50-80 knot winds gusting up to 100 knots, trapping them in the small "Gadget Hut" originally built by fellow compatriots Don and Margie McIntyre for their 1995 sojourn. The

small (2.4m x 3.6m) prefab of fibre-glass and plywood was rented out by the McIntyres for \$US70,000 for the Claypoles' year-long stay, which came to an end in January. Like the McIntyres, the Claypoles have been making Internet and voice contact with schools, as well as writing articles and collecting data for the AAP Mawson's Huts Foundation in an area not generally well monitored by governmental programmes.

maintain the base's very varied fleet of tracked and other vehicles, as well as the base's diesel generators.

Steve Spicer, Electrician, is from Auckland and over the winter he will be ensuring that the base fuel systems are functioning correctly and that the fire alarm system and fire fighting equipment are maintained. One of his major projects will be the rebuilding

of the fuel tank electrical system.

Keith Roberts, Telecom Technician, is from Manakau, and will be responsible for maintaining the Telecom NZ communications network on Ross Island, and radio communication. Keith wintered in 1997, and this year will be acting as Deputy Winter Manager and is also as the Fire Chief.

FOUND: WALLET

There's always something new to discover — an adage proved by the Antarctic Heritage Trust team this season with the discovery of a new artefact in the hut at Cape Evans. A member of Shackleton's Ross Sea Party lost his wallet down the side of a bunk, and it remained there through the hut's use and conservation, undiscovered for almost 90 years.

Dating the wallet was relatively simple — it contained a ferry ticket stamped Nov 21 1914. Finding out who owned it has not proven to be as easy, despite the wallet containing five photographs, four tram tickets and the Sydney ferry ticket.

The Antarctic Heritage Trust believes the item belonged to the Reverend Spencer-Smith, who died in the 1914 expedition. The Trust brought the wallet back to New Zealand for assessment and conservation work, gaining permission from the Ministry of Foreign Affairs and Trade to do so. Specialist conservators will check over the vulnerable contents and a decision about where the wallet will be kept will be made once that any conservation treatment has been completed.

ROLE EXAMINED

A group of New Zealand science policy makers travelled to Antarctica to meet with international counterparts for a discussion of New Zealand's role in the international science community in Antarctica.

The group was led by Waikato Management School's Adjunct Professor Neil Richardson, who is also Chairman of the New Zealand's Foundation for Research, Science and Technology. He was accompanied by Don McKay, the Minister of Foreign Affairs and Trade; Peter Adams, a member of the Canadian Parliament; Sue Suckling, a board member of Antarctica New Zealand; and Dean Peterson, Science Strategy Manager, Antarctica New Zealand.

The purpose of the trip was to discuss policy in Antarctica and experience firsthand what's being done in scientific research and its implications for New Zealand.

"Antarctica is one of those areas where strategic thinking about the investment in Antarctica and trying to understand possible outcomes and benefits to New Zealand, not only in a commercial sense but an environmental and knowledge sharing sense, becomes extremely important," says Richardson.

As an Adjunct Professor at the Waikato Management School, Richardson sees part of his role as "applying a sense of strategic logic to the implications of these relationships and the investment in Antarctica".

IT WAS A VERY GOOD YEAR

Antarctica New Zealand CEO Gillian Wratt outlines the successes of the scientific work undertaken in 1999/2000.

Projects that have been undertaken this season were very diverse and while led by New Zealanders, have had a real international content with scientists from all parts of the globe participating, says Gillian Wratt, chief executive of Antarctica New Zealand.

Last year's launch of the science strategy for Antarctica and the Southern Ocean saw five science themes outlined within that strategy, and these have been represented in the diverse range of scientific studies undertaken in Antarctica by New Zealand scientists and their international collaborators.

ANTARCTICA AS A GLOBAL BAROMETER

Using Antarctic as a "marker of the past and signpost to the future" provides a means of learning how global climate has changed and how Antarctica has influenced and been influenced by such changes.

The Cape Roberts Project is a prime example of research related to this, with the international team looking to better understand the present and predict the future by learning more about the past. In the 1999/2000 season, the project broke the record for the deepest earth core drilled in Antarctica (939.4 metres) and saw over 5,000 kilograms of core recovered. It was the first large project in Antarctica to complete a Comprehensive Environmental Evaluation, and got a thumbs up from an independent environmental audit done by Australia.

"For the first time, scientists can recognise and date individual advance-retreat cycles of



the ice-sheet margin with high precision," noted Wratt. Results show that cycles 20 million years ago were similar in frequency to those in the northern hemisphere over the last million years. Scientists have also seen that the coastal Transantarctic mountains, which are currently bare of vegetation, were covered in cold climate vegetation around 25 to 34 million years ago.

"This confirms that the much talked about potential for sea level rise from variation in the Antarctic ice sheet is a real possibility."

THE SOUTHERN OCEAN

It's appropriate that the Southern Ocean is a specific theme in the science strategy, as the ocean itself encompasses Antarctica and accounts for more than 12% of the total area of the world's oceans. The area of sea ice that freezes then breaks up each year is equivalent to 63 times the land area of New Zealand.

"This is a major global process," said Wratt, "the dynamics and impact on global climate of which are still not well understood."

Continued on page 54

SYMPOSIUM STRIKES A SUCCESSFUL NOTE

Over 170 papers were presented at the 8th International Symposium on Antarctic Earth Sciences held in Wellington, New Zealand, last year. Convened by Dr Fred Davey, Vice-president of SCAR and former SCAR Secretary, the conference saw three concurrent sessions running, with an additional 150 poster papers and seven plenary review papers given by leading Antarctic earth scientists.

Three general topic talks were organised during the lunchtimes for those registrants who were lecture addicts. These were "Conservation of Tuatara, an Ancient Survivor", by Professor Charles Daugherty; "The human dimension in Antarctica: glacial versus catastrophic", by Hugh Logan; "Climate Change — a perspective on the developing science-policy interface, by Dr Martin Manning".

A notable lunchtime concert was held for the premier performance of 'Deep Time' by composer Ross Harris, a work specially commissioned for the symposium. Harris says of his work:

"The almost total absence of a human presence in Antarctica — the timeless quality of the environment — gives us the idea of 'deep time'. I have used the term as stimulus for a piece of music in which the inexorable power of the Antarctic environment is articulated in sound. The raw materials of 'Deep Time' are brass instruments and saxophones spread around the concert hall.

The sounds unfold in layers, sometimes spacious and sparse and at other times harsh and dense. The surface musical events unfold according to hidden (deep) time structures which control the ebb and flow of the work."

A public lecture discussing New Zealanders in Antarctic Exploration was given at Te Papa by Professors Peter Webb and Barrie McKelvey, focusing largely on the involvement of New Zealanders in Antarctica during the Trans-Antarctic Expedition and IGY, as well as scientific exploration in subsequent years.

IT WAS A VERY GOOD YEAR

Continued from page 53

An international research project run by Industrial Research Limited has been investigating physical characteristics of the formation and break-up of sea ice. Scientists have been looking at thermal, optical, mechanical and physical properties of the sea ice to better understand the physical processes occurring in the sea ice sheet surrounding Antarctica. The study has expanded this year into the marginal ice zone to look at the interaction of the sea ice with the Southern Ocean and consequently with the climate in the area. There is recent evidence linking El Nino events with sea ice coverage.

LIFE IN EXTREME ENVIRONMENTS

Protection of the Antarctic environment requires an understanding of its organisms and ecosystems, encompassing behavioural, anatomical, physiological and genetic studies of both marine and terrestrial species. Many species in the Southern Ocean are yet to be identified, and new species of moss and lichen are discovered each research season.

One international study into microbial mat communities has led

to research into nitrogen asphyxiation, potentially applicable to the same problem which occurs in rice fields in warmer climes.

HUMAN INFLUENCES IN/ON ANTARCTICA

This theme covers global impacts such as global warming and ozone loss, and also direct impacts from human activities carried out within the Antarctic region.

Along with the ozone research done by NIWA in Antarctica, there is an ongoing study of greenhouse gases in the Antarctic atmosphere. This study is located in Antarctica because of the pristine nature of the air in the region. The measurements on methane, carbon dioxide, sulfur dioxide, and nitrous oxide are combined with other stations around the world. This network of stations monitors greenhouse gas emissions globally.

THE CONNECTIONS BETWEEN ANTARCTICA AND NEW ZEALAND

New Zealand shares a common geological heritage with Antarctica, having broken away from the super-continent Gondwana about 80 million years ago. Long before this event, about 500 million years ago, a collision zone between East and West Antarctica was formed. This event resulted in the creation of the

Transantarctic mountains. The dating of the magmatic rocks will give us the time in which this event occurred and how long it lasted.

The five science themes all have global significance and international collaboration.

"This, in a way is the essence of Antarctica," said Wratt. "But science is not the only thing that we are involved with. Education also plays a large role. Our education programme aims to inform people about why Antarctica is important and what are New Zealand's interests in the region."

Public education is achieved in several different ways — through projects in schools, through Web site information, through different media profiling activities in Antarctica, and through the Artists & Writers To Antarctica Programme.

"We took 405 people to Antarctica. The New Zealand Air Force contributed 15 flights to the flight pool between Christchurch and the ice.

