

ANTARCTIC



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Grounded Vessels at South Georgia New Base at Dome C A Letter from Scott



Double Issue

COVER PICTURE



Cover photograph: A rare sight. Big Ben on Heard Island without its usual capping of cloud. Photo courtesy Margaret Bradshaw.

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Call for articles

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

Topical discussions on Antarctic themes are also welcome.

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Grounded Vessels Pose Problems For South Georgia

On 30 April 2003, three long-line fishing vessels ran aground on the coast of South Georgia, the first one during a Force 10-12 storm and the others later the same day when the weather was abating. All crew members were saved, but two of the ships were seriously damaged, remaining where they grounded, posing environmental problems due to fuel and other items on board. The third ship was able to pull herself off.

After dragging her anchor during the height of the storm, the Spanish vessel *Viking Bay* was driven onto the beach near King Edward Point. The Falkland Islands' fisheries protection vessel *Sigma*, which was at the island for the start of the licensed fishing period, helped with mooring lines so that *Viking Bay* could hold her position until the strong winds abated. The ship was then able to get herself off the beach by the afternoon with minimal outside help.

Later that same evening, the thirteen residents at King Edward Point received a message that two other ships, the Korean longliner *Moresko 1* and Falkland Islands registered longliner *Lyn*, had each run onto rocks on opposite sides of the entrance to Moraine Fjord about two kilometres away. *Moresko 1* was taking on water quickly, causing panic amongst her mixed crew of 40 non-English speaking Chinese, Indonesian, Korean and Vietnamese nationals. Her engine room flooded and the generators failed, plunging the ship into darkness. The radio on land was manned so that contact could be made every 40 minutes with the English speaking fisheries observer on board, and despite her own problems, *Lyn* was able to keep a searchlight trained on *Moresko 1* to monitor her situation.

Early the following morning the crew were taken off the *Moresko 1* and housed in very limited accommodation on shore where they were generously fed and cared for. Meanwhile, during the day at least five other longliners tried to pull the *Lyn* off the rocks, at one time three of them pulling together. Just before darkness fell, *Lyn's* Master asked that all but six senior officers be moved from the ship as it was taking on water. The 37 crewmen, who originated from Spain, Chile, Peru and Indonesia, were housed aboard *Sigma* in the bar. During the night, the six officers left aboard maintained the power necessary to keep the ship's pumps running.

Over the next few days attempts were made by *Sigma* and five fishing vessels to pull the *Lyn* into deep water. These were not successful because of falling tides and rocks around the hull. *Lyn's* owners made arrangements for the tug *Typhoon* to travel from the Falkland Islands to pump off the stricken ship's fuel, and perhaps tow the ship away if it could be successfully refloated.

But on 5 May, the day before *Typhoon* arrived, the *Lyn* had to be abandoned because her pumps could no longer cope. Once the *Typhoon* had arrived the large amount of water in the engine room made it impossible to reach the control valves and transfer off the 470,000 litres of fuel.



The Lyn on the rocks at Discovery Point.
Photo: Courtesy South Georgia Website.



The Viking Bay aground on Genny Beach.
Photo: Courtesy South Georgia Website.



Crew being rescued from the Moresko 1.
Photo: Courtesy South Georgia Website.

Continued on Page 36

Change of Command

On Tuesday June 3rd Lt. Col. Timothy Penn, the new Commander of the US Air National Guard Detachment 13, part of operation DEEP FREEZE, was sworn in at a ceremony in Christchurch, New Zealand.

Colonel Joel Maynard handed over command of the Christchurch-based operations in a change of command ceremony hosted by the Chief of Staff of the US Air National Guard. The ceremony was well-attended by Christchurch locals including the Mayor of Christchurch, Mr. Garry Moore. Senior officials from the US included the current US Ambassador to New Zealand, The Honorable Charles Swindells and Mr. Arthur Brown, National Science Foundation Representative. Detachment 13 was activated in Christchurch on 1 April 1998; Colonel Maynard was its second commander.

During the Change of Command Ceremony Col. Maynard was awarded the Defence Meritorious Service Medal for his achievements while serving in the command. Joel moved back to the USA with his family to take over as trainer at the Colo-



Above. Lt. Col. Timothy Penn at the change of command ceremony on June 3.

rado Springs-based Air Force Academy.

Lt. Col. Penn now commands the detachment which is responsible for all airlift and logistics in support of the National Science Foundation's USAP programme.

New Operations Manager for Raytheon Polar Services

For many years Kerry Chuck flew between Christchurch New Zealand and Antarctica as load master on a New Zealand Air Force C130 aircraft.

It was the beginning of an association with a "truly amazing" part of the world which Kerry finds hard to describe to those who haven't seen it for themselves. Whilst such regular flights to the ice are behind him now, Kerry still manages to visit Antarctica in his new role as New Zealand Operations Manager for Raytheon New Zealand Limited.

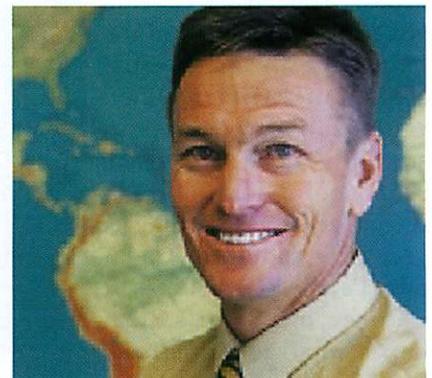
As such, Kerry and his team offer vital support to the US Antarctic Programme running the clothing distribution centre, a travel office (that processes some 3,000 visitors to the US McMurdo and South Pole bases

every year), an administration office and an information technology department.

Kerry has taken the job over from John Sherve who returned to the USA in June. He is hoping to carry on from where John left off and is slowly easing into his new position and responsibilities. "I was previously Terminal Operations Manager for Raytheon and have just moved 10 yards across the hall for this job", he laughs.

He says one of the most challenging parts of the job is having to respond to the weather.

"Because of the weather in Antarctica things can change very quickly and we have to be ready. It's a very dynamic atmosphere to be working in."



*Kerry Chuck.
Photo: Raytheon Polar Services.*

With the new job Kerry conceded that he will probably continue to "talk about playing golf a lot" but will make time for his fitness programme (running and the gym) and of course his wife and two daughters.

Veteran BAS Captain Retires from the Sea

Farewell events were numerous when Captain Stewart Lawrence recently retired from the British Antarctic Survey (BAS) after 33 voyages to Antarctica and a total of 42 years at sea.

Captain Lawrence's Antarctic involvement began when he did two voyages on the *John Biscoe*. He then joined the *Bransfield* and found himself commanding the vessel when the captain fell ill and the chief officer broke his ankle. He assumed permanent command of the *Bransfield* in 1974 and remained with her for most of his career.

Every year he took the ship to Halley Base, Britain's most southerly station, repeatedly facing the challenge of the frozen Weddell Sea.

Just before the 1982 Argentine invasion, Lawrence hosted a reception aboard the *Bransfield* at Port Stanley in the Falklands, which was attended by Argentine LADE staff. The ship then sailed and news of the invasion was heard on a local broadcast when they were halfway between the Falklands and Tierra del Fuego. Lawrence was able to alert BAS headquarters back in Britain so that they could inform the Foreign and Commonwealth Office.

Lawrence then faced the threat of mutiny by some of his crew who reacted to the invasion by wanting to sail back to the Falklands to sink the *Bransfield* in the approaches to Stanley Harbour. He quelled the mutiny by plying the relevant crew with alcohol until they were too drunk to carry out their plan.

Captain Lawrence's link to the sea began at five years of age when he lived in the same Grimsby street as the captain of a Cunard liner. When only 13 he began studying at HMS *Conway* Sea School and by the age of seventeen he was serving as a seagoing cadet with Canadian Pacific Steamships. It was here, in Canada's Great Lakes, that he gained his first experience of winter ice.

He intended to join the Royal National Lifeboat Institution but the head of that body, Admiral Egg Irving, urged him to sail to the Antarctic instead, as he himself had done with the former director of BAS, Sir Vivian Fuchs. From his first voyages on the *John Biscoe*, Lawrence never looked back.

Lawrence was awarded the Polar Medal in 1983 and the MBE in 1998. He also has a Meteorological Office Award. Captain Lawrence took command of the newest BAS vessel, RRS *Ernest Shackleton*, in 1999, leaving her for the last time in April 2003 when he enjoyed a party in Stanley with his Falkland friends, appropriately timed for the anniversary of the Argentine invasion on April 2nd.



Professor Chris Rapley, Director of the British Antarctic Survey (left), presents a framed historic map of Antarctica to Captain Stewart Lawrence at his farewell retirement party. Photo: BAS.

RRS *Bransfield* in fast ice during her first season with BAS. Photo: D. Rampton.



New Station Planned

Estonia plans to build a scientific station near Wood Bay in the Ross Sea. The base will comprise two buildings with accommodation for 15 people. At the Antarctic Treaty Consultative Meeting, queries were made concerning the possibility of interfering with penguin migration routes whilst travelling across the sea ice, as well as the proximity to an Antarctic Specially Protected Area (ASPA) that had been proposed by Italy. Estonia stated that their proposed station would be about four kilometres from the proposed ASAP boundary. Estonia hopes to launch their Antarctic supply ship in May 2006, with construction of the base in January 2007.

Woman Scientist Killed by Leopard Seal

Tragedy struck Britain's Rothera Station on 22 July 2003. While snorkelling, marine scientist Kirsty Brown was pulled below the surface by a Leopard seal and drowned.

A rescue boat was immediately launched and reached Kirsty ten minutes later, but despite cardio-pulmonary resuscitation for over an hour, her colleagues and the station doctor were unable to revive her.

Brown was part of a team of 22 British Antarctic Survey (BAS) researchers who were wintering-over at Rothera. She was conducting research on the impact of scouring by icebergs on marine animal communities living on the sea floor near the coastline. She was snorkelling in the afternoon with a colleague, inspecting equipment at her study site in a bay close to the station, when the seal struck her without warning and dragged her underwater.

Leopard seals are sleek and aggressive predators in water, and though inquisitive of swimming humans, attacks are rare. This is the first leopard seal attack on BAS workers in 30 years. However, in 1999 a *New Scientist* article reported that US scientists have started fitting their inflatable boats with puncture guards after a

A Leopard Seal. Photo courtesy Wade Fairley.



Kirsty Brown. Photo: British Antarctic Survey.



series of Leopard seal attacks. Once a Leopard seal is spotted, BAS safety regulations prevent scientists from entering the water, while those in the sea have to get out immediately.

BAS Director, Professor Chris Rapley, described Kirsty as a vibrant, dynamic individual who was committed to her science and had a promising scientific career ahead of her. "The Rothera team reacted in a highly efficient and professional manner of which we, and they, can be proud. They are, however, shaken by the loss of a colleague," he said.

Brown, 28, had obtained her first degree in geology from the Univer-

sity of London, and then obtained an MSc in oceanography at Southampton University before moving to Adelaide University, South Australia. She worked as a scientific diver with Imperial College's Greenland Diving Expedition in 1995 and then as a field assistant in Greenland for the Cambridge Arctic Shelf Programme during the summer of 1996. She was later a research scientist in Canberra. She joined BAS on contract in 2002.

Brown's body will be flown back to Britain following an inquest into the death, which will be held under the auspices of the British Antarctic Territory.

Chase across Southern Ocean for Toothfish Poacher

In August, Australia, the UK and South Africa were involved in a three week chase of an Uruguayan fishing boat allegedly fishing illegally for toothfish in Subantarctic waters. The boat had been working in Australian territorial waters and was captured on 28 August. The boat was believed to contain fish to the value of NZ\$5.5 million.

At the 26th Antarctic Treaty Meeting it was reported that 12,817 tonnes of toothfish have been legally fished from the CCAMLR convention area, but that IUU fishing (illegal, unreported and unregulated) had taken 10,898 tonnes. IUU fishing at this rate could lead to a dramatic decline in toothfish stocks and is causing grave concern.

Quite a few toothfish fishing licenses are issued by New Zealand for the Ross Sea. New Zealand works under the *Convention for the Conservation of Antarctic Marine Living Resources* (CCAMLR) an international agreement to manage, in a sustainable manner, marine resources. Sur-

veillance of the Ross Sea is carried out from the air by RNZAF Orions, and at sea by the Navy and legitimate fishing and tourist vessels.

When caught, the Antarctic toothfish weighs up to 75 kilograms. It typically lives near the sea floor at depths of 300 to 2500 metres. The fish is beheaded before being brought ashore reducing its weight by 40 kilograms and saving valuable storage space on the ship. In New Zealand, restaurants are beginning to sell the dish on the menu for \$28. In Japan, the United States and Europe the fish is a lot more expensive, fetching from \$45 to \$50 a kilogram. The fish is described as "delicate and sweet, similar to orange roughy, but more tasty". Current krill fishing is about 118,000 tonnes per year and is increasing. The total seabird by-catch (caught whilst longlining) since 1996 is a colossal 278,000 to 700,000 birds, and this too appears to be increasing.

Successful Meteorite Collecting Season

US scientists record the discovery of a new Antarctic meteorite. Photo courtesy ANSMET.

NSF and NASA supported two ANSMET (Antarctic Search for Meteorites) field teams during the 2002-2003 season.

The larger group of eight individuals worked in the Goodwin Nunataks and MacAlpine Hills at the head of the Beardmore Glacier to complete nine years of systematic searching for meteorites in the Walcott N ev , Queen Alexandra Range.

They were flown in by LC-130 Hercules to the abandoned Beardmore South Camp in the northern end of the Walcott N ev . From here the group completed a 60km motor toboggan traverse to the Goodwin Nunataks, where local icefields yielded more than 400 meteorites during the 1999-2000 season.

Later the group traversed to the MacAlpine Hills, last visited during the 1987-1988 season when 126 meteorites had been collected. Here, only a few days before pull out, they recovered more than 100 meteorites in a single day. Over the two traverses, the group recovered a total of 607 meteorites.

A smaller group of four scouted out poorly known and unvisited icefields in the Pecora Escarpment area to assess their potential for future collecting visits. The reconnaissance group was put into the field via South Pole and was heavily supported by Twin Otter, which allowed them to cover a lot of ground with the aid of motor toboggans. The group recovered a total of 318 meteorites during their reconnaissance.

A large number of meteorites of many different types have been collected in Antarctica since the 1970's after it was realised that the Antarctic ice sheet contained meteorites that had fallen to its surface and had been incorporated into the ice. Places where ice-flow was impeded by the Transantarctic Mountains, were also places where meteorites progressively melted-out of the stagnant ice, to be left lying on the surface. Unlike other areas of Earth, Antarctic meteorites are exceptionally well preserved because of the cold temperatures and dry con-



ditions. Collecting in Antarctica has therefore allowed scientists to sample a range of meteorites that have fallen onto the earth over many thousands of years. A few rare specimens are known to have originated from Mars and the moon.

Over the past twenty five years, a partnership between the National Science Foundation (NSF), the National Aeronautics and Space Administration (NASA) and the Smithsonian Institution in Washington, has facilitated the collection and curation of Antarctic meteorites. There is now a full time Meteorite Curator (Kevin Righter) at NASA's Johnson Space Centre. It is here that new meteorites are processed and analysed. Newly classified Antarctic meteorites are regularly listed in the *Antarctic Meteorite Newsletter*, which is now in its 26th volume.

Under the Madrid Protocol meteorites in Antarctica can only be collected for scientific research purposes. To maximise their potential scientific value, meteorites have to be collected and curated in a way that maximises the information available about them and minimises their contamination during collection and storage, as well as their physical and chemical degradation. The curation includes making the meteorites available to bona fide scientific researchers, who are able to apply to the Meteorite Working Group to borrow material. The Meteorite Working Group is a peer-review com-

mittee that meets twice a year to guide collection, curation and loan of the meteorite collection.

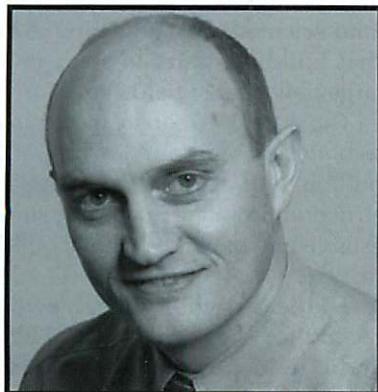
The recent Treaty Meeting in Spain endorsed a move by the US to treat meteorites as 'mineral resources' within the meaning of Article 7 of the Madrid Environmental Protocol. As such, nationals of all Treaty signatories can not collect meteorites for anything other than scientific study, thereby reducing fears of meteorite collection for commercial gain.

Earlier this year US regulations were tightened for nationals involved in meteorite collecting expeditions. Detailed plans concerning the meteorite's collection, handling, and proper curation and storage now have to be submitted to NSF for approval prior to the expedition. An exception was made for serendipitous finds, which still have to be collected in a way that prevents contamination, and have to be stored and curated correctly.

Many thousands of meteorites have been gathered from Antarctica, mainly by American and Japanese field parties. Despite the valuable information that these specimens have provided us about our Solar System, *one wonders* if perhaps we have collected enough, and whether we should leave the remainder melting out of the ice for future generations.

(See ATCM article, page 15).

New Faces at Antarctica New Zealand



**Neil Gilbert –
Environmental Manager**

Antarctica New Zealand is proud to welcome Dr. Neil Gilbert as the new Environmental Manager.

Neil comes to New Zealand from the UK, where, for the last six years, he was deputy head of the Polar Regions Unit in the Foreign and Commonwealth Office.

In this position he was responsible for developing and implementing all aspects of UK Antarctic policy. He brings a depth of understanding and involvement in Antarctic issues to the Environmental Manager position that would be hard to match.

As Environmental Manager Neil will be furthering Antarctica New Zealand's established role as a leader and advocate on environmental issues in the Antarctic. He is particularly looking forward to further developing New Zealand's leading role on key issues such as reporting on the state of the Antarctic environment, marine stewardship and protection, and waste management.

Neil replaces Emma Waterhouse who is now a Senior International Advisor with the NZ Ministry of Fisheries.

Staff Change

Jim Cowie, previously Antarctic Support Coordinator at Antarctica New Zealand, is now Project Manager for the multinational ANDRILL project.

All photos on this page courtesy Antarctica NZ pictorial collection.



**Shelly Peebles –
Communications Manager**

Antarctica New Zealand has appointed Shelly Peebles as its new Communications Manager.

Shelly has an extensive background in marketing, communications and project management and is responsible for the education scholarships, Antarctica Arts Fellowships and media programmes that take place in Antarctica.

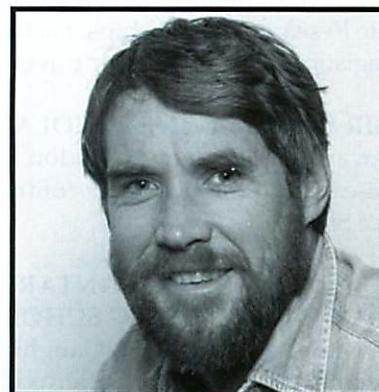
Shelly was previously with YHA New Zealand (Youth Hostels) as National Marketing and Development Manager and Marketing Manager for Christchurch Tramways.

Artists to Antarctica 2003-2004

Antarctic Arts Fellows for this season will be David Trubridge (furniture maker and sculptor) and Laurence Fearnley (fiction author). Both artists will receive financial support from Creative New Zealand.

David plans to use his Antarctic experience to develop a series of works based on natural and human-made structures, Antarctic survival techniques and the sensitivity of the environment. Laurence will gather ideas for a novel based on the Antarctic environment and the human presence there.

Prominent South Island painter Grahame Sydney has been selected to participate as part of an Invitational Antarctica Arts Programme. Grahame is widely respected for his magnificent landscapes of Central Otago.



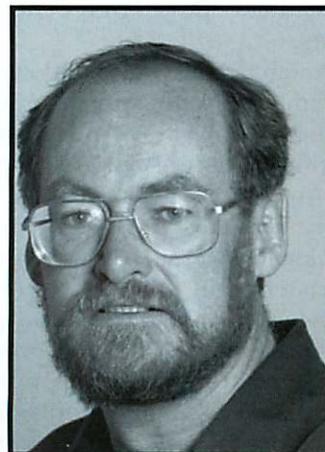
**Keith Springer –
Programme Support Manager**

Keith Springer takes on the new role of Programme Support Manager, responsible for the co-ordination of the annual event programme in Christchurch and management of operational support in Antarctica.

As Programme Support Manager, Keith's responsibilities include matching event requirements with available resources, and the management of equipment allocation including helicopters, vehicles, field equipment and field food. He also has an oversight role on the ice for diving operations, first aid and emergency response including search and rescue, and field training for all programme participants.

Keith previously worked for Antarctica NZ in the roles of Operations Coordinator and Field Support Officer at Scott Base.

Peter Cleary returns to take up the new position of Operational Planner after a short spell overseas.



2003 Antarctica New Zealand Research Scholarships

Three students have been selected for Antarctica New Zealand's Post-Graduate Research Scholarships. Each student will receive a cash total of \$10,000 plus logistics support for their travel and activities on the continent.

SIR ROBIN IRVINE SCHOLARSHIP

Awarded to Penelope Clendon, University of Canterbury, Christchurch, for her research on the processes controlling meltwater production on the McMurdo Ice Shelf.

KELLY TARLTON'S ANTARCTIC ENCOUNTER AND UNDERWATER WORLD ANTARCTIC SCHOLARSHIP

Awarded to Angela McGaughan, Waikato University, Hamilton, for her research into describing patterns of biodiversity for terrestrial invertebrates from study sites within the Victoria and Wright Valleys.

NEW ZEALAND POST ANTARCTIC SCHOLARSHIP

Awarded to Patrick Maher, Lincoln University, Lincoln, for his research on the values of visitors to the Ross Sea Region.

New Heated Scott Base Field Store

After almost 50 years of organising their field gear in the freezing conditions of the Scott Base hangar, New Zealand scientists will be happy to know that building starts this season on a large new heated field store.

The store, 1800 square metres in area, two stories high and costing NZ\$3.5 million, will be the largest single construction project at Scott Base since the establishment of the original buildings in 1956.

The heated store will be a dedicated facility for the preparation of all Antarctic field programmes, as well as warm storage for the base. It will be connected to the main base by an all-weather link. Construction will begin November 2003 and completion is scheduled for October 2005. The store has been designed by OPUS.

Educational News

A stunning exhibition of paintings, sketches, collages that included a variety of materials, poems, essays and a fictional book based at Scott's Cape Evan's Hut, were the fascinating end results of a visit last season by four boys from St Bedes School in Christchurch.