"More than 314 helicopter hours were flown by the RNZAF and Helicopters New Zealand. We had a 31% increase in the number of scientists supported in Antarctica — up from 165 researchers in 1998/99 to 216 this season. The person-days for the year is anticipated to be slightly lower than last year, at 15,147."

CLASH OF THE SUPER-CONTINENTS

Continents crashing together and then splitting apart again formed the focus for two plenary papers presented at the 8th ISAES meeting in Wellington.

An early continent-to-continent collision event 11,000 million years ago saw the formation of a giant super-continent called Rodinia in the Southern Hemisphere. The collision involved a landmass comprised of East Antarctica, India, Australia and North America, and another made up of South America and Africa. The collision zone is known as the Grenville Orogenic Belt. The remainder of the Southern Hemisphere was occupied by the large Mozambique Ocean. The amalgamation of Rodinia and its subsequent break-up was the subject of a review by Dr Joachim Jacobs of the University of Bremen, Germany.

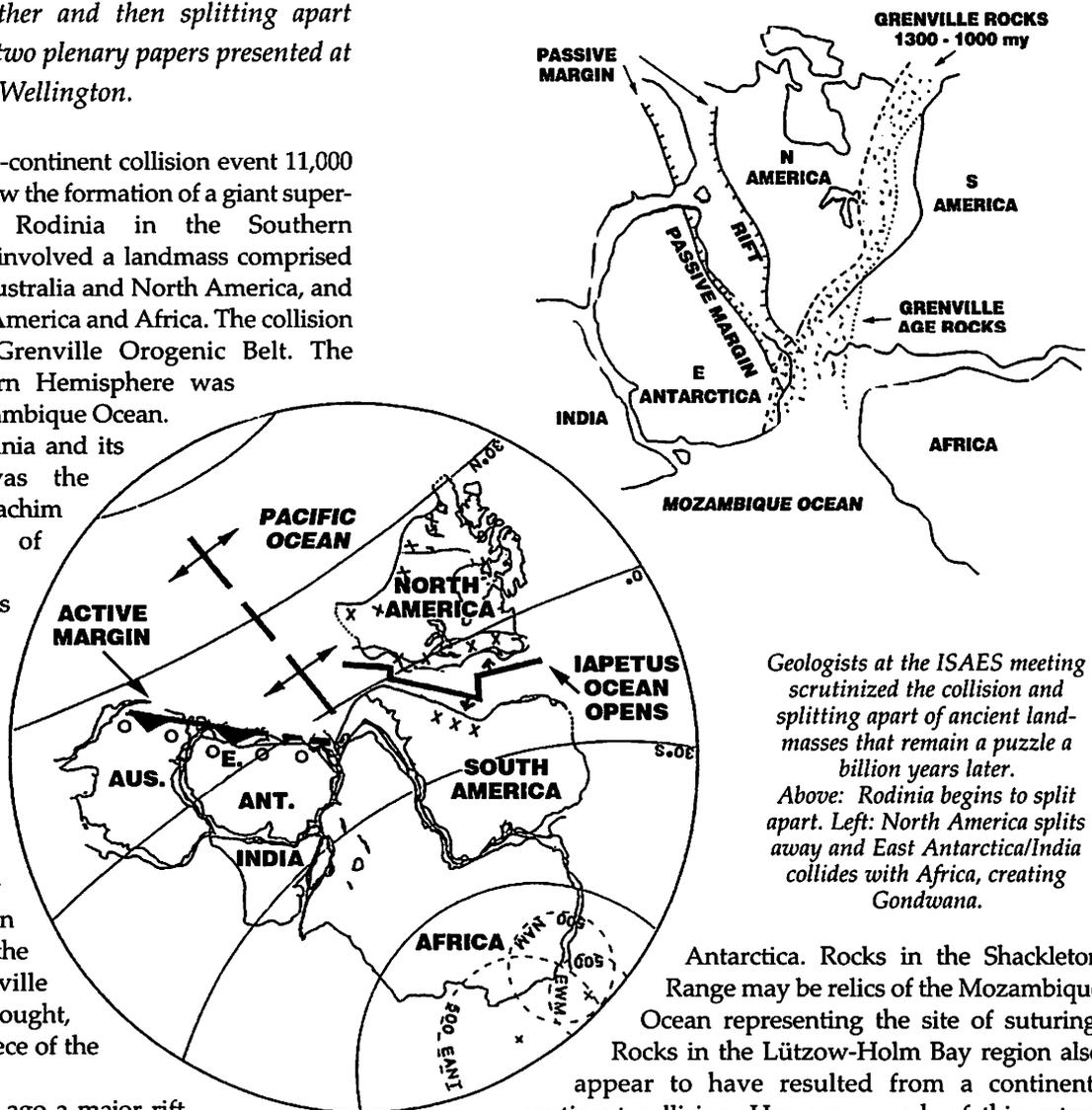
Dronning Maud Land is known to contain an Archean cratonic fragment (ancient crust), called the Grunehogna Province. Jacobs believes there is sufficient evidence to suggest that, in terms of its geological history, this province is more closely related to the African Kaapvaal Craton than to the North American Grenville Province as previously thought, and that it is a detached piece of the African crust.

About 700 million years ago a major rift developed between North America and the East Antarctic part of Rodinia. Over time, new ocean floor was produced and sea-floor spreading led to the creation of the Palaeo-Pacific Ocean. This caused the East Antarctic/Australia/India landmass to migrate towards Africa, closing the Mozambique Ocean. The huge landmass eventually collided with the edge of the African Craton.

At the time that the East Antarctic Craton collided with Africa, the Dronning Maud Land crust was effectively part of Africa and only became welded to East Antarctica after the collision. The collision caused a major tectonic (fold) event in South Africa (the Pan-African Event) which was followed by the intrusion of post-tectonic Pan African granites about 510 million years ago. Granites of similar age are present in Dronning Maud Land and are responsible for the sheer dramatic topography of parts of the region. (See cover)

A new southern supercontinent, Gondwana, resulted. When this, too, broke up many millions of years later, part of the African Craton (Dronning Maud Land) remained attached to East Antarctica.

Interest is now focused on exactly where the ancient suture line between West and East Gondwana lies within



Geologists at the ISAES meeting scrutinized the collision and splitting apart of ancient landmasses that remain a puzzle a billion years later.

Above: Rodinia begins to split apart. Left: North America splits away and East Antarctica/India collides with Africa, creating Gondwana.

Antarctica. Rocks in the Shackleton Range may be relics of the Mozambique Ocean representing the site of suturing. Rocks in the Lützow-Holm Bay region also appear to have resulted from a continent-continent collision. However, much of this suture must lie hidden beneath the East Antarctic icecap, and further work will be necessary, including aeromagnetic studies of subglacial rock, before the exact position of the suture is known.

A QUESTION OF AGE

The splitting apart of the Rodinia supercontinent and how its remaining parts came together to form the southern landmass of Gondwana was addressed by John Goodge of the Southern Methodist University, Dallas, US. Using evidence from the older rocks of the Transantarctic Mountains, Goodge demonstrated that there are still many uncertainties with regard to the timing of events.

Significant similarities exist between the older rocks of the Transantarctic Mountains and those of western North America, including crustal formation 3,000-2,500 million years ago, metamorphism and magmatism 1,900-1,700 million years ago, and a period of volcanism 1,000-750 million years ago.

Goodge favours a rather older time for the break-up of Rodinia than is generally held, with extension (rifting) beginning about 750 million years ago as indicated by

Continued on page 59

FIRE ON THE ICE

The worst thing happens at the best possible time aboard the *Aurora Australis*

Following on from voyage four of the *Aurora Australis* in the last issue of "Antarctic", Janet Stevens, a journalist reporting for Discovery Channel Online, recounts her adventures in this item courtesy of the "Maritime Officer".

A drift in the Antarctic ice, 24 July, 1998. The worst thing that can happen to a ship at sea is fire in the engine room. At 2.30am Wednesday morning, one long, ear-thrumming alarm bell jerked me from the edge of sleep. A fire drill? At this hour?

Several of the researchers had just inaugurated this 24-hour-a-day ice expedition by planting a giant weather buoy into an ice floe at midnight, and working their first ice station. They had collected snow samples and an ice core, a process that had taken a couple of hours. I had just crawled into my bunk and turned off the light when the alarm sounded.

I opened my cabin door to peer into the hall. Nathan Bindoff, an Australian oceanographer who has one of the three best laughs on the ship, a sort of impishly evil heh-heh-heh, stumbled down the hall in his work clothes. "Is this a drill?" I ask. He sleepily shook his head and shrugged. "Don't know."

The alarm abruptly stopped. I stood for a few moments, hoping the alarm was false and waiting for the silence to settle in for the night. The alarm erupted again.

ATTENTION, PLEASE...

"Attention." The voice of Tony Hansen, the *Aurora Australis* captain echoed through the loudspeakers on the ship. "Attention, please. There's a small fire in the engine room. Please muster to the heli-deck."



It wasn't a drill. But it was a small fire, so maybe it wasn't serious, I thought. Something like this had happened on a previous trip I'd made into the winter sea ice aboard the *Nathaniel B Palmer*, a US research icebreaker, and we were back in our bunks in a couple of hours.

My roommate, penguin researcher Barbara Wienecke, awakening from a deep sleep, rolled out of her bunk. She's one of the three best laughers, but no one would hear her hearty ha-ha-ha or hee-hee-hee for several hours.