The exhibition opened at the Centre of Contemporary Art Gallery, Christchurch, on 2 July and the opening night drew over 100 students, teachers, relatives, friends and old Antarcticans. The four boys visited Ross Island last season accompanied by two of their teachers, as part of Antarctica New Zealand's Secondary Schools Education Initiatives Programme. For the 2003-4 season it will be Waitaki Boys High School students.

Antarctica New Zealand supports a number of educational initiatives and familiarisation programmes. During the last season, educators from the Antarctic Attraction, Christchurch, Kelly Tarlton's Underwater World, Auckland, Wigram Airforce Museum, Christchurch, the Italian National Museum of Antarctica, Genoa (jointly with the Italian Programme) and teachers from Mount Cook and Middleton Grange Schools, visited Antarctica for background experience.

Antarctica New Zealand also strongly supports the Graduate Certificate of Antarctic Studies taught by Gateway Antarctica, University of Canterbury. This is an intensive 14-week holistic course that includes a 10 day study visit to Antarctica. The Certificate provides a platform and starting point for participants to become involved in Antarctic research and scholarship.

Antarctica New Zealand announced its involvement in the

Matthew Finnigan, Ben Roy, Joseph van der Loo and James Silcock show working drawings for their book – Photographer John McComb. Antarctica New Zealand Pictorial Collection.



Mauriora ki te Ao Scholarship programme, a joint initiative with five other research and environmental government agencies (Ministries of Agriculture and Forestry; Fisheries; Environment; Research, Science and Technology; and Land Information New Zealand). The aim of the programme is to increase the participation of Maori in the area of science and natural resource management.

This year Antarctica New Zealand will provide a \$2000 study grant for the successful applicant in the programme and will also offer work over 2003/2004.

Changes to Board

The former chief executive of the National Institute of Water & Atmospheric Research (NIWA), Paul Hargreaves, has been appointed Chairman of the Antarctica New Zealand Board. Mr Hargreaves was first appointed to the Board in November 2001, and has a long association with Antarctica. As one of a small group of Sea Cadets from New Zealand schools, he was chosen to accompany the New Zealand part of the Trans-Antarctic Expedition, led by Sir Edmund Hillary, on its voyage south into the Ross Sea in 1956/57.

Mr Hargreaves has been with NIWA for eight years, and earlier was cofounder and later Chief Executive of Datacom Group Ltd. He is currently a Director of Datacom Group, Gallagher Group Ltd and Software of Excellence International Ltd. He is also Chairman of the Auckland Branch of the Institute of Directors and a member of its National Council.

Mr Kerry McDonald was recently appointed to the Antarctica New Zealand Board. Mr McDonald was a senior executive with Comalco Group for 20 years, including 12 as Managing Director of Comalco NZ. He is Chairman of the Bank of New Zealand and GRD (NZ) Ltd, and Deputy Chairman of the New Zealand Institute of Economic Research.

Reappointed Board members include Bill Mansfield, UN International Law Commission member and international legal consultant; Dr Wendy Lawson, Senior Lecturer in Geography at Canterbury University; Maj de Poorter, ecologist and coordinator of the World Conservation Union's (IUCN) Invasive Species Specialist Group; Dr Francis Small, engineer and Chairman of Meridian Energy and the Centre for Advanced Engineering at Canterbury University.

Environmental Report Wins Award

Ross Sea Region 2001: A State of the Environment Report for the Ross Sea Region of Antarctica, published by Antarctica New Zealand, November 2001, won the State of the Environment Reports section of the 2002 Institute of Chartered Accountants An-

nual Report Awards. The report was the result of three years of intense collaboration between Antarctica New Zealand and numerous contributors, that was spearheaded by Rebecca Roper-Gee and past-Environmental Manager, Emma Waterhouse. The report represents New Zealand's commitment to environmental sustainability and management.

Conservation Minister Visits Scott Base

A visit by The Hon Chris Carter last November (2002), provided the Zealand Minister of Conservation with the opportunity to experience at first hand the issues relevant to his conservation portfolio. The Department of Conservation has had a long-term interest in Antarctica, and participates in the Officials Antarctic Committee, and is represented on the Committee for Environmental Protection, which falls under the international Antarctic Treaty System.

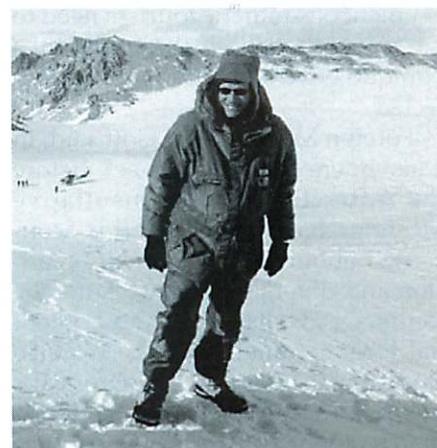
The Hon Chris Carter was accom-

panied by Dr Rick Pridmore, Chief Executive of the National Institute of Water and Atmosphere (NIWA), Mr Barry Carbon, the Chief Executive of the Ministry for the Environment, Ms Kaye Turner of Transition Tertiary Education, Dame Ann Hercus a past Trustee of the Antarctic Foundation and Dr Svein Tveitdal the head of the United Nations Environment Programme concerned with polar issues. The group's time in Antarctica included visits to science groups in the Dry Valleys and to Bratina Island.

Cable Controversy

At this year's Treaty Meeting, the Antarctic and Southern Ocean Coalition (ASOC) questioned the United States on the proposed South Pole traverse, the associated fibre-optic cable and the lack of a Comprehensive Environmental Evaluation (CEE). The US responded that it was at proof-of-concept stage only and that a CEE would be prepared over the next 12-24 months. They also stated there is no proposal to proceed with the fibre-optic cable.

However, *BBC News* ran an article about the cable, citing a cost of US\$250 million. The construction and laying of the cable will be one of the most dramatic and challenging engineering tasks ever carried out in Antarctica. At the moment, South Pole is the only permanently inhabited place on earth that cannot see geosynchronous communication satellites. This seriously restricts communication with the base. The American National Science Foundation last year issued a request for industry to place bids for the building of a trans-Antarctic fibre-optic link for use in 2009. The cable will be laid on the snow surface and will also run along the watershed from Pole Station to Concordia Station. The total cable distance will be 1670 km. It will also be necessary to develop new snow tractors as the present ones, with the capability of towing 60,000 pounds, will probably not be powerful enough to lay the cable.



Minister of Conservation Chris Carter overlooking the Taylor Glacier – Photographer: Lou Sanson. Antarctica New Zealand Pictorial Collection.

Record Tourist Landings in the Antarctic Peninsula

Information released at the International Association of Antarctica Tourism Operators's (IAATO) annual meeting in May show that a record number of more than 100,000 individual tourist landings were made in the Antarctic Peninsula region during 2002-03. Fewer locations were visited than during the earlier record 'Millennium' season of 1999-2000, when there were 88,328 individual tourist landings. Nearly three quarters of last season's landings (74,171) were concentrated at just 17 sites, three less sites than during the 1999-2000 season. The large increase in visitor numbers occurred at the ten most popular sites.

Last season's new record was set despite the total number of tourists in the Peninsula area being 600 fewer than the 1999-2000 high (13,600). This suggests that although fewer people may be visiting the Antarctica Peninsula, their visits ashore are more frequent, and are increasingly concentrated in a number of areas. Data on landing activities has been collected by tour operator affiliates of IAATO for the past 14 seasons and is collated by the US National Science Foundation (NSF).

As in previous years, almost two thirds of this season's visits to the Antarctic Peninsula have been focused on two areas: the South Shetland Islands and the Peninsula coast at the south-eastern end of the Gerlache Strait.

Thirty five percent of the 100,405 individual landings were made during ship visits to 27 sites located on Deception, Livingston, Greenwich, Robert, Nelson and King George Islands in the South Shetlands. Approximately 90 per cent of these visits were concentrated at only one-third of the sites: Whalers Bay, Pendulum Cove and Rancho Point on Deception Island; Hannah Point and Half Moon Bay, Livingston Island; Yankee Harbour and the Aitcho Islands in the Greenwich Island area; and Penguin Island and the Polish Arctowski Station on King George Island.

Whalers Bay on Deception Island has been the most visited tourist site in the Antarctic region for the third season running, with almost 9,000 passengers landing there in 2002-03 during 95 ship visits, a rise of 28 per cent compared to the previous year. The second most popular region for

landings (23 per cent of total) was 18 locations along the Danco Coast between Cape Murray and Flandres Bay at the southern end of Gerlache Strait, with places such as Paradise Bay, Andvord Bay and the Errera Channel dominating the figures. Four locations - Cuverville Island, Neko Harbour, Waterboat Point, and the Argentinean Almirante Brown Station - accounted for 87 per cent of total individual landings. The other 14 locations accounted for less than 3,000 of the landings from only 47 ship visits.

The data collected by IAATO-NSF does not always incorporate information from yachts in the area that support climbing and trekking activities. Approximately 20 yachts were known to be in the area this season. Nor is data included for tourists flying into King George Island. In the Ross Sea region the impact of tourism continues to be much less. As a result of the bad sea ice conditions last season, the total number of individual landings at the main sites in Ross Sea region fell to 931 compared to 1,774 the previous season. Cape Royds received the most tourists (235), followed closely by Cape Evans (228), Taylor Valley in the Dry Valleys (177), Cape Hallett (94), Italy's Terra Nova station (78), the US McMurdo station (74), and Cape Adare (55) (Scott Base unknown).

Call for 'Stronger' Management of Antarctic Tourism

The New Zealand government believes that arrangements for the management of Antarctic tourism need to be "strengthened" if the continent's "unique environment" is to be protected.

Foreign Minister Phil Goff said, in a statement released a week before the Antarctic Treaty Consultative Meeting, that New Zealand is "concerned about the continued expansion and diversification of Antarctic tourism, as well as safety and potential jurisdictional issues". He also said that "there are a number of gaps in the [Antarctic Treaty] System's management of tourism and other non-government activities", including "different interpretations of the Environmental Protocol, and the lack of means to ensure the safety and self-

sufficiency of such activities". Mr Goff said that the number of tourists who visit Antarctica had "grown from 5,000 to more than 15,000 in just over 10 years", and that some "projections suggest that numbers could increase by a further 10,000 in the next five years". The International Association of Antarctic Tour Operators (IAATO), however, estimates that approximately 22,000 people will make landings from ships in Antarctica as early as the 2003-04 season. While there is concern over several small private expeditions that ran into difficulties last season (see *Antarctic* Vol 20, No 3/4), problems have also affected commercial tour operators, with ship groundings and aircraft damage in storms. There is also the added concern of the effects of

cumulative impacts on popular sites that are likely to lead to their deterioration.

The New Zealand Foreign Minister said that New Zealand would be working within the Antarctic Treaty System to ensure that all non-government activities proposed for the Antarctic region are thoroughly assessed before they get under way. Such an approach would promote the highest possible operational standards and thus reduce the chances of serious incidents and environmental damage from occurring, he said.

The regulation of Antarctic tourism occupied two full days during the second week of the 26th Antarctic Treaty Consultative Meeting in July. Two substantial papers were presented by Australia and the United Kingdom, and while there was much discussion, there was little resolution. Discussion will continue at an Intersessional Meeting of Experts hosted by Norway in March 2004.

Bioprospecting in Antarctica Workshop

Bioprospecting (or biological prospecting) is the search in the natural world for biologically useful materials – usually chemical compounds or genes. Globally it has generated major scientific and commercial interest, and attracted the attention of large pharmaceutical and bio-corporations. This, in turn, has raised questions about who actually “owns” the rights to biological resources and the products that may result from bioprospecting activities.

Researchers are already bioprospecting in Antarctica and the Southern Ocean, and extreme environments such as those associated with the Polar Regions have been known to be valuable sources of novel biodiversity. This poses particular problems for Antarctica.

In 2002 bioprospecting was discussed in the Antarctic Treaty System (ATS) – at the Antarctic Treaty Consultative Meeting (ATCM) in Warsaw, and the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) in Hobart. The Committee for Environmental Protection (CEP) agreed to address

bioprospecting at its meeting, CEP VI, at the 26th ATCM in Madrid held in June 2003. But the CEP noted that some aspects of Antarctic Bioprospecting went beyond its brief. The Final Report of the Warsaw meeting specifically noted the issues and urged Antarctic Treaty States to be prepared to discuss these in Madrid.

With this in mind, Gateway Antarctica at the University of Canterbury in Christchurch, New Zealand, organised a workshop, “Bioprospecting in Antarctica”, which was held on 7-8 April. The Workshop was attended by 70 participants from the international community. Day 1 included a Welcome by Professor Bryan Storey, Director of Gateway Antarctica, question sessions facilitated by the Convenors and Keynote Presentations from six speakers, each experts in their fields. Day 2 of the Workshop was devoted to workgroup discussions on supply, equitable, ethical, environmental and legal issues surrounding Bioprospecting in Antarctica.

A preliminary report on the workgroup outcomes was sent to the

New Zealand Ministry of Foreign Affairs and Trade who agreed to table the report as an Information Paper at the Madrid ATCM. Additional information from the Workshop can be found on the Gateway Antarctica Webpage at

www.anta.canterbury.ac.nz.

In addition to the paper tabled by New Zealand, another document on bioprospecting was jointly presented by the UK and Norway. Both papers were discussed at the CEP VI, Madrid Meeting. Comments from the CEP Report included that “...the current environmental impact of bioprospecting in Antarctica was small”. The CEP also noted that “Bioprospecting raises many complex legal and political issues...”, they agreed to refer the legal and political issues to a future ATCM for further consideration. It was recognised that considerable use of bioprospecting technology already exists, with 62 patents issued in the UK and 92 applications registered in the US. Most of these are for medical purposes.

Antarctic Library Collection

Since 1999, Gateway Antarctica at the University of Canterbury in New Zealand has maintained *Antarctica New Zealand's* collection of maps, aerial photographs and books. These materials are part of the University of Canterbury's holdings, and are located at three sites. Anyone can come into the library and ask to see these materials, but you will need to acquire a library card to borrow material, and some of the collection has restricted access.

Aerial Photographs

Gateway Antarctica holds Antarctica New Zealand's Antarctic Aerial Photograph collection, which contains images from as early as the 1960s. Although this collection is by no means complete, there are many thousands of photographs covering a reasonable proportion of the Ross Dependency. Approximately 60% of the images and flight lines are cata-

logued and the catalogue is viewable and downloadable via the Gateway Antarctica website (www.anta.canterbury.ac.nz). Researchers can view available flight lines and see scanned images along a flight line, while low resolution copies of many photos are available (for free) from the website. High quality copies may be ordered, or you can come to Gateway Antarctica and view the photographs.

Maps

The *Antarctica New Zealand* collection of maps is currently being catalogued and entered into the University of Canterbury system. Once complete, all of these maps will be available at the University of Canterbury Geography Department Map Library. Cataloguing is scheduled for completion in October 2003. In addition to the *Antarctica New Zealand* collection, the University of Canterbury has a

large, reference-only Antarctic map collection, which is also open to the public. This collection includes United States Geological Survey (USGS), British Antarctic Survey (BAS), New Zealand 1:50000 and 1:250000 maps, as well as one-off topographic and satellite image maps. Gateway Antarctica also has the expertise to produce high quality maps.

Books

There are many Antarctic-related books and journals in the University of Canterbury Library, some of which have been kindly donated by the Antarctic community. The collection can be searched online using the University of Canterbury Library's webpage available at <http://library.canterbury.ac.nz/>. Also, check out the Antarctic Subject Portal while you're on the Library website.

The Scottish National Antarctic Expedition 1902-04

Part 3: Bruce's Historic Discovery

By David E Yelverton FRGS

After a nine-day voyage from Buenos Aires to Port Stanley, and a further nine days in port, Bruce's ship, the *Scotia*, finally steamed into Scotia Bay (Laurie Island) on 14 February 1904. A further week was lost while they built a new store hut and fixed a proper wooden roof onto the living quarters.

Bruce's idea of their chances as they weighed anchor on the 22nd February must have been influenced by the splendid weather that day, for it was the very day a year earlier when they had had to retreat from their farthest south in 70°25S. "It looks like a Weddell year" he wrote three days later, as they steamed south east with only scattered icebergs about

Twenty-four hours later they were in more predictable surroundings for that time of year, with pack to the southwest and fingers of one-year ice stretching east from it, through which they passed. Crossing the Circle early on the 27th, they found ice blocking the way south until, travelling well east of Weddell's track, they reached the eastern margin of the pack at 3pm on the 29th.

Resuming a southerly course amid numerous bergs Bruce was quickly at work photographing them, first with his own Verascope camera, designed by Dr. Jules Richard, who he had worked with aboard the *Princesse Alice II*, and then with the ciné camera, which jammed "as usual", as Bruce recorded with evident irritation after shooting some 7 yards of film.

A freshening breeze the following afternoon allowed them to stop engines, and with the sails carrying them south at almost 7 knots and the pack safely to the west of them, few aboard can have doubted that their fortunes had defied the calendar, despite the snow that later came on from the west. Numerous birds began to appear, and to their surprise the terns



The Scottish National Antarctic Expedition Silver Medal (obverse) awarded by William Bruce to his men. Photo: D. Yelverton, courtesy of Mr Ronald Gordon.

were not the ones familiar at Laurie Island but Arctic terns twelve thousand miles from their northern summer haunts - the first ever seen south of the Antarctic Circle.

At midnight on the 1st March, already south of last year's turning point, Bruce, ever conscious of historic moments, went below confident that the next day would see them south of 71°30S. As they continued on their southeasterly course they would pass Ross's farthest south made on 6 March 1843 at 14°51W, about 140 miles east of their own position.

The historic latitude was passed the following evening and prospects seemed even better, despite the strong WSW gale, for there was no pack and only one berg in sight. Over confident that there would be no change in the sea, everyone was taken off guard when things began to fly about in the cabins. The sea was short and choppy and, under just three topsails, a jib and staysail, the *Scotia* had several times rolled 43° to windward. But being a 'stiff' sailer, it never rolled more than 23° to leeward.

As the wind fell away to nothing on the morning of 3 March 1904, thin cirrus cloud spread over the sun, al-

though the atmosphere remained brilliantly clear as the captain swung his way up to the crow's nest. A moment or two after 10am his cry "Land Ahead!" brought everyone on deck. Bruce was soon at the masthead, while others clambered up the rigging.

It was ice-covered land for sure. There was no actual rock visible, but what must have been 150ft glacier ice cliffs were topped with frozen slopes rising away to heights that merged with the hazy sky far away in the south-east. Bays alternated with berg-like capes, the rangefinder putting their distance at some 10 miles, with the shoreline running west-southwest. Steaming closer after sounding in over 1100 fathoms, they were not given much time to investigate as the wind rose from the north driving streams of pack along the shore in worsening visibility. So much did the land trend westward at this point that Bruce took it to be "the southern boundary of the Weddell Sea in this longitude" although still only in 72°18S, almost 120 miles north of Weddell's farthest, some 300 miles WSW from their position.

Not surprisingly Bruce's log for that day betrays more anxiety for their safety than exhilaration at his discovery, for at the moment of their approach the situation quickly became serious. The weather, Bruce recorded, "not only spoilt our view but compelled us to seek safety further to the northwest of the ice face while the wind was blowing on to it. The pack ice was very heavy, and had we been caught in it off this dangerous coastline, with a swell running against it, great apprehensions for the safety of the *Scotia* would have been felt."

He was to find there was also a strong on-shore current for after steaming all night, they were little farther from the shore, and it was

snowing. When the weather cleared around noon, Bruce's precarious decision to press south-west along that hazardous lee shore must have been bolstered by the rising barometer, for the wind had shifted to the NW.

Almost twenty years later Rudmose Brown was to write that Bruce had realised that land in that position meant there was a relatively narrow southern end to the Weddell Sea, with the consequent likelihood of greater than normal ice pressure as the pack drove into it.

It was an almost clairvoyant conclusion given that the only clues were the land Bruce saw in front of him, and the presence of birds at Weddell's farthest south decades before.

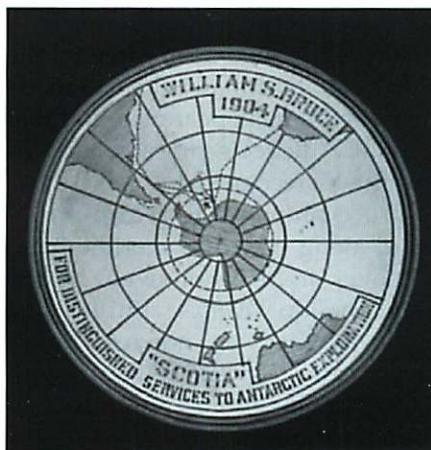
After steaming South West by South on the afternoon of the 4th, and again the following evening, the greatest advance was made on the 6th when it was possible to sound (159 fathoms) and follow the coast about three miles off the shore, always with dense pack on the move between them and the frozen cliffs.

By 9 o'clock that evening they were opposite a bay facing rather south of west and some 115 miles from the point where they had first sighted the coast. One mile south of the 74th parallel, and in 22°W, they were only 14 miles short of Weddell's record (74°15S in 34°16W).

During the night the off-shore wind veered through East to ENE and, as the barometer fell in the morning, the trap was sprung. It was not instantaneous but since the wind was from the landward side, it, perhaps understandably, caught the new chief engineer off guard. Bruce related: "While it was very thick indeed, at about 6.30am we got drifted into some sludge ice, closely jammed together by the wind, and formed of snow and bay ice - thick as glue. Unfortunately there was no more steam than to make the *Scotia* go considerably less than half speed, and she stuck every minute. The sludge drove up and became closer and thicker, and the hope of extricating the ship became less and less, except with high pressure of steam. It was a case of 'firing up the middle furnace.' At length after every effort, at 8am we were hopelessly beset in this mass like a fly in treacle. How we missed Ramsay at this critical time! He of all



Scotia at 74°01S, March 1904. Photo courtesy of the Hunterian Museum, Glasgow University.



The Royal Scottish Geographical Society Gold Medal (obverse and reverse) presented to William Bruce on his return to Scotland. Photo: D. Yelverton, courtesy of Mrs Moira Watson, Grand-daughter of William Bruce.

people would never have allowed steam to be down at this critical moment. Haymes, however, whom we had shipped at Buenos Aires, who was in every respect a capable engineer, had had no ice experience, and had not realised the condition of things, and how helpless we would be if we were caught in this, that has been around us for some days."