I donned a turtleneck sweater, sturdy pullover, jacket, as well as long underwear, heavy sweatpants, heavy socks and wool-lined boots. The temperature was 33 degrees Fahrenheit (one degree Celsius) when we crossed into the sea ice at 10am that morning, but had dropped to 17 degrees Fahrenheit (minus eight degrees Celsius) before the researchers deployed the buoy. The clothes would be enough, I thought. I was wrong.

SMELLING SMOKE

I glanced at Barbara, who was donning her "freezer" suit, fully lined heavy long-sleeve overalls designed to withstand minus four degrees Fahrenheit (minus 20

degrees Celsius). "Why are you putting that on?" She shrugged. "It was already out." She's been wearing it to watch the buoy deployment and hadn't put it away.

We grabbed hats, gloves and life jacket. I began to walk into the companionway and stopped to reach for a small flashlight tucked on the bookshelf. It was probably overkill, I thought, but you never know.

We scampered toward the stern and up one flight to the helicopter deck, was stunned to see two of the ship's crew dressed in full fighting gear, heavy black coats and pants, black boots and helmets. Breathing masks and oxygen bottles lay at their feet. They stood silently, grimly. I smelled smoke.

Floodlights spotlighted the deck. I hurried toward the muster station on the port side. Kieran Jacka, a research meteorologist, bent over a roster and nervously called out names. The air temperature had dropped noticeably, to five degrees Fahrenheit (minus 15 degrees Celsius), and I knew I'd get cold if we were out for long. I began to feel the first pangs of uncertainty.

FIREBALL IN THE ENGINE ROOM

In the engine room, the small fire

quickly turned fierce. The engineers had found a small fire near the port engine, located on the bottom deck, and put it out. But it was not the main source of the fire which was on the port engine. It quickly flared.

Third Engineer Rob Cave, First officer Peter Dunbar and Second Officer Scott Laughlin fought the blaze, which seemed still manageable at this point. They ran out of the engine room to retrieve more extinguishers. At that moment, a fireball swept through the port engine. Two other engineers on the deck above fled through separate watertight doors and locked them.

On the bridge, Hansen heard an explosion, and knew that the situation had turned critical. Suddenly, just seven minutes after the alarm sounded, the whole ship went black.

Outside in the bitter cold, two decks down, a soft murmur went through the expeditioners and crew assembling on the thin layer of snow on the heli-deck. The sudden darkness was absolute. The silence, stunning. On a ship, we live with constant background noise, the continual exhale of air from the vents, water pulsing through pipes, and below all that, the comforting heartbeat of the engines. Now the ship was dead, and we heard only the silence of the Antarctic sea ice, silence unbroken for thousands of square miles around us.

The 308-foot *Aurora*, once vibrant and huge, sank into insignificance.

CHECKING NAMES

"Don't panic," says Les Morrow, the Third Officer. "Ladies and gentlemen, please stay together and we'll be just fine." Morrow was born for life-threatening emergen-

cies. He delivers clipped words in a formal, understated manner. Perhaps it's the years of training he's received from P&O Polar Australia Pty Ltd, the ship's owner.

Jacka stammered, "I can't see." I remembered the flashlight in my pocket and took it out. He began calling out names again. Tony Worby, deputy voyage leader and sea ice scientist, appeared and finished calling the roster. Three people were still unaccounted for. Voyage leader Ian Allison brought his group over from the starboard side, stuck his roster under the flashlight and began calling out names.

"Karen Evans."

"Here."

"Deb Thiele."

"Here."

Allison is a sturdy, barrel-chested glaciologist who stopped counting the number of times he's been on Antarctic expeditions at number 20, and that was several years ago. His voice boomed loud, but the night seemed to swallow it. The expeditioners' responses were strong, but tinged with fear. Worby called out the remaining names on his list. All of us, some more prepared than others for the cold, were together and safe. I switched off the flashlight. I sensed Ian looking at me. "Better to save the batteries," I say.

THE NIGHT CLOSES IN

Morrow's radio crackled, the only sound in the night. From the snippets of transmissions between the captain on the bridge and the crew, the drama continued to unfold in the engine room. The two engineers who had fled through different doors were accounted for. The BA (breathing

Continued on page 58

ENVIRONMENT

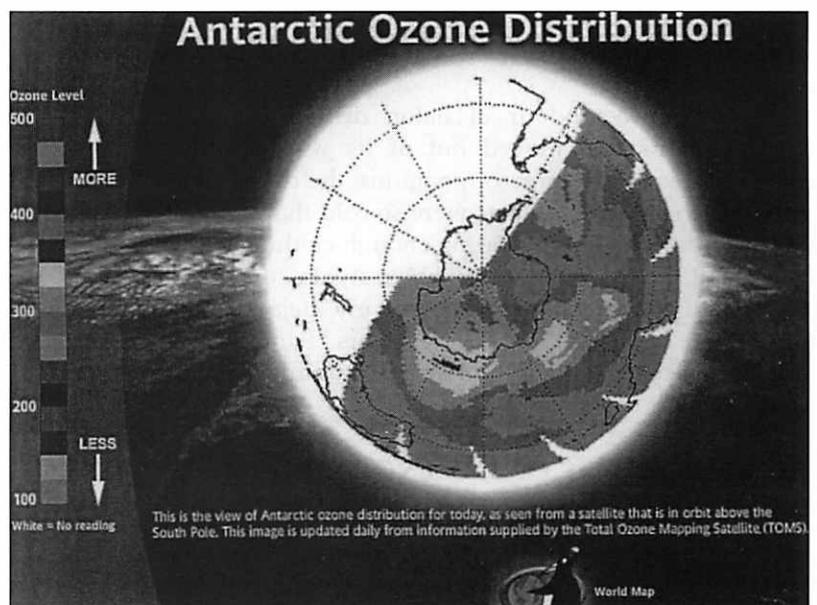
OZONE DISPLAY

The ozone hole over the Antarctic may have been smaller this year, but that doesn't necessarily mean a recovery of atmospheric ozone levels. Scientists from the National Institute of Water and Atmospheric Research continue to monitor the 25 million square kilometre "hole".

NIWA UV programme leader Dr Richard McKenzie notes that there has been an increase in sunburning UV radiation of 12% over the past 10 years; a 1% increase is associated with a 2% in non-melanoma skin cancers.

Dr McKenzie was the guest speaker at the recent launch of the new Ozone Interactive Display at Christchurch's International Antarctic Centre. The display downloads daily satellite information supplied by NASA, covering ozone levels in Antarctica and around the world, and presents it as simple touch-screen graphics. The information is supported by more detailed material relating to ozone, the formation of the ozone hole and efforts being made to restore atmospheric levels of ozone.

"It is very clear that ozone is a subject of great interest



The NASA data in the Ozone Interactive Display at the International Antarctic Centre ensures visitors are kept up to date with the state of ozone depletion in Antarctica and around the world.

for all ages," said the centre's general manager Richard Benton. "Our role is to present this in a comprehensive, interactive and fun way."

FIRE ON THE ICE

Continued from page 57

apparatus) team and the officers closed all watertight doors leading from the engine room. The captain ordered preparation for dropping the halon, an inert gas that chemically locks up all oxygen and deprives fire of its vital fuel.

But three crew members were still missing: two stewards and a cook. "The cook's with me," radios Dunbar. The other two were quickly located. "All crew members accounted for, captain," radios Morrow. "All expeditioners accounted for," follows Allison.

Hansen's voice sounded small through the radio as he went through the countdown to drop the halon. It was at that moment, just 22 minutes after the alarm went off, that I realised the seriousness of the situation. The black night seemed to close in on us, trap us in a nightmare that wasn't a dream.

But the mind does funny things at times like these. I tucked my face into the top of my life vest to keep my nose warm, and dropped into a love-hate relationship with the bright orange lifeboat. I dreaded the thought of getting into the windowless, claustrophobia-inducing craft that looks like an overgrown roly-poly bug. That would certainly mean that some of us, perhaps all of us, would die, because the ship would be aflame and perhaps sink. On the other hand, we might survive this ordeal in it. I was scared, as I have never been scared before. We were all scared, from the Captain on down. Antarctica doesn't offer many avenues of escape.

We were quiet, each of us wrapped in our own thoughts, on edge waiting for the next development, and mentally preparing for the worst. I thought about my husband, Rob, and calculated that we'd been married just two weeks and three days. I had to see him again. I wondered if he could sense, 10,000 miles away, what was happening to me.

The sticky sweet odour of halon drifted from the funnels over us. We moved out of its way, shuffled together like so many emperor penguins, the colder of us scooting to the centre. My legs were so cold that it didn't seem to matter that I was wearing enough clothing above my waist. I shivered uncontrollably. Again, my mind gave me a diversion: I'd never secured my lifejacket, and in the dark, couldn't find the fasteners. Sarah Howe sensed me struggling, took off her glove and helped me buckle up.

THE MELTED MESS OF THE ENGINE ROOM

On the bridge, while Radio Officer Ian Moodie began sending mayday signals, the captain received continual reports from the officers and crew who stood outside the watertight doors. About 20 minutes after the halon was released, the first team carefully opened one of the watertight doors after checking for heat.