They were still trapped on 11 March, and it looked as though they would be there for the winter. The calmness of Bruce's entry betrays nothing of the anxiety prevailing that evening, or the fact that on that day they had decided to ration their lighting oil. "It looks as if we were fixed up for the winter, especially as tonight the temperature has fallen again, with

a clear sky, to 4.2°F." (-16°C)

He was up early the next day: "When I got up this morning at 4am the temperature was below zero [-18°C] ... everything looked as solid as could be. There seemed little doubt now that we would have to settle down for the winter here After breakfast ... a light south westerly air had now sprung up, and the temperature had risen rapidly ... The captain had not been up [in the crow's nest] long when he saw a small crack opening ... and in a few minutes there was a lane broad and long enough to sail a ship in. Then all round, between the ship and the glacier especially, the ice broke up into a thousand pieces — gently, quietly, powerfully — and

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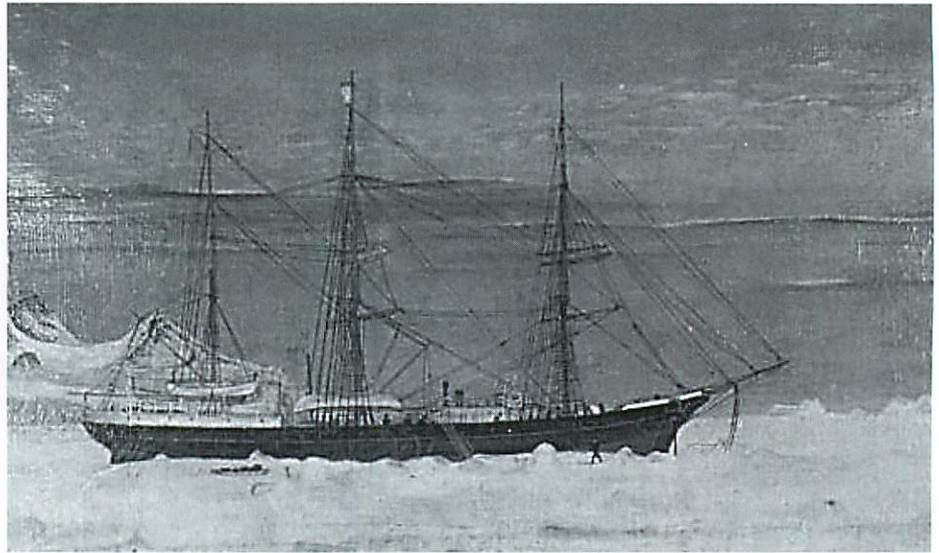
there was every prospect of an immediate liberation."

Bruce was thankful that he had not started a planned sledge trip around the bay to make soundings, though not to reach the shore about 3 miles away. There had never been an intention to mount land journeys on this second voyage; no attempt had been made to bring dogs and Bruce must have known that if they did find land, the lateness of their start would rule out exploration.

At this late date he sensed they had shot their bolt. Everyone was assembled on the ice for a photograph (the weather was too dull so it was not successful) with the Scottish Royal Standard on the foremast, the burgee and blue ensign from the mizzen, the Union Jack and the silk St. Andrew's Cross, made by Bruce's wife, planted on the ice ahead of the ship. Bruce was nothing if not proud to be a Scot!

Three hours later the ice opened around the floe they were trapped in, with the keel 4ft above the base of the ice. Attempts to split the floe with dynamite had no effect whatever, but that evening Nature split it for them and the ship was once more afloat. "Never during the voyage had I seen everybody in such exuberant spirits" wrote Bruce in his log that night, but it was premature, for the lanes all around quickly closed up and the pack carried them relentlessly away from the coast all that night and throughout the next day. By the time tea was served in the saloon on the 13th the captain had given up hope. "Well Mr. Bruce" he said "we are hopelessly beset and I'm much afraid with this frost we won't get out of it." Bruce and the Mate John Fitchie disagreed, and the next morning their optimism was vindicated. Clear of the pack, there was not a moment's hesitation in Bruce's decision to head north, and that evening it was champagne and cigars in the saloon and grog all round for the crew as they celebrated their discovery and liberation.

Beginning the most southerly oceanographic campaign yet tackled, the next day saw the netting of three specimens of *Primnothonus hookeri*, the world's rarest fish at that time. The only known example had been caught by Sir Joseph Hooker aboard Ross's *Erebus*, and before he could



Painting of the Scotia in Scotia Bay made by expedition artist William Cuthbertson, who later gave it to Able Seaman Hendrig Anderson. Photo: D. Yelverton; copyright Mr Ronald Gordon.

preserve it, it had been eaten by the ship's cat! Fortunately he had made notes about its appearance, and that was how Bruce's prize catch was eventually recognised.

Bruce proposed to return northward along the 10°W meridian and so cover an area not swept by the German ship *Valdivia*. But his first goal was what was known as 'Ross's Deep' in 68°34S 12°W where, with 4,000 fathoms of line out, Ross had found no bottom.

Reaching the approximate position on 23 March, Bruce found bottom in 2660 fathoms. There could be no doubt about it - Ross's Deep had never existed! This Deep had fathered the theory of a sea connecting the Indian Ocean with the Weddell Sea (across modern Antarctica) that German oceanographers had persuaded Neumayer, the father of the German expedition, to believe in. Whether Bruce realised what he had achieved that day is not clear, but his compatriot and tutor was to leave him in no doubt when he got home.

The subsequent voyage north was, as one of the scientists put it, "hardly a bed of roses." Appalling weather frequently ruled out any work with the nets, or sounding machines. In the westerlies even the ship's stiffness seemed to forsake her as she rolled as much as 47° to starboard.

Almost through the 'furious' fifties on 8 April, they sounded in 52°S and, to their surprise struck bottom at least 6000ft above that of previous sound-

ings. It was the last marine science coup of Bruce's voyage — they had found the Mid-Atlantic Ridge a thousand miles further south of its supposed end. Tracing it north to Gough Island, where they landed, they turned east to reach Cape Town on 5 May 1904.

Leaving after 17 days they arrived at Kingstown Harbour on 15 July, only to be forced to stay there until the 21st because they were too early for the reception laid on for them at Millport in the Clyde.

As Sir John Murray presented Bruce with the Gold Medal of the Royal Scottish Geographical Society, telling the assembled audience that Bruce had discovered "an Antarctic continent in the place where no one believed it existed", and Bruce thanked his backers, few in the audience realised what Sir John had been quick to tell Bruce - that the expedition had doubly solved the riddle that Drygalski and the German expedition had been sent to answer - that there was no seaway from the Indian Ocean to the Weddell Sea.

Proud for Scotland as the expedition's crucial discovery of the shore of Weddell's "Polynia" had been — "the name of Scotland was emblazoned on its flag" Bruce was to say — science had been the expedition's "talisman", and neither by Bruce nor Sir John were the men still on Laurie Island forgotten that day. By then they were well on the way to

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completing a second year's observations of Antarctic weather and magnetic forces, and building the link between Nordenskjöld's records and those of Charcot's expedition, which was now wintering on the Pacific side of the quadrant at Port Charcot on Booth Island.

APPENDIX

Expedition Staff: Wm S. Bruce, Robert N. Rudmose Brown, Robert C. Mossman (led shore party), David W. Wilton (who had chosen Scott's dogs in Russia), John H.H. Pirie (surgeon, who with taxidermist Alex'r Ross and artist Wm Cuthbertson, joined shore party after first voyage, rejoining ship for second voyage), Gilbert Kerr (laboratory assistant).

Ship's Crew (Served throughout unless otherwise indicated. [SP] = joined shore party, and did not serve on 2nd voyage; [DD] = died, [INV] = invalidated, not replaced, [R] = resigned, rx = replaced for second voyage ex B.Ayres by): Master: Thos. N. Robertson, 1st Mate: Robert Davidson, 2nd Mate: John Fitchie, 3rd Mate: James McDougall, Ch.Engr: Allen G. Ramsay [DD], rx Chas. Haymes, 2nd Engr. Henry Gravill, Bosun: David Patrick [R] rx J. Nordstrom (Norwegian), Deputy Bosun: Alexr. J. Walker, Carenter: James Rice, [R] rx Ole Gullstüse (Norwegian, who deserted at Cape Town, where replaced by Thos. Frazer), Ch.Steward: Thos McKenzie, rx Edwin Florence, Asst Steward: Wm Smith [R] RX Garnet Cooke, Ch.Cook: Edwin Florence (Ch.Steward on 2nd Voyage), Asst Cook: Wm Murray (Ch.Cook on 2nd Voyage) rx E.K. Havens Stokers: Alexr. Duncan, David Low, Robert Wilson [R, not replaced for 2nd voyage], Able Seamen: Hendrig Anderson, Lazaro Carvajal [R] rx Patrick Kilkenny (at Port Stanley for first return to B.Ayres), Andrew Greig rx C. Snyders (Dutch), James McKenzie rx C.W. Janssen (Swedish), John Macaurhie rx L. Petersen (Danish), Wm Martin [SP], Alexr Robertson rx Karl Hansen, James Smith rx Peter Andersen (Danish), Ordinary Seaman John Smith [INV].

XXVI Antarctic Treaty Consultative Meeting 2003

The XXVI Antarctic Treaty Consultative Meeting (ATCM) was held in Madrid, Spain, 9-20 June, 2003. It was attended by 27 consultative nations and 11 contracting countries. Malaysia also attended by invitation.

After the meeting was opened by Ambassador Fernando de la Serna, Head of the Spanish Delegation, Ambassador José Antonio de Yturriaga was accepted as Chairman. The official inauguration of XXVI ATCM was performed by the Prince of Asturias, HRH Don Felipe de Borbón, who commented on the special nature of the Antarctic Treaty System which served as a unique case of collective administration. HRH mentioned that SCAR (Scientific Committee for Antarctic Research) had received the Principe de Asturias Prize for International Cooperation.

It was noted during the meeting that there had been no new accessions to the Treaty during the year. At present there are 45 Parties to the Treaty, and the Government of Ukraine has applied to become a Consultative Member.

At a Treaty Meeting in Madrid in 1991, the important Protocol on Environmental Protection was signed. There are now thirty Parties to the Protocol, with Romania as the last country to ratify the Protocol on February 3, 2003. The United States reminded all Parties of the importance of ratifying the Recommendations made over ten years ago. Eight countries had still not taken action, although Canada, Estonia and the Czech Republic indicated their intention of completing ratification by 2004.

SCAR

Last year SCAR (Scientific Committee for Antarctic Research) was awarded the Principe de Asturias Prize for International Cooperation for its role in Antarctica. The Prize of 50,000 Euros will be used to establish a SCAR Fellowship Programme to fund five young scientists to undertake Antarctic research in a country other than their own.

The 2002 XXVII SCAR Meeting held in Shanghai completed major restructuring of SCAR, and the proposed establishment of three new Scientific Standing Groups: Geosciences, Life sciences and Physical sciences. Two new

Standing Committees on the Antarctic Treaty System, and on SCAR Finance were also established.

Peru was accepted as a full member of SCAR, and the withdrawal of Estonia from associate membership was accepted with regret.

ENVIRONMENTAL PROTECTION

The Committee for Environmental Protection (CEP) met during the first week of the ATCM under the chairmanship of Dr Tony Press (Australia).

METEORITES

The CEP affirmed, and the ATCM endorsed, that meteorites were "mineral resources" within the meaning of Article 7 of the Madrid Environmental Protocol. All Parties to the Protocol therefore had an obligation to prohibit any activity in Antarctica relating to meteorites, other than scientific research.

LAKE VOSTOK

A draft Comprehensive Environmental Evaluation (CEE), submitted by the Russian Federation for Water Sampling of the subglacial Lake Vostok, was discussed by the CEP, who recommended revisions in the final CEE. Russia intends to drill the remaining 50 m of ice below Vostok Station (3600 m). Only an IEE is necessary for the ice drilling, but a CEE has to be in place before the lake is entered.

Queries were made about the sterility of the drilling fluid, and the fact that the draft did not address worse-case scenarios such as spillage of drilling fluid or that the lake water is pressurised. A paper presented by SCAR urged caution for the Lake Vostok project as it is seen to be at the limit of modern technology and glaciology.

ANDRILL

New Zealand presented a draft CEE for the International scientific drilling project. Although regarded as reaching a high standard, the final CEE will have to address the mitigation and monitoring of noise impact from the seismic profiling and drilling; contingency plans in case of sea-ice break-up at the drill site, and further consideration of sewage disposal and the possibility of treatment at the drill site.

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The Sir Hubert Wilkins' Third Antarctic Voyage

The Ocean Frontiers' flagship, the Sir Hubert Wilkins, has made four voyages to Antarctica. Iain Kerr, the author of this article was Master on Voyage 3.

After a training voyage exploring Tasmania from Hobart to Wineglass Bay, in December 2001, we took our passengers aboard the Sir Hubert Wilkins ("Huey"), and sailed south at 1000 hours on Sunday 6 January 2002.

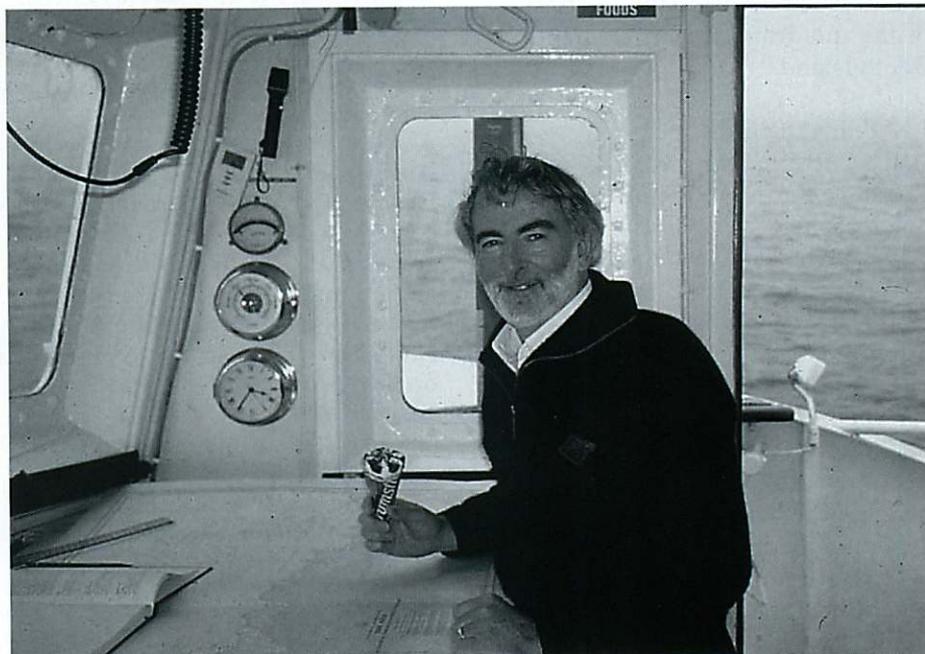
As usual on a small ship, crew and passengers all quickly merged into expeditioners on a common adventure. Technically though, there were 21 crew, including expedition leaders Don and Margie McIntyre, three mates and three engineers, and the very best of general hands - real seamen and women, mostly from Australian square rig sailing ships.

Our 12 passengers included reporter Piers Ackerman, mariners David and Shane Beard who had won the cruise in our sponsor Dick Smith's breakfast cereal competition, the proprietor of Hobart's Irish Pub, Peter Stopford, and marine artist Ian Hansen.

Also on board for the sail down the Derwent was Dick Smith and his family, with Dick at the helm and dolphins in the bow wave. A Hobart crowd, of which my family was a significant part, waved us off with Titanic style streamers. Backing away from the quay gave us the opportunity to use the three blasts on the whistle as a farewell.

Sailing weather was good, and passengers sat down for their first meal in Huey's beautifully wooden-panelled saloon which, in her earlier life as the Finnish presidential yacht, had been the venue for a Cold War meeting between the Presidents of USA and the former USSR. But within a day or so, everyone was intermingled and passengers were as liable to be dining to just the same standard, in the crew's mess right aft.

We had two outstanding chefs,



Iain Kerr in the wheelhouse with refreshment in hand.

Katrina and Carlita, and ate as well as on the biggest passenger liner. Katrina was an experienced sailing ship cook and after leaving us became cook on the *Aurora Australis*. Carlita was originally an accountant but retrained as a cook specifically to work her way to Antarctica on Huey. On a small ship in the Southern Ocean they had the hardest job of all on board - and did it magnificently.

Our ship's surgeon was Dr Paul Hui, who kept an illustrated diary of the voyage through a doctor's eyes, with pictures of everyone on board. This can be accessed at www.oceanfrontiers.com.au/iceship/hui.html.

As Paul recorded, "The seas and weather we encountered during the following days were 'moderate', according to our Scottish captain". And by Southern Ocean standards, and by watching the weather carefully and working our way round the worst of it, so it was.

Some people say Huey rolls a lot. Yes she does, but when you read the reports of other ships, from *Braveheart* and fishing boats, to USCG icebreakers and passenger cruise ships, they

all roll the same - routinely 30 or 40 degrees, with occasional 50 or 60 degrees. The bottom line is that it is the Southern Ocean that rolls; and the only alternative is to fly - and miss out on the experience that has remained unchanged since the heroic era.

Before sailing we had unbolted the drivers' seats from the bridge, making room for more people to share the wheelhouse. We also made up rosters so that everyone on board had the opportunity of steering Huey by hand, keeping a lookout, and recording the weather, including seawater temperature, every hour.

Maybe it was the meticulous comparison of sea and air temperatures that guarded us against icing up on this trip, but certainly the abrupt drop in sea temperature told us when we crossed the Antarctic Convergence at 54 degrees South and entered physical Antarctica. Watching the chart told us when we crossed the 60 degree parallel into 'Treaty Antarctica', and on crossing 67 degrees and 33 minutes into 'Astronomical Antarctica'. Each crossing was duly celebrated.

A sweep was held for when we would sight the first iceberg. This turned out to be a big one, about 3 miles long and 2 miles across at 63 degrees, 35 minutes South. It was a grey misty day but we stayed with our first berg of the voyage for a couple of hours, taking pictures and enjoying the shelter behind it. We used the sextant to measure its height.

Then iceberg numbers started increasing, although we only saw them on radar, as the fog had increased. We crept forward towards Commonwealth Bay, through very little pack ice - most of which was trapped in the Ross Sea - making conditions very easy for us to the West.

At 12 noon, on Saturday 12 January, exactly six days out from Hobart and on ETA to the minute, we had land five cables (1 km) ahead of us on the radar. Here we anchored.

By mid-afternoon, the fog lifted and Antarctica was awesome, the ice-cap glowing white in the sunshine and stretching from horizon to horizon. It was also rather noisy, cracking like thunder as the heavily crevassed ice moved outwards, continually shedding brash into the sea.

With the improved visibility, we now moved closer to Cape Denison, keeping a wary eye on breaking reefs, with an anchor hanging a full shackle (15 fathoms or 30 metres) underfoot, and a ship's boat sounding ahead of us. Little had changed in a century!

We then used the ship's boats constantly for both cargo and passengers, picking our way through the brash to Boat Harbour. The bridge watch on Huey monitored the boats both on radar and with the Crewfinder transponders, guiding them backwards and forwards by radio when it got foggy. Occasionally we also had to use our horn and searchlight to get them back safely.

In a week, we had done the following:

We removed Gadget Hut (named after the sledge dog) in which Don and Margie McIntyre had wintered alone in 1995, as their permit for a modern building in Antarctica was expiring. We had a last cup of tea inside and then dismantled it carefully, so that it can be reassembled somewhere for others to admire. A book and a video of the McIntyres' adventure are now available.



The last day for Gadget Hut at Commonwealth Bay. Jim Claypole (left) had wintered here with his wife Yvonne, and Don McIntyre (right) wintered there a few years earlier with his wife Margie. Photo: Iain Kerr.

We did restoration work on Mawson's Hut. This was under the official control of Dr Ian Godfrey, who allowed us in one by one. The bunks had well known initials, the aging tins still had recognised brand names, the almanacs that would have been used for the original sledge navigation were still there, and an old newspaper had the headlines "Titanic sinks".

We generally cleaned up the modern debris of the last couple of years. Sadly some of this had been left by earlier official clean-up teams.

We helped Simon Nasht with his documentary film about Hurler.

We ground-truthed satellite photos using GPS.

We unsuccessfully searched for the *Aurora's* anchors (1913) with a magnetometer. The latter did not like being so close to the magnetic pole.

We also all had lots of opportunity to sightsee both ashore and round the MacKellar Islands. Highlights include memories of a melt-pool of water high up a glacier, with hundreds of penguins cavorting in the clean fresh water; cruising round the MacKellar Islands, which looked like little Christmas cakes topped with metres of frozen spray ice; having penguins jumping into the boats.

Commonwealth Bay was de-

scribed by Mawson as the "Home of the Blizzard". We monitored the weather carefully and had one katabatic blow of Force 9 (storm) and -8 degrees temperature. The weather then turned into a calm sunny afternoon and we saw that our nearest tabular iceberg had been reduced to 'bergy bits and brash. Antarctica was kind to us.

Leaving our scientists behind, we then cruised down Iceberg Alley to the old Port Martin base in Terre Adelie and went ashore. Then it was back to Cape Denison for the scientists, back to Port Martin, and then on to the modern French base of Dumont D'Urville.

This is where the French, oblivious to international opinion, some years ago evicted penguin rookeries, blasted islands, and built a rock runway. However the neighbouring Astrolabe Glacier remained a problem because icefalls into the sea created tidal waves and the runway has never been properly used. Now an idle control tower looks down on the hordes of Adele penguins that have found the level runway a much better rookery than ever before.

We had our own skirmish with

Continued on Page 18

Continued from Page 17

French officialdom. They had decided to tax visiting ships, which meant asserting a sovereignty that is not allowed under the Antarctic Treaty. So we refused to pay! However we visited as planned; toured the area and the Astrolabe Glacier by boat, using two for safety; and had a hot croissant breakfast on the helideck while at anchor beside their base. We flew a French courtesy ensign and were pleased to see that they hoisted an Australian flag. So at a local level Antarctic hospitality prevailed. All we forwent, to the disappointment of both sides, was a tour of their facilities. The tax has since been rescinded.

From here, with no less than 125 icebergs in sight around us, we set a course for Macquarie Island, seeing our last berg at 63 and a quarter degrees South. The weather was bad on this passage, and we were pleased to reach the Island and calmer seas, where King Neptune boarded and helped us celebrate our visitation to Antarctic Seas.