They walked into a disaster. The fire blackened the entire engine room. Wires on control panels on the upper deck and 40 feet away from the fire had melted. All lights were shattered or melted. Melted strands of cabling hung down like spider webs. Both fuel pumps were damaged.

The turbo-charged port engine, on which the ship relied for breaking ice, was ruined. But the fire was out, and, luckily, it didn't look as if the flames had reached the second, smaller engine.

The Captain instituted a procedure to send in a breathing-apparatus team every half-hour to monitor the cooling down of the engine room, so that the engineers could get in to assess the damage, figure out which systems could be restored, and if the ship could move again.

AN ANSWER TO OUR MAYDAY

One ship and the marine radio station in Sydney responded to the ship's mayday, and passed the word to P&O and the Australian Antarctic Division, which chartered the *Aurora* for the multi-million dollar seven-week expedition.

At 3.30am, the fire seemed to be out, emergency power was restored, and the captain said that we could move into the dimly lit helicopter hanger. It wasn't warm, but it was manageable. People gathered in small groups and talked quietly. Some slumped against the steel walls, sat on their lifejackets and dropped their heads on their knees. Allison moved casually from group to group and talked to every person, making sure that everyone was all right.

At 4.40am, after the second breathing-apparatus team slipped into the engine room to search unsuccessfully for fire, we filed into the video room one deck down. The cold had begun to seep into the ship, and all of us kept our heavy clothes on. Twenty-five minutes later, Hansen came in to give us an update.

A CRITICAL SITUATION

At first glance, Hansen, a trim man with straight blond hair, doesn't fit the old image of a ship's captain. He has a ready smile, and his blue eyes twinkle impishly. But talk with him for 30 seconds, and his command appears instantly, and you notice his broad shoulders, confident bearing and intelligence. His courtesy, ability to lead, and willingness to communicate inspires complete loyalty from his hard-working crew.

He hopped up on a cabinet by the door. His face reflected the relief of a man who'd escaped great catastrophe, but who was still dealing with a critical situation. We knew that it wasn't over.

"We have to wait to check and make sure the fire's out," he says softly. He asked us to stay together in the room until then. "I want to thank you for your patience." We blinked in surprise. He was thanking us? We applauded. He smiled and left.

Two hours later, Hansen and Dunbar walked in with several bottles of juice and milk. Most people had drifted to sleep, and Hansen chuckled. It was enough to startle everyone awake.

He explained that he was now in radio contact with P&O Hobart, which had gathered technical staff and local firefighters. They had advised waiting for several hours to vent the engine room of the deadly halon gas. We were free to return to our cabins, but we'd be called back in at that time, in case the fire re-ignited and we needed to abandon ship. The good news was that the second engine appeared to be unharmed.

He asked if we had any questions. We were silent. Then someone piped up from a corner of the room: "That was a good fire drill."

Dunbar's rough, blackened face cracked into a smile. "Was it real enough for you?" And he laughs. He's the third of the three best laughers on the ship, a nasal staccato braying. And we all laughed.

LUCKY TIMING

I went back to my room. It was colder than the video room, so I changed into my freezer suit. As I was heading back, I ran into Allison. "Have you seen the aurora?" he asks. I rushed on deck. The skies had cleared. In the moonless night, the lime green curtains hung on the stars and undulated slowly on solar winds. The gods were fingerpainting. "Maybe it's an omen," says Allison.

All the ship's systems were down. With the exception of a few large containers of distilled water from one of the laboratories, we had no water. The sewage system wasn't working, and we had no heat or electricity, except emergency lighting. But we were alive.

We spent a chilly first night, but miraculously, the engineers restored the sewage system, water and hot water. We have some heat now.

We had the worst thing happen to us, but under the best of circumstances. If the fire had occurred two days earlier while we were rolling through 15-foot seas, says Hansen, fuel would have sloshed back and forth, spreading the fire to other parts of the engine room and likely damaging or destroying the second engine. Crew members would have been injured. The lifeboat would have repeatedly slammed into the ship as it was being lowered, injuring those inside.

If it had happened one day later, yesterday, we would have had to muster into a blizzard with 40 to 60 knot winds, and a wind chill of up to 58 degrees Fahrenheit (minus 50 degrees Celsius). If we were in thick sea ice, instead of fairly loose pack, the ship would have risked becoming beset or even crushed. If we were in looser pancake ice, we'd risk being pushed by wind and current into an iceberg.

DRIFTING IN ICE FLOES

It could have been much worse, he said. Because we mustered so quickly, he was able to set off the halon gas before the fire raged further. And it was within moments of releasing the halon that the plastic tops of cylinders containing liquid petroleum gas had just melted off. If the Officers and Engineers hadn't left to retrieve more fire extinguishers, they would have been killed in the explosion.

As it is, we're drifting northwest at about half a knot, and sitting quietly in the midst of large floes of ice, which occasionally break apart and push together as a swell rolls beneath. An iceberg six miles away, is now just two miles away.

But we're not out of the water yet, so to speak. In fact, 60 hours after the first alarm sounded, we're still dead in the sea ice. The engineers have the second engine running, but are trying to figure out how to repair the engine's auxiliary systems to actually get the ship moving.

Three of the expeditioners who are engineers or experts in construction are helping secure live wires and restore some necessary cabling. We have no more halon, so they've put more fire hoses and extinguishers into the engine room, and set up a 24-hour watch. We have enough food for months, and enough water for seven days (or two weeks if stretched). When the engineers get the second engine going, we'll be limping slowly back to Hobart, because so many systems were damaged. Depending on how rough the seas are, it could be difficult, especially since the stabiliser's out.

Our spirits are fine, but we are all keenly disappointed that the expedition ended before it hardly began, especially Allison, who began planning this trip in 1995. We're frustrated because P&O is still restricting communications from the ship while the Captain and engineers are still conferring with the P&O technicians. We can receive email, but can't send email to our worried families and friends until the ship begins moving under its own power again.

The cooks are still working off tiny gas stoves that penguin researcher Wienecke had brought for her work. The system that runs the galley is still down. Expeditioners help with chopping and cutting, with dish-washing and cleaning. The last two afternoons, we've had a snowball fight or two. Sarah Howe and Moninya Roughan built a snowman, but objected when I made it anatomically correct.

At night, those who can, go to the ship's bar for music, laughter, and a beer or two to celebrate our place in the world.

CLASH OF THE SUPER-CONTINENTS

Continued from page 55

magmatism, followed by drifting about 600 million years ago as suggested by thick wedges of clastic sediments preserved in both continents.

There are still many unknowns, such as the exact position of the rift margin between East Antarctica and North America, the geometry of rifting, and the extent of crustal thinning as the two landmasses pulled away from each other before finally breaking apart.

The rifted margins of the two continents were initially "passive", an interpretation supported by the thick land-derived sediment sequences in each area. Later, however, the "passive" margin changed to an "active" margin, where oceanic crust from the opening Palaeo-Pacific began to descend (to be subducted) below the eastern edge of the East Antarctic Craton causing the Ross Mountain building phase about 550 million years ago.

Goode suggests that the slight differences in age of the Ross Orogeny throughout the Transantarctic Mountains indicates a pivotal opening of the Palaeo-Pacific, with earlier opening in the north than the south, and the associated change from a passive to active margin occurring earlier in northern Victoria Land compared to more southerly parts of the range.

ICE CAMP IS NO PICNIC



Margaret Bradshaw

Tim Pearn and Kathryn Yussof relax on their snow sofa — a brief breather during a hectic 14-day study trip to Antarctica.

Another successful Graduate Certificate in Antarctic Studies course was organised by the University of Canterbury, Christchurch, during the summer vacation. The course was coordinated by John Hay (Auckland) and Brian Taylor (Dunedin) and involved 13 students, two of them from overseas (see *Antarctic* vol. 17 No. 2, p. 30).

Beginning 22 November and ending 25 February, the course was a concentrated study of all aspects of Antarctica, with lectures from New Zealand Antarctic experts and live video links overseas ensuring that information was right up to date. A weekend field training camp was held near Arthurs Pass in preparation for a 14-day visit to Antarctica in December. Two half-day science field trips were also run near Christchurch.

The group was divided into three work syndicates who made a critical analysis of contemporary themes and issues facing Antarctica and on 27 January publicly presented their topics: *Antarctica — Canary in the Cage or Phantom of the Past?* *Antarctica — Does it Differentiate between the Tourist and the Scientist?* *Humans and Antarctica — a Model for the Rest of the World?* The students were also required to complete four field projects, a literature review and a supervised project related to their own field of expertise.

The highlight for the students was the visit to Antarctica between 14-15 December and 28-29 December, which included eight nights away from base living in tents. In addition to the students and coordinators, the party was joined by two tutors, Gary Steel, psychologist, and Margaret Bradshaw, geologist, who had been involved in the previous field visit.

The time at Scott Base was pretty tight — field training, learning to survive in a hostile climate, building snow trenches and, in one case, an artistically erected igloo. Learning the hard way that wet mukluks left crumpled on the snow froze crumpled and had to be somehow thawed to wear. Ropework, recognising crevasses, remembering sunscreen, riding on sledges.

Drilling sea ice to determine thickness, watching American divers in their fish hole, one complete with Father Christmas hat. Inspecting the New Zealand fish hut to see John Macdonald's party at work. Getting gear ready for the field trip, heavy work and often cold.