King penguins now surrounded the ship in hundreds, cavorting, preening, and calling. Ashore, the penguins were wall-to-wall, covering entire beaches, and up into valleys; Kings, and Royals, and Gentoos.

On quieter beaches the Kings, in particular, would stroll past you like pedestrians in a city square. But if we knelt down to their level they would approach close to examine us, and peck at our clothes and cameras.

Less interested in us, fortunately, were the Elephant seals, generally huge, smelly, and lazy (and the males are even worst). While landing on the beach we had to find a space between sparring bulls, which looked like prehistoric monsters battling each other. We hoped they would not see our little rubber boats as challengers!

The Australian base on Macquarie entertained us, and we them. We bought postcards at the base and posted them, then carried the mail back to Australia. On the passage back, the Southern Ocean reminded us of just how rough it could get. And the rougher it gets, the slower you go, and the longer it lasts. The last day or two became a race against the nastiest looking depression coming in from the West.



*The Sir Hubert Wilkins (Huey) at anchor in Commonwealth Bay.
Photo: Ian Kerr.*



*Leaving the last iceberg astern on the voyage home to Australia.
Photo: Iain Kerr.*

We made the lee of Tasmania and entered the calm waters of home, with twinkling lights ashore and the smell of the eucalyptus drifting down the Derwent.

For all 33 of us on board, it had been the experience of a lifetime. For Sir Hubert, there was one last voyage south to make. For Debra and Nick

Dugan, who had been on board since Finland, who had gone for a swim in the brash, and were then "seasick" for the first time, there was a beautiful daughter, Adelle, waiting for them in the future. And for myself, there was a desk job in Canberra, and a little schooner on the lake.

New plans to Locate Shackleton's *Endurance*

New plans are afoot to locate the remains of Shackleton's ship *Endurance* on the floor of the Weddell Sea in January 2005.

Earlier plans to find the ship announced two years ago by American undersea explorer, marine scientist, and US Naval officer, Dr Robert Ballard (see *Antarctic* Vol 19 (2) p. 118) were deferred when funding could not be raised. Ballard has considerable underwater experience, having been on over 65 expeditions in submarines and deep diving submersibles and regularly used remotely controlled submersible robotic devices. His name is remembered as the 'discoverer' of the sunken *Titanic*, and many other wrecks.

Two separate syndicates from the UK are proposing to search for the *Endurance*. One is underwater expert and commercial explorer David Mearnes, who announced plans in June to film and photograph the wreck of the *Endurance*, and to recover artefacts from the wreck for re-

turn and display in the UK. The second and newer group to enter the hunt for *Endurance* is led by adventurer Jock Wishart, whose plans are less well known.

Mearnes is Director of the private company Blue Water Recoveries Limited (BWR) which operates the survey vessel *Challenger*. The ship has been extensively used for deep-water trans-ocean cable surveys, salvage, mineral mining and marine accident investigation. In 2001 she was used in the North Atlantic to locate and photograph the wrecks of the World War II battleships *Bismark* and *Hood*. The venture was funded by the UK-based Channel Four television company which produced documentaries and screened live video from the wrecks onto the internet.

Bismark was initially found by Ballard in 1989, but its precise position in 4,700 m of water was kept a secret. Mearnes was able to relocate the ship using side-scan sonar. The same technology, together with painstaking archival research and

navigational analysis, also led Mearnes to locate the lost ship *Hood*. Both Mearnes and Wishart face formidable challenges in locating the *Endurance* because of the notoriously heavy Weddell Sea pack and the depth of the wreck (3,400 m). Mearnes is reported as saying that he has "enthusiastic" support from the British Antarctic Survey (BAS), who are keen to collect scientific data from a unique deep-sea environment. Support is also expected from the UK National Marine Museum, Southampton University, the Southampton Oceanography Centre, and the Ministry for Defence (MOD). Mearnes' expedition will be well filmed and reported on the web in order "to educate viewers about the unique environment of Antarctica and the hugely important role it plays in the environmental balance of the planet" (South Atlantic News Agency *Mercopress*).

Special permission will have to be sought to allow the expeditions to retrieve and remove objects from the ship. The wreck is well within Antarctic territory and subject to the Madrid Protocol, with which the United Kingdom, as a signatory of the Antarctic Treaty, and her subjects, must abide.

Garside Proposes Solo Run Across Antarctica

UK athlete Robert Garside, also known as 'The Running Man', is starting to plan for a 5,500 km 'run' across Antarctica sometime in 2004.

For the last seven years Garside has been running across six continents as part of an "around-the-world" journey that has included Europe, parts of Asia and Australia, South and North America and parts of Africa.

On 13 June 2003 Garside ran into New Delhi, India, completing a series of runs on every continent except Antarctica.

Next year's proposed run is from the northern tip of the Antarctic Peninsula to the coast of Queen Maud Land via the South Geographic Pole, a distance of around 5,500 km. During the run, Garside plans to pull a specially-designed light-weight shelter on a sledge that he has called the "Runningmanobile".

The sledge will be made of aluminium and fibre-glass, and the top will

be hinged to allow access to a sleeping space. During his run Garside proposes to carry ultra-small "mini and lip-stick cams", a laptop computer and satellite transmission devices to provide live coverage back to civilisation.

The run appears to be planned as a two-stage unsupported crossing, probably over successive austral summers. This would break each summer's journey, presumably at the Pole, down to around 2,700 km, but would require Garside to pull a considerable weight, which is likely to inhibit his 'running', even though he will be wearing special "ice running shoes".

Garside, yet to release detailed plans of his Antarctic run, is not without severe critics. Experienced field personnel who know the Antarctic Peninsula regard Garside's proposal to run down it as not feasible. Others consider that the choice of Queen Maud Land as the exit point from the continent does not take into account the realities of that area.

Garside's running abilities have also come into question. Garside's 40,000-km "around-the-world" journey via six continents is now under scrutiny by a panel from the Guinness Book of Records that includes a statistician, an athletics researcher and a record keeper. Their findings may influence Garside's chances of sponsorship.

Long distance athletes and ultra marathon authorities involved in events that are run over distances longer than a 42-km marathon are suspicious of the resilience of a man who has never competed in a monitored ultra marathon event.

They query Garside's assertions that he has run 170 km per day for days on end without a support team and through a number of hostile environments.

Or is Garside a phenomenal 'iron man' akin to the heroic Forrest Gump character made famous by actor Tom Hanks?

Antarctic Heritage Trust Field Season

Last season saw the most ambitious field party organised by the Antarctic Heritage Trust as part of its long term plan for the conservation and restoration of the historic huts of the Ross Sea region.

Of the eight individuals who travelled south on behalf of AHT, historian David Harrowfield spent the longest time in Antarctica, arriving late November and leaving mid-February. He was joined for varying times by Nigel Watson, Executive Director, AHT, Alan McKinnon and Aaron Smail, Project Managers Arrow International, Architect Pip Cheshire and Conservation Architects Adam Wild and Michael Morrison (UK), and Ewan Paterson, Field Support Assistant from Scott Base.

This season's work programme has produced detailed surveys and reports on the current condition of the huts and their artefacts (with the exception of Scott's Hut at Cape Evans), as well as a check and update of the Trust's data-base. This work will assist the development of Conservation Plans for the historic huts this year. The plans propose ways in which the huts could be protected, restored and enhanced without detracting from their historical aura and their atmosphere.

The programme began with the Discovery Hut at Hut Point. This hut was used by Scott's first party, although the men were housed on the ship anchored in Winter Quarters Bay. The hut was later used as a refuge by 10 stranded men from Shackleton's Ross Sea party in 1915-16. It is intended that both stories will be remembered during any conservation work undertaken at the hut. The current arrangement of many artefacts is haphazard. David Harrowfield's summer report includes an exert from First Officer Stenhouse's diary when the Ross Sea Party arrived at the hut 21 January 1915 *"Door had been left open; found it (the hut) snowed up. Effected an entrance by smashing window on western side of hut. Found hut in great disorder."*

Changes in or about the original hut have been identified by the historian and conservation architect in the AHT work party. For instance, the seal that lies on the *Discovery* awning inside the hut was not present in photographs taken in the late 1950s, and its movement is recommended because the seal meat is damaging the awning. According to AHT's field report *"The seal was removed two years ago then put back by an enthusiastic visitor."* Presumably by someone who hadn't got their historic facts right!

Modern items, such as a McMurdo Station shovel and a post-historic box are earmarked for removal. Reinstatement of some exterior wall panels, currently used in the hut to prevent snow entry, is planned. Three posts near the hut that date back to the time when a McMurdo Station road passed close to the hut are also proposed for removal.

The report continually emphasises the Trust's desire not to tamper with features that reflect parts of the hut's history. For instance, how the hut was used by the stranded Ross Sea party in 1915-16. *"Walls, fittings, food and personal possessions were blackened with soot from the burning of seal blubber. Evidence of a near catastrophe when the hut could have burned down, is visible with charred wood about the flue where it enters the inner ceiling. Blubber on the floor about the stove should be left in-situ, although there is a need for some tidying of the floor at the rear of the stove. Blubber on the floor in the Physical Laboratory and also in the Mens' Room should be left, as this reflects the privations of the last expedition. Similarly soot should not be cleaned from the walls or ceiling."*

The report also contains a wealth of historic information about the artefacts still visible in the hut. *"On the blubber stove is a pan with pieces of seal meat, probably the breakfast cooked by Richards, Joyce and Wild on 15 July 1916 before they left the hut for the last time on their way to Cape Evans."*

In the past some items, such as clothing from the Ross Sea party, have been arranged in an unnaturally orderly way on a wire above the mens' sleeping platform and the proposal is

for this to be displayed in a more realistic arrangement.

The Trust's brief to consultants for the Cape Evans hut, to which the AHT party moved in December, is one focused on maintenance and repairs and selected elements of restoration to reflect the occupancy of Scott's Terra Nova Expedition of 1910-13, while not overlooking its later residents, Shackleton's Ross Sea Party of 1914-17. The overriding priority is this goal be achieved in an accurate and sympathetic manner, without disturbing the present ambience. The building, allowing for aging, is much as it was when it was built but has had a protective butylin cladding placed over the roof, and some exterior boards have been replaced. Early attempts to weather-proof the hut using galvanised clouts and malthoid are now viewed as incompatible with the rest of the hut and the Conservation Plan being developed may recommend their replacement. Likewise, the historical accuracy of the butylin roof covering is questionable. A canvas over-covering could be more authentic. Concerns about snow accumulation against one wall and melting during the summer are being investigated by structural engineers.

The historian's summer report notes that inside the hut the bulkhead of cases that separated the "wardroom" from the rest of the space may need to be realigned. Original beds, some now stored under existing beds, or elsewhere, may be replaced in their original positions. The Trust is taking professional advice and asking for realistic recommendations to deal with a decaying artefact collection and site in a hostile environment.

The Cape Evans site has the greatest number and variety of artefacts of any historic site in Antarctica, and over 95% of them originate from Scott's expedition. It is the intention that artefacts within the hut will be repositioned to sites more in keeping with the inhabited hut as deduced from expedition photographs. Modern objects, such as an American toilet drum that thaws each summer, a

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A Letter from Scott

By Paul Wales

A recent important purchase for my collection of postal history from the 1901-04 Discovery Expedition is the letter shown here. It was written by Captain Scott to Admiral Sir Albert Hastings Markham (cousin of Sir

Clements Markham and a member of the expedition's 'Ship Committee') on the 19th June 1901 and in it he expresses his concern about the choice of boat for the expedition.