Visiting McMurdo Station to see the Carey Lab, hearing about satellite tracking, seeing a newly found meteorite, freezing in the ice core lab, visiting the wet lab with glum looking fishes and colourful invertebrates. Being shown the Firehouse with a tourist-like demo of an engine and firefighter, visiting the hospital and listening to Dr Quick (a good name perhaps?), enjoying the humour of the Met Office.

Breathing in the atmosphere of Scott's sombre Discovery Hut, so careful not to touch anything, only to absorb the sensation of history. An unexpected "FAM" trip on Sunday to the historic huts at Cape Evans and Royds, the last trip that season by the Hagglands across the sea ice. Breathless



Students of the University of Canterbury's Graduate Certificate in Antarctic Studies sit down for Christmas Dinner. Photo: Jennifer Hoar

wonder, silent scrutiny, lots of photographs, nothing touched.

On Wind Vane Hill at Cape Evans, the wind is keen, feldspar crystals in the rocks beside the path glitter brightly in the sun. We approve of the strong brushes mounted by the AHT to clean visitor's boots. We need a torch to inspect the stables and see the names of ponies written on the wooden walls so long ago.

At Cape Royds, a group of curious Adelie penguins come very close to investigate the students, unfazed by the noise of multiple camera shutters. A walk around the penguin colony to the top of the cliffs to watch a long line of waddling penguins going to and from the sea, exchanging gossip as they meet en route. The ice edge is too far away to see, and we are impressed at the bird's determination. The American scientists have enclosed a tiny bit of the rookery and are there studying the nesting birds. None of the birds seem worried. A quiet walk through the rocks near the hut. Some ancient stores here and there; a tiny newly hatched penguin from another year lying mummified on the gravel. Noisy skuas, some bathing in the melt pools, but their nests so difficult to see amongst the rocks.

Then out to the Windless Bight to erect camp. Two lines of four polar tents converge on two Polar Havens, and the arms of the camp open out towards a glorious view of gently smoking Mount Erebus. The snow is soft, but there is no wind and spirits are high. It's not long before the artistic enterprise of many of the students shows through.

"Cooking wells" are deeply dug, with snow benches, and shelves cut in the snow walls. A snowhenge decorates the walls and a very realistic snow sofa resides in front of a tent, facing the view. One of the Polar Havens is decorated for Christmas, although these large tents were seldom used except for storage, radio skeds and detailed recording; the weather outside was too good. Human waste is carefully containerised; "grey water" (cooking and washing up water) is stored separately after being strained. A special kerosene bottle filling station is established to protect the snow from spillages. Areas for snow block collection are marked with flags as "no-go-areas". Boxed frozen food from Scott Base is buried and marked.

Camp was in the middle of a great flat plain of white quite a distance south of Hut Point Peninsula. No matter how far

one trudged away from camp, it always seemed to remain close. On some nights the camp seemed to be ringed with tiny solitary figures who had radiated outwards to experience the isolation of white vastness; some to write their dairies or poetry, some to paint or sketch, some to think, some just to lie and look up at the sky.

Each day two Haggglunds, driven by Ross Hickey, Dean Arthur of the Field Training staff, or Ewan Paterson, the Field Support Officer, would arrive from Scott Base to take the party to the field areas on Hut Point Peninsula. The students were split into two groups. Each group had to spend two days, not always in kind weather, on the detailed geology of Castle Rock, a precipitous 413-metre high volcanic vent on the crest of the ridge. A fixed rope was set up to help students safely to the top of the crag for a fine viewpoint. Each group also visited Hutton Cliffs for two days to identify tagged seals to compare with those found there the previous season. Life below the sea ice was also studied.

Two further studies were undertaken in the field by the students. One was the regular monitoring of weather data at the base camp and the degree of "human comfort" experienced. The other was an ongoing psychological study about Antarctic expectations, in which the students interviewed each other before, during and after their Antarctic visit to analyse changes of outlook.

The party completed the fieldwork by the end of 24 December and the growing Christmas spirit was aided by a visit from Father Christmas himself (Kevin Chappell, Base Engineer) and his elf helper (Scott Iremonger, Base Mechanic), with a Haggglund substituted for the sleigh. The fresh fruit in Santa's sack was greatly appreciated.

Christmas dinner was organised totally by the students and was a great success. All available primuses were congregated in the Polar Havens or on a table outside, and a mass cook up took place, fortunately in perfect weather. Using food and fresh vegetables delivered the previous day, a veritable feast was prepared. The energetic carved an enormous table out of unblemished snow, with snow benches along two sides, a seat at the head for "the Boss" and at the opposite end, one for "absent friends". The party was joined by a curious skua who definitely had his eye on the two turkeys! Speeches and toasts

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ICE CAMP IS NO PICNIC

Continued from page 61

preceded and followed the meal, token presents were distributed "Captain Scott" style. Photographs were taken for posterity.

Then there was a rush to get a mammoth wash-up done and kitchen boxes returned to tents before the arrival of the three Haggglunds from Scott Base to take the students, with Scott Base staff, to the Imax Crevasse. This was an enormously deep, narrow crevasse on the side of Mount Erebus, well bridged and accessible at one of its ends.

Five groups of people, each safely roped up, were guided in and out of the long, very cold crevasse, and the exercise was a credit to Scott Base Operations Manager, Pete Cleary, and his staff Ross Hickey, Dean Arthur and Ewan Paterson.

Boxing Day was a day off for the students. Some carved a three dimensional 2000 into the snow for a visiting film crew. Others helped on the ski field where an emerging crevasse needed to be bridged with plywood and the rope pulley moved across to the protected slope.

Others skied, climbed back up Hut Point Peninsula or relaxed at K396 Base. That night the Polar Havens were dismantled and everything packed up apart from equipment needed for the final night and breakfast. When the Haggglunds arrived at 9.00 the next morning in flat grey weather, the party was ready, with tents struck and equipment neatly stacked.

The "Waste Management Officer", Graham Mackereth, produced some unexpected figures for the 119 man-days that the party had been in the field: 403 kg of waste had been produced; 208 kg of this was human waste, 144 kg was grey water and the remainder was "rubbish". This was far more than Antarctica New Zealand had predicted (and supplied bags for!) and the exercise was a useful one for the future management of snow-based field parties who plan to leave nothing behind them at all.

The students returned to New Zealand on 28/29 December as scheduled, and after 11 day's break, were back at lectures again.

• **Information about next year's course can be obtained from: Gateway Antarctica, University of Canterbury, Private Bag 4800, Christchurch, New Zealand. Email: gateway@anat.canterbury.ac.nz**

BYRD'S FAILED FLIGHT

Admiral Richard E. Byrd has long been an important name in Antarctic history and he made many friends in New Zealand on his way south. But before he became the first man to land on the Antarctic mainland in 1929, he gained fame over his claim, along with Floyd Bennett, of being the first people to reach the North Pole by plane.

On 9 May 1926, Byrd (navigator) and Bennett (pilot) left Spitsbergen in the Fokker trimotor airplane *Josephine Ford*. The two men planned to beat Roald Amundsen, Lincoln Ellsworth and Umberto Nobile (pilot) who were flying the dirigible *Norge* with the same plan in mind. Byrd intended to confirm his success by dropping a cargo of more than 100 American flags onto the North Pole, but this was never done.

Several years ago Ohio State University released Byrd's navigational records of the flight, and a study of these revealed that Byrd's flight never actually reached its destination, and that the Amundsen/Ellsworth/Nobile flight was in fact the first plane to overfly the North Pole on 12 May 1926. A paper by Dennis Rawlins in a recent edition of *Polar Record* (Vol. 36, No. 196, January 2000, pp 25-50) explores in some detail the navigational data preserved in Byrd's records and explains why Byrd could not have reached the pole.

The Antarctic Aviation Preservation Society was set up in New Zealand several years ago with the prime aim of salvaging one of Byrd's Antarctic planes from the Rockefeller Mountains, Marie Byrd Land. This was the Fokker Super Universal *Virginia*, the first aeroplane to take off and land south of the Antarctic Circle and the first to land on the Antarctic mainland. The plane was overturned and damaged in a fierce storm. Byrd had the engine removed, but the damaged plane with its wooden wings was left behind. The plane was rediscovered by a New Zealand party in 1987 (see *Antarctic*, Vol. 11 No. 7, p. 274-279), and interested New Zealand Antarctic aviation enthusiasts investigated its possible retrieval from the ice in which it now lay.

The ownership of the wreck was transferred from Admiral Byrd's daughters (though wrecked, the plane was still the property of the Byrd family) to the Antarctic Aviation Preservation Society, who hope eventually to recover, restore and display the plane.

POEM

*From "Capturing the Antarctic Vastness"
by Graham Mackareth*

Antarctic Studies Course 1999-2000

Today we climbed Castle Rock,
Pillar of twisted volcano
Locked in frozen grimace
Grown from origin under ice,
Fractured shattered, splintered, bent
Blistered, twisted and rent.

Intruded into itself,
Yet viewed from this ugly vent
Vast ice sheet, white light, splendour,
Frigid rock is weathered down
And contrite sand blows away
Let go at last to vastness.

SCOTTS BIRTHDAY PRESENTS FLAG PUZZLE

David E. Yelverton FRGS

The recent Christie's sale in London of Scott's sledge flag (lot 203) and other relics of his last expedition, included another sledge flag (lot 204) which can be seen hanging above Scott's left shoulder in the famous 6 June 1911 picture of Scott's last birthday dinner at Cape Evans.

The origin of that flag is a puzzle to most who see the picture. It bore an emblem of a small green globe between two wings beneath the motto "Stretched wings towards the South", hand-embroidered in blue on the upper half of the cream (possibly gold?) and navy blue pennant, edged with twisted blue and gold cord. Curiously, Frank Debenham's diary entry for Christmas Day 1910 refers to the wings being "on a white background", but the birthday dinner photo shows quite clearly that the colour was darker than the white background of the St George's Cross.

The photo was reproduced in Ponting's *"The Great White South"* (fcg p141) with Tryggve Gran erased and Taylor's flag (behind his head in other versions) "reconstructed". In that book, as in Lord Mountevans' *"South with Scott"* (fcg p161 in the 1948 edition), it was wrongly captioned as the Midwinter Dinner. Neither book contains any clue as to the flag's origin.

Edward Wilson's diary entry for 6 June simply stated "... all our flags were hung round the hut". However, his description of Christmas Day 1910 aboard the *Terra Nova*, provided the clue to its origin:

"Then we decorated the wardroom with all our sledge flags . . . We also had Queen Alexandra's flag up and Lady Islington's and everybody else's."

In the 1972 published version edited by the then-Librarian of the Scott Polar Research Institute, Harry G.R. King explains in a chapter note (ch.6 note 13 on p267) that Lady Islington was the wife of John Poynder Dickson-Poynder, 1st Baron Islington, who was Governor of New Zealand in 1910-12. No other flag visible in the Birthday Dinner picture could conceivably be that flag, which was given pride of place beside Scott's own sledge flag that day.

Volume III of "The South Polar Times" includes Wilson's paintings of 15 sledge flags, excluding those of Campbell, Priestley and Levick, away at Cape Adare. Those paintings readily serve to identify all but two of the other flags wholly or partly visible in the Birthday Dinner photo.

Counting from the left, and starting with Tryggve Gran's (No.1), only partly visible above Cherry-Garrard's (No.2), No.3 is Simpson's, No.4 is Teddy Evans', No.5 is Scott's, No.7 is Atkinson's, No.8 is Meares', No.9 is Debenham's, No.10 is Taylor's, No.11 is Wright's and No.12 is Wilson's.

As revealed by the print (lot 252/23) reproduced in the sale catalogue, No.14 is Bowers', only a small part of which is visible at the right edge of the print. To its left, No.13 has the visible part of the body of flag in some plain dark colour, with unbound edges.

Nelson's flag appears in the Midwinter Day picture to the right of the lantern above the table, and was one of the 15 illustrated by Wilson. This flag has the part next to the St George's Cross in plain navy, with the end in white, patterned with ermine tails. No.13 in the Birthday Dinner picture is, therefore, almost certainly Nelson's.

That leaves two flags depicted by Wilson that are not in the picture. Oates' flag, which is currently undergoing conservation at the Oates Memorial Museum at Selborne in Hampshire, and Day's flag.

So far all is clear, but, in the Midwinter Day dinner picture (also reproduced in the catalogue) another flag appears at the right, behind Taylor, as it does at left in the 1912 Midwinter dinner picture in *"Scott's Last Expedition"* (Vol.II fcg p326). This is pale coloured, with the Union Flag nearest the hoist, and embroidered with crossed skis followed by three crests and the date 26.12.10 (26 December 1910) placed across the flag, so that it reads right way up when the flag is hung, as it is in the Midwinter dinner pictures.

Fortunately this flag appears in the picture of the second Western Party at



1911 picture of Scott's birthday dinner.

Cape Geology in *"Scott's Last Expedition"* (Vol.II fcg p184) and in *"The Quiet Land"* (Frank Debenham's diaries edited by June Debenham Back (Bluntisham Books 1992: ISBN 1 85297 037 5). It can be none other than a flag belonging to Debenham — his elder daughter, Barbara, confirmed that it had been made for him by his mother, and that 26 December was his birthday.

Some men, therefore, had more than one flag. That picture also included Forde's plain-coloured flag with an Irish harp, revealing, as do other pictures, that many of the men had flags too. None of theirs, however, had the St George's Cross at the hoist.

Five of Wilson's watercolour plates in *"The South Polar Times"* reveal the design and colours of the 15 officers' and scientists' flags at Cape Evans in the winter of 1911, with the exception of the flag made for Debenham by his mother. Reproduction of those illustrations being impractical in the space available, it is necessary to describe their design and colours. Two lesser-known heraldic language terms will be useful as shorthand for otherwise lengthier descriptions. "Couped" means cut off at the base of the neck, and a "torse" is the corded "baton" that various emblems are mounted on in many coats of arms.

As Australians, Debenham's and Taylor's pennants had the Union Flag at the hoist, while all others had a St George's Cross. Pennant ends were rounded except where noted below. Listed in the order of Wilson's illustrations, design, colours (navy means navy blue), and edging were as follows:

Scott: Gold above navy, edged with

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THE ADVENTUROUS ACADEMIC

Ron W. Balham, 1921-1999

Ronald Walter Balham, born Wellington August 24, 1921; died Wellington 10 August, 1999.

Ron Balham took his learning from lecture hall to Antarctica, gaining along the way the Polar Medal, honorary membership of the Explorers Club (New York), the Medallion of the Royal Geographical Society and other awards that recognised his contribution to the practical and theoretical understanding of the Great Outdoors.

In 1956, Balham joined the Trans-Antarctic Expedition as biologist and meteorologist. His scientific duties were supplemented with driving the infamous Ferguson tractor across crevasse and glacier to re-supply a depot on the Polar Plateau. Huskies and sledges were another Balham transportation method, when he retraced the Scott expedition route to Cape Crozier



Ron Balham rises to make a speech at Scott Base's first midwinter dinner, June 1957.

Photo: Trevor Hatherton collection

and the emperor penguin colony. Balham ventured into the Dry Valleys, and an Antarctic valley now bears his name.

Balham was an early member of the Wildlife Division of the Department of Internal Affairs,

following a wartime stint examining the weather and the wildlife of the subantarctic islands. His Masters degree from Victoria University concentrated on grey and mallard ducks, and he took his PhD in Missouri with further studies of water fowl — this time Canada geese — in the isolated areas of central Manitoba. In the Wildlife Division, Balham helped initiated waterfowl banding programmes.

A lectureship at Victoria University saw Balham establish the country's first course in animal ecology. From there, he led a university expedition into the Victoria Mountings in 1959-60, and continued at the university for the next quarter century. Although troubled in later years by continuing illness, he is remembered for his enthusiasm for field work and his broad knowledge of life in the wilderness.

A STUDENT OF THE OUTDOORS

Ken Woolfe 1965-1999

P J Barrett Wellington

Ken died unexpectedly in Townsville, Australia, two days after returning from a successful two months with the Cape Roberts Project in Antarctica.

From his early student days at VUW, Ken stood out as an exceptional person. He would sit at the back of the class with a gaze that penetrated the lecturer, but only occasionally would he ask a question — it was always a good one. His grades varied from very good to indifferent, depending on his interests at the time. The real classroom for Ken was out of doors, but he knew that to exercise his curiosity fully would require training and development of skills, and he was prepared to put in the time.

Most years VUW has opportunities for one or two students to join a university field party in the Antarctic. Almost all applicants selected are third-or fourth-year students whose

abilities and scientific bent can be moderately well assessed. Ken applied as a second-year student, and it was quite plain that his outdoor experience and competence were very high and in his geological nous and enthusiasm were higher. He was selected, and went to the ice as assistant for PhD student Paul Fitzgerald, collecting samples from high peaks in the Beardmore Glacier area. The Antarctic was plainly a place that could challenge both his physical and his intellectual abilities.

Ken's third and fourth years at university were spent in getting by in classes and much outdoors activity, such as tramping and kayaking, with a significant commitment to running the Kelburn Scout Troop. Nevertheless and seemingly without much effort he produced a first class Honours project on Late Quaternary strata between Bulls and Wanganui. At the same time he was planning a return to the Antarctic and gained my support for



Ken Woolfe.

Photo: Peter Barrett

an ambitious plan to survey the Beacon sandstone over a 300-kilometre length of the Transantarctic Mountains.

The Beacon survey took four field seasons and involved over a thousand kilometres of motor toboggan travel. It began with Ken as field leader for an NZ Geological Survey mapping party for the Knobhead area, and involved

two of Ken's scout leaders, also geology students, in providing field assistance that led to highly creditable theses. In this, Ken showed two characteristic qualities: his ability to find a way of getting things done somehow and also to provide others with exciting opportunities.

Ken graduated with his PhD in 1991 and soon after took a position as Lecturer in Environmental Geology and Sedimentology at James Cook University of North Queensland in Townsville. Here he quickly developed a research interest in sedimentation in the Gulf of Papua and around the Great Barrier Reef. His move to Townsville also coincided with an upsurge of Victoria University graduates in the Townsville graduate school.

Despite his new tropical base, he still found a way in 1995 to return to the Antarctic. He did this by seeing the value of applying sequence stratigraphy, better understood in Townsville than most other places, to the study of glacial history from strata around the Antarctic margin, and then approaching the developing Cape Roberts Project for a place for Australia in the international consortium. His funding bid was successful, Australia joined at 5% (of \$US4.3 million), and the rest is history.

Ken was a tireless supporter of the Cape Roberts Project at every level, from the mind-numbing hours spent in draughting 1:20 scale logs (over 200 pages for CRP-3) to the scientific issues (were the strata more or less glacial? — we argued endlessly on that) to the leadership he was showing in developing an international group to support drilling operations in a range of environments around the Antarctic margin.

His written legacy is in over 50 papers in refereed journals and about 10 in review. Beyond that and over the last 20 years (or possibly longer) he has enthused, stimulated and challenged all of those around him. Such achievement, what a life and what a loss.

SCOTT'S BIRTHDAY PRESENTS FLAG PUZZLE

Continued from page 63

navy and gold cording, with couped stag's head on a torse facing hoist above scroll with motto "Ready Aye Ready". The reverse, illustrated in Christie's catalogue, showed the back of stag's head, facing away from the hoist.

Evans: White above red, with white and red corded edging, and lion sitting upright, facing hoist, on torse. No motto.

Bowers: White, with wide plain navy edging, and naked leg facing hoist and pierced by arrow above motto "Esse quam videri" in capitals. One of the Pole photos shows that the reverse appears to have been left plain.

Oates: White above grey, with white half-edged plain grey cording, grey half-edged plain white cording, and mailed fist holding dagger, pointing away from hoist, on torse. No motto.

Wilson: Plain navy, the whole edged navy cording, with head and torso of wolf, facing away from hoist, on torse above motto "Res non Verba" on scroll.

Atkinson: White with pointed ends and longer St George's Cross than others, the whole edged in white cording, with pine tree blown by wind towards hoist. No motto.

Taylor: Navy with pointed ends, the whole edged broad plain red, with white silhouette of Australia, bearing the words "Advance Australia" in capitals, and two shields, that of Sydney University positioned above the white shield with blue lion rampant of Emmanuel College, Cambridge. No motto.

Wright: Red with ends squared, the whole edged blue and white cording, with maple leaf and no motto.

Debenham: Navy, the whole edged wide plain yellow, with Sydney University shield above motto "Sidere mens eadem mutato" and, above the pennant divide, a smaller shield bearing the white cross on a pale blue ground of the arms of the King's School at Parramatta, NSW, topped with the crown of the school badge. (Griffith Taylor had attended the same school).(a)

Nelson: Pennant with pennant shaped navy section next to the St George's Cross, with an ermine-tailed white end section, no edging and, on navy section, an eagle with raised wings on torse above motto "Malo mori quam foedari".

Meares: Navy, with blue and white corded edging, and triton head and torso

facing hoist on torse above motto "Omnia providentiae committit" on scroll.

Day: White above navy, edged broad navy and white lozenges, with phoenix on torse above motto "Dies lucifer" on scroll.

Simpson: Navy, edged plain navy cording, with lightning bolt and no crest or motto.

Gran: Norwegian flag with lion rampant at centre.

Cherry-Garrard: White above navy, the whole edged with red, white and blue cording, with griffin and, to the right of it, a white lion sitting upright facing hoist and holding a red-banded roundel, with central red fleur-de-lys on white ground, above motto "Chéris l'espoir" on scroll.(b)

Study of the shields on Taylor's and Debenham's flags yielded the curious fact that the frontispiece in Taylor's *With Scott — The Silver Lining*, published in 1915, identifies Debenham as of Gonville and Caius College. He was only appointed a Fellow in 1920, after demobilisation and following active service during which he had been severely wounded in the Dardanelles campaign.

Perhaps the final question to be resolved is whether Oates's and/or Lady Islington's flags were found on the sledges when the tent was found on 12 November, 1912. If taken south at all, Oates's would have been there, he having been with Scott's party from the start of the Southern Journey. Neither flag appears in any of Bowers' or Wilson's photos taken at the Pole.

NOTES (a) The writer is indebted to fellow member David Harrowfield, and Peter Yeend, Archivist at the King's School for this identification.

(b) The mottoes that did not appear on flags were Evans's "Perseverando", Oates's "Sua dextra cuique", Atkinson's "In pectore robur", Taylor's "Expurgiscimini", Wright's "Labor ipse volupta", Simpson's "Arduus ad solem" and Gran's "Norønafolket det vil fare".

ADDENDUM

A further flag with Antarctic connections came to light recently with the discovery of a flag belonging to Frank Worsley, a member of Shackleton's Antarctic exploration expeditions. The captain's flag was found in the roof of the Fendalton Open Air School, where Worsley had been dux in 1887. The white ensign's rather battered condition came not from having survived snow and ice, but from its use during war actions in European waters.

RETURN OF THE PIONEERS

Dr V.B. Gerard

In January 2000, after almost half a century, eleven survivors of the original 1957 Scott Base wintering-over party returned to the Ice. This time it was by Hercules aircraft, taking just eight hours instead of two weeks by ship, and time was further compressed because we had only two days there, little more than the time required for the aircraft to "turn-around". It would have been only one day, but the Antarctic weather was kind to us old veterans and closed the airstrip to give us another day.

There are still 13 of us alive from the original 1957 party of 23, but two of these did not make it. Selwyn Bucknell — Buck to his mates — was deemed too sick to go; and Sir Edmund Hillary found that even he could not be in two places at once. However, two men came a long way just to enjoy the Ice and the company of their old mates of long ago. From England, came Richard Brooke, and from Australia, Neil Sandford.

It all came about in a rather unusual way when the writer was talking to his neighbour over the back fence about the possibility of going back there to see the new Millennium in.

People, I find, do not always believe that a little fellow like me could possibly have been part of Ed Hillary's expedition to the Antarctic. Four others and I were chosen as IGY (International Geophysical Year) people, not by Ed but by the old DSIR (Department of Scientific and Industrial Research) to carry out various scientific programmes involved in this international effort. Most people do not know that the IGY had been preceded by two similar international scientific exercises called "Polar Years" 25 and 75 years before ours.

Although the TAE (Trans-Antarctic Expedition) and IGY were nominally two separate endeavours, this distinction often became rather blurred when we were in action at Scott Base. For instance, one of the unusual jobs I had was to find aircraft fuel drums which were buried on our airstrip in a blizzard. No problem really

when you are equipped with a suitable magnetometer, but after finding them I helped dig them out, all in the darkness and cold of mid-winter. These days, of course, science is the *raison d'être* for the base and there is no "gung-ho" adventuring in the epic style.

To get back to the back fence, my neighbour as it turned out had contacts with the then Associate Minister of Foreign Affairs and Trade, Hon. Simon Upton, who had charge of Antarctica New Zealand in the previous governments. Like they say, "it's not what you know, but who you know that counts".

Anyway, I put forward the idea that it would be nice if we veterans could be present at Scott base at the start of the new Millennium. Simon Upton thought well of the idea too. This was happening late in 1998 — one has to start the ball rolling well ahead of time.

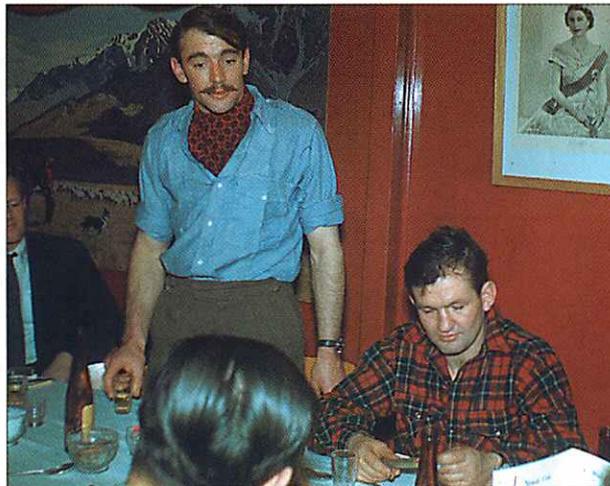
Eventually, after a lot of uncertainties, including a change of government, we found ourselves at Christchurch airport in late January 2000 being briefed and kitted out for the trip south. A lot of media people were around and the trip got a great deal of television, radio and newspaper coverage, maybe even more than original event in late 1956!

TIME TRAVEL

Present-day Scott Base is just a rebuilt modernised version of the Base as it was when I last saw it in February 1959, two years after we built it. But a lot is concealed by the word "modernised"...

Now they have hot and cold running water with hot showers and flush toilets — very different from the old honey buckets! And carpet on the floor. There are "public" telephones just like the ones on New Zealand streets. You plug in your Telecom card, dial your number and in a few seconds are in in contact with a New Zealand phone. It's by satellite, of course, and 43 years after the first Soviet Sputnik went into orbit in October 1957.

Not that we paid much attention at the time, because mostly everyone was pretty involved with getting their summer programmes going. But I



*Top: Vern Gerard standing; midwinter dinner.
Middle: Bill Cranford Standing; Murray Ellis to left;
midwinter dinner. Bottom: L-R, Peter MacDonnal, Herb Orr,
Ted Gawn, Ron Balham; a Sunday dinner.
Photos: Trevor Hatherton collection*



Photo courtesy of Don Scott, Christchurch Press.

Ed's boys at Cape Evans. From left: John Claydon, Bernie Gunn, Neil Sandford, Wally Tarr, Guy Warren, Jim Bates, Bill Cranfield, Peter Macdonald, Richard Brooke, Verne Gerard, Murray Ellis.

remember that on 4 June, 1957, I gave my midwinter talk on "Interplanetary Travel" in which the basic physics of artificial satellites was outlined. No one, least of all myself, expected that in just four months the Earth would have its first example. To me, at Scott Base 43 years on, it really brought home the immense changes of this century.

Nearly all the buildings of our own old Scott Base have been demolished, but the old mess hut remains, though shifted down the hill towards the shore line. It is now a reminder of our times, thanks largely to the efforts of John Claydon (our senior pilot, now Wing Commander, retired). Basically the new base layout is quite similar to ours, but larger. I preferred our sleeping hut layout whereby each man had his own individual tiny cubicle instead of a dormitory room with 6-8 bunks.

We oldies probably found the most interesting change was the presence of women on the staff there. In our time, Admiral George Dufek, Commander US Naval Support Force, had said, "No women in Antarctica until there is one for each man." We were all male chauvinists then!

The first women to McMurdo and the first in history to be so close to the South Pole arrived on 15 October, 1957. These were two hostesses aboard the first PanAm commercial Antarctic flight. To the disappointment of many at McMurdo, they

left the next day. Now there are always women there and no one, except for us old-timers, thinks it unusual.

Large transport aircraft, like the Hercules, land at the Pegasus airstrip on the Ross Ice Shelf. Helicopters are used where we used the Beaver and Auster, and we were taken by one to Scott's old Cape Evans hut to "inspect" it. We also went to his Hut Point hut. These huts have been cleared of the ice which filled them over the years after Scott and Shackleton left them. There is virtually no change because the Antarctic deep freeze preserves everything well, so long as blowing snow does not enter and fill up the place with ice again.

After our very brief visit, it was back to the airstrip for the return to Christchurch, but at the last minute our flight was aborted due to poor visibility, so we had another day there. This was much to everyone's delight, as I think most of us would have eagerly volunteered for another winter given the chance, and had we been 40 years younger!

Dr Vern Gerard was a geophysicist in the 1957 IGY party.

For further information about the establishment of Scott Base and New Zealand's involvement in TAE and

IGY, see the four-part feature in Antarctic Vol. 14, No. 4, p. 123-128; Vol. 15, No. 1, p.22-24; Vol. 15, No. 2, p.46-47, Vol. 15, No. 3, p. 71-74.



Sir Edmund Hillary proposes a toast at at Scott Base's first midwinter dinner in 1957.

Photo: Trevor Hatherton collection

INNOCENTS ON THE ICE:

A MEMOIR OF ANTARCTIC EXPLORATION, 1957

John Behrendt, then a 24-year-old graduate student, was part of a US Navy-supported scientific expedition to Antarctica during the International Geophysical Year (IGY, 1957-1958), which ushered in the "Scientific Age" in Antarctica, continuing to the present day. It also marked a transition period between the "Heroic Age", dominated by the early Antarctic geographic explorations carried out by leaders such as Amundsen, Scott and Shackleton, and the modern day tightly-focused scientific investigations.

In the 1950s and early 1960s, much of Antarctica was still unexplored, still essentially "Terra Australis Incognita", the great unknown. The author was one of the "innocents" of the title who volunteered to suffer physical hardship and isolation for an uncertain reward. As Behrendt says in his epilogue: "They took us young PhDs and grad students and threw us to the wolves; they expected us to manage without supervision for a year and produce results. We did." But not without significant sacrifices.

Behrendt's book is not about the results of his scientific explorations, which were published many years ago. It is about how the science was accomplished in the face of tremendous odds, and about the interactions between people who supported it and carried it out, and some who made that achievement difficult. It is consequently as much an essay on the sociology of a small group of people with diverse and sometimes clashing interests isolated in a hostile environment, as it is an account of exploration of the last still largely untouched and little-known part of the Earth's surface.

Although the IGY was a purely scientific programme, the US Antarctic programme (unlike those of most of the other participating countries, including New Zealand) was run by the US Navy because of its historical involvement in such expeditions. This meant that at all seven US scientific stations (except Ellsworth), there was joint station leadership, comprising a naval officer in charge of operations and a senior civilian scientist responsible for directing the scientific research.

Ellsworth Station, on the other hand, isolated in the southern Weddell Sea, was the most inaccessible of the US stations. One person, Captain Finn Ronne, filled both the role of naval officer in charge and of civilian scientific leader. He was the only member of the 39-man party who had ever been to Antarctica before and, on the basis of his previous three winters there, he assumed he had the authority to tell scientists how to do their work.

The US Navy contingent and the scientific party at Ellsworth had little comprehension of how the other group functioned, and herein lay the nub of many of the

John Behrendt, University Press of Colorado, Niwot, Colorado xviii +428 pp. ISBN 0-87081-493-1, 1998. US\$29.95. Reviewed by Malcolm Laird

problems which surfaced during the setting up of the base and coexistence during the winter that followed.

The situation was exacerbated by the personality of Captain

Ronne. He was, in many ways, a person in the style of Captain Robert Scott — dour and autocratic, convinced that the Navy way was the only way. Like Scott, he insisted that officers (including scientists) and men be separated. Officers ate in the galley at a separate time from the enlisted men, and were served at table, which caused much resentment among the men. Captain Ronne actively discouraged discussion and consensus within his command, and prevented communication with other Antarctic bases and the outside world, except that controlled by himself. This attitude unfortunately extended to field work as well — the traverse party was provided with a low-powered radio (even though better equipment was available) which permitted radio communication with Ellsworth Station only, and that intermittently. It is hard to imagine that putting the safety of field parties at risk in this way would be countenanced today.

The spring traverse by Snow Cats of the Filchner-Ronne Ice shelf offered a welcome relief to the claustrophobic life on the base, and the author successfully captures the essence of the two distinctly different facets of the Antarctic experience. Away from the restrictions of station life and an autocratic leader, five young inexperienced scientists successfully carried out a difficult and hazardous 1,300-kilometre geophysical and glaciological traverse. Behrendt's party regularly stumbled into and out of crevasse fields, but somehow always escaped unscathed. Along the way they also made the first geological observations of the spectacular Dufek Massif in the then-unexplored Pensacola Mountains.

This is the story of a great adventure. Subsequently, the author has returned to the Antarctic many times over a period of 40 years to continue his scientific work. There is more than a hint of nostalgia and regret for the more limited and focused goals of research these days, however, when he remarks "What I miss now . . . is the sense of excitement that can only come when a scientist is among the first to investigate a vast unknown area without restriction or inhibition". You can only go to Antarctica for the first time once.

Dr Malcolm Laird first went to Antarctica as a student geologist in the early 1960s, and subsequently has been on geological expeditions to the central Transantarctic Mountains and northern Victoria Land. Last season he was associated with the Cape Roberts drilling programme. He is currently a Senior Research Fellow at the University of Canterbury.

THE HOUND OF SCOTT BASE

In the late 1950s, when New Zealand's Antarctic Scott Base still sent its field parties out with dog-drawn sledges, a young husky pup was "lifted" from the base and eventually found itself at the American South Pole station. For some obscure reason his intended role as a pet did not last and he found himself an outcast at the South Pole, living as a pariah on scraps scavenged from the rubbish dump.

With the change of Pole-dwellers with change of year, Beauty, as the pup had been named, became a furtive black shadow moving among the station buildings. Bored winter-overers used him as moving target for revolver-shooting practice. Their aim was no better than their intentions and the dog, now fully grown, survived.

Shortly after I had become Leader at Scott Base in 1959, I was offered the dog back. The Americans had no use for him — perhaps, they said, we could use him in a dog team? He was captured and duly delivered to Scott Base slung, terrified, in a net below a helicopter.

I have never seen such a magnificent dog. A man's thigh in height at the shoulder, he carried his strikingly handsome head majestically, and he was pure black except for the flames that flickered in his dark brown eyes. At once I changed his soft Beauty name to Beau. He was too savage to be unchained before he was reclaimed, but I spent a lot of my scant time squatting just out of his reach, talking to him, throwing him titbits and imagining he was beginning to respond.

Though by now it was dark for 24 hours, we kept "day" and "night" by clock time. One night Beau somehow slipped his collar. The atmosphere in the Base changed. What had been the leader's impossible dream became the menace that stalked by night. Members of the wintering team moving between huts or to the food dump to bring in supplies would suddenly feel they were not alone and would turn to find a black shadow, Beau, closely following. No sign of attack, no menacing growl, just a soundless following, head low. They found it at first eerie, then alarming, always expecting the attack that did not come.

I still had hopes of winning his confidence, for when he followed me and I squatted down and talked to him, he would sometimes sit while he watched me; but the time came when the disquiet among the party became acute. That night I quietly took the base's Lee-Enfield .303 and went stalking in my turn. I have never forgotten the sight of that magnificent creature as I sighted him 40 yards off in the light of a fitful moon, standing side on to me, silhouetted against a snow ridge, his head raised, his ears pricked, his tail held level.

There was gratitude, I suppose, that he died at once from one shot. But I mourned his passing.

Commander James Lennox-King spent six summers in the Antarctic and was leader of Scott Base for fifteen months 1959-61. He later commanded both Antarctic supply ships Endeavour.

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.

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

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

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