The letter is on the notepaper of *H.M.S. Majestic*, Channel Squadron

(embossed at top of page). Scott soon after relinquished his duties as First Lieutenant of the *Majestic*, flagship of the Channel Squadron.

The original of this letter appears on the following two pages.

June 19th (1901)

Dear Admiral Markham,

In giving my opinion on the boats I hope you will think that I have never lost sight of the experience which chose them and that I appreciate that there must have been excellent reasons for so doing - at the same time the matter fixed my attention directly I saw the plans and in remembering my own experience of the unsatisfactory nature of small boats and that these were in fact smaller than the smallest ships in the service possesses, I took every opportunity of consulting practical men on the subject & found them without exception in agreement with me. I therefore wrote a letter to the secretary requesting him to submit it at the next meeting. The letter contains my proposal in brief but I should very much like to come & discuss this with you before the committee meets if you would be so good as to spare me the time.

I am coming to town tomorrow afternoon (20th) to attend sister's marriage on 21st - I should be able to call on you on afternoon of 20th or forenoon of 21st if you would kindly send me a wire as to time.

I shall be going to 68 St. Georges Square, SW. on arrival,

Yours very sincerely

R F Scott.



H. M. S. MAJESTIC,
CHANNEL SQUADRON

June 19th

Dear Admiral Beakham

In giving my opinion on the boats I hope you will think that I have never lost sight of the experience which chose them and ^{that I} appreciate that there must have been excellent reasons for so doing - at the same time the matter forced my attention directly I saw the plans and in remembering my own experience of the

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Send me a wire as to time
I shall be ~~at~~ going to
98 V. George's Square
S.W.

On arrival

Yours very sincerely

R. V. Sch



World's oldest Ice Core Drilled at Dome C

When the Concordia Camp at Dome C closed for the 2003 winter, the world's deepest hole into the ice cap had reached a depth of 3200 m, encountering ice believed to be up to 1 million years old.

The core was the first to be drilled by the European Project for Ice Coring in Antarctica (EPICA), a joint scientific programme of the European Science Foundation and European Commission (EC). The project is being funded by the European Commission, together with contributions from Belgium, Denmark, France, Germany, Italy, the Netherlands, Norway, Sweden, Switzerland and the United Kingdom.

The main objective of EPICA is to obtain two deep ice cores in Antarctica to provide a record of climatic and atmospheric changes during the past 500,000 years and to compare these to ice cores obtained from the Greenland Ice-cap. By studying atmospheric gas variations during the past, the programme is responding to the need for an accurate record so that models can be made of how global climate is likely to respond to increased emissions of greenhouse gas concentrations in the future. Because air becomes trapped as bubbles when ice forms from snow, analysis of ice cores has become the most powerful means of determining how the atmosphere has changed over the last few climate cycles and to relate this to temperature.

The European Science Foundation's very successful Greenland Ice Core Project (GRIP) and the US Greenland Ice Sheet Project (GISP2) have provided valuable information about climate change and atmosphere composition over the last 150,000 years. A full glacial to interglacial climatic cycle is represented by the Greenland cores which show rapid climate oscillations during the later part of the last glacial period, before the relatively warm and stable climate period of the last 10,000 years. EPICA wants to see if these rapid climatic changes during the last ice age are confined to the Northern Hemisphere or whether they can be matched in the south. Antarctica has an enormous archive of ice in its East Antarctic Ice-cap, which is likely to be much older than the Greenland Ice-cap, and may record information for earlier glacial cycles.

EPICA's two drill holes will compli-

*Taking ice cores in Antarctica.
Photo courtesy EPICA*



ment earlier Antarctic ice cores obtained at Vostok, where drilling ended at 3000 metres in ice believed to be 240,000 years old, and a hole drilled by Japanese scientists at Dome Fuji. Both of these holes did not reach bedrock.

A geodetic and geophysical survey during the 1995-96 season identified Dome C as the most likely site to achieve the longest climate record in Antarctica because of the dome's low snow accumulation rate and its minimal ice flow. Drilling commenced in 1999, and each year "Camp Concordia" became a busy international community during the summer months. In November, at the start of the 2002-03 season, drilling restarted at a depth of 2871 m and it was hoped that bedrock would be reached at about 3310 m by the end of the season. The deep cores come up in 3 metre lengths that are processed in the camp by an international team of scientists. On 12 December a depth of 3000m was reached and the core was estimated to be 700,000 years old, but 100 m later the drill could get no further. The ice refused to be drilled. Measurements of temperature, pressure and inclination of the hole were taken, equipment was changed and the drill rotation speed was varied. Drilling restarted, but stopped after only one day.

A supply of alcohol and a fibreglass

reservoir were generously provided by the Americans and delivered by Twin Otter. This allowed the drillers to build a specially heated reservoir that supplied a solution of water and alcohol to the bottom of the hole without the solution freezing before it reached the bottom. It allowed two to three days of drilling at a time. On 7 January drilling recommenced and by 21 January had reached a depth of 3170m. EPICA's Chief Driller, Laurent Augustin (Laboratoire de Glaciologie et Geophysique de l'Environnement, France) said he did not think they would reach bedrock that season, but he was confident that they were on the right track to go deeper and deeper.

EPICA's second hole will be drilled near Kohnen Station in Dronning Maud Land where detailed geophysical surveys have been completed. This is at a slightly lower altitude (2890m cf 3200m) with ice only 2750 m thick (cf 3310 m), but the fact that it has a higher rate of snow accumulation means that it will provide much finer detail of climatic changes during the last glacial cycle. Concordia, a site of slow snow accumulation, has recorded several glacial cycles over a much longer period of time, but the detail of climatic change is not as fine. Together, the two EPICA holes, in conjunction with other Antarctic ice cores, will make correlation with the Greenland cores possible.

Dome C Aircraft Hazards

Dome C, the site of Concordia base, lies on the ice watershed of the East Antarctic polar ice cap in Wilkes Land. It is higher than South Pole Station, and has extreme weather conditions. Its altitude (3200m) makes air access difficult.

On 4 December 1971, a US Hercules (LC-130) resupplying a French glaciological traverse party on Dome C ran into trouble on take-off. Because of the altitude, which makes it difficult for a plane to release its skis from the snow, eight JATO (Jet Assisted Take Off) bottles were used for the take-off. Each JATO bottle, 165 pounds in weight, is fixed to brackets on the side of the aircraft. When the plane approaches take-off speed the bottles are simultaneously ignited and the extra thrust pushes it up from the surface.

When the bottles were ignited on the Hercules, just as the aircraft was about to take to the skies in late 1971, one port side bottle broke free from its bracket and smashed into the inner port side engine. The plane swerved, but returned to the snow safely although its new direction sent it crashing across hard sastrugi (wind sculptured snow ridges), which caused the front ski-support to collapse.

The plane was stranded, and for three days the US crewmen camped in survival tents alongside the French traverse party, with temperatures down to -30° C and winds up to 64 kph. The US relief team sent from McMurdo collected the crew, stripped the stranded Hercules of its instruments and left plane, JD321, to the drifting snow.

Similar aircraft problems were experienced on the Dome three years later. On 15 January 1974 a US Hercules flew out to Dome C to collect a party of French, Russian and American snow scientists. During take-off one of the JATO bottles again exploded, this time shattering the inner starboard engine and puncturing the fuselage. The engine promptly burst into flames. The plane slewed in a half circle but remained upright and no-one was injured.



JATO bottle being attached to the fuselage of a US LC-130 in northern Victoria Land. Photo: J. D. Bradshaw.

A rescue Hercules was sent to Dome C from McMurdo, and after retrieving the men the pilot decided not to use JATO for the take-off. But the long take-off run across the rough, hard polar surface caused the nose-ski to collapse and drive up into the fuselage, causing the plane to pitch forward. Again, no-one was hurt.

The two stranded planes were far too valuable to write off and abandon. Experts were flown over the stranded planes and plans made. In the US an entire wing assemblage was made, together with a complete lower nose section, and over the next two seasons a camp was set up at Dome C for engineers, mechanics, metal workers and electronic technicians to put the aircraft together so that they could be flown out under their own power. This they did, which was no mean feat considering the extreme weather conditions at the site.

The first crashed plane, JD321, remained on Dome C, now buried in snow with only the tip of the tail exposed. By the mid 1980s, the rising

price of new aircraft convinced the US Polar Programs to decide to try and retrieve the buried Hercules. A camp was set up from 1986-1988 to dig the plane out, repair it and fly it back to McMurdo. This amazing feat was achieved in 1988 saving the US many millions of dollars. However, it was not without a cost.

On 9 December 1987 one of the many Hercules delivering material and equipment to the recovery site clipped a snow bank with its wing tip on landing. The plane wheeled about, tipped up and crashed, later bursting into flames. The recovery team from the temporary camp had a difficult time dealing with the emergency with very limited facilities, but the survivors were quickly extracted from the plane before it exploded. Two of the crew died and nine were injured, some seriously.

Much of the aviation detail for this article was obtained from David Burke's very useful book Moments of Terror. (Ed.)

New Polar Base Takes Shape

From its conception on the drawing board, Concordia Base has been a joint venture between two European nations.

The base was planned in 1993 by the French Polar Institute (IFRTP) together with the Italian Polar programme (ENEA) and named "Concordia" by the late Paul-Emile Victor, founder of the French Polar Expedition (later the French Polar Institute). Concordia's budget of 31 million Euros is split 50-50 between Italy and France. The site was selected principally for the glaciological work being undertaken by the two countries, but is also highly suitable for astronomical and atmospheric studies.

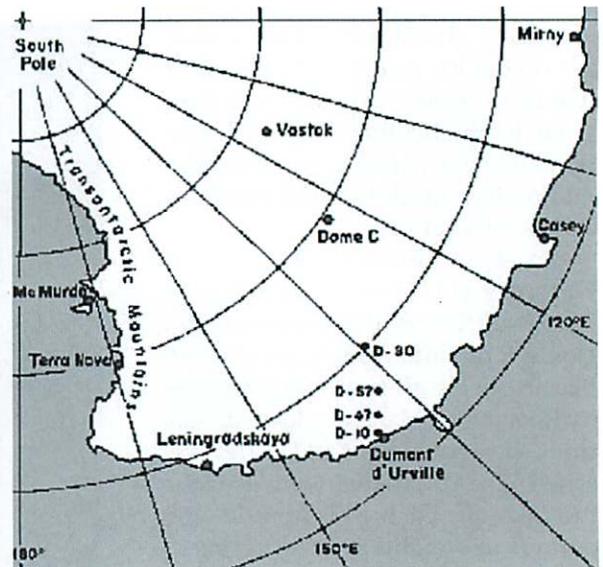
The base, at a height of 3200 m high on the Polar Plateau at Dome C, lies approximately 1,200 kilometres (750 miles) from both the French Dumont d'Urville Station, and the Italian Terra Nova Base.

Concordia Base was designed by Frenchman Jean-Paul Fave and has been under construction since 1999. It will be fully operational as a year-round station by the end of 2004, capable of supporting 16 people over the winter of 2005. Fave spent four weeks early in the building stage to help supervise the construction with Building Team Manager Serge Drapeau (French Polar Institute) who led a team of 10 builders, half of them Italian and half of them French.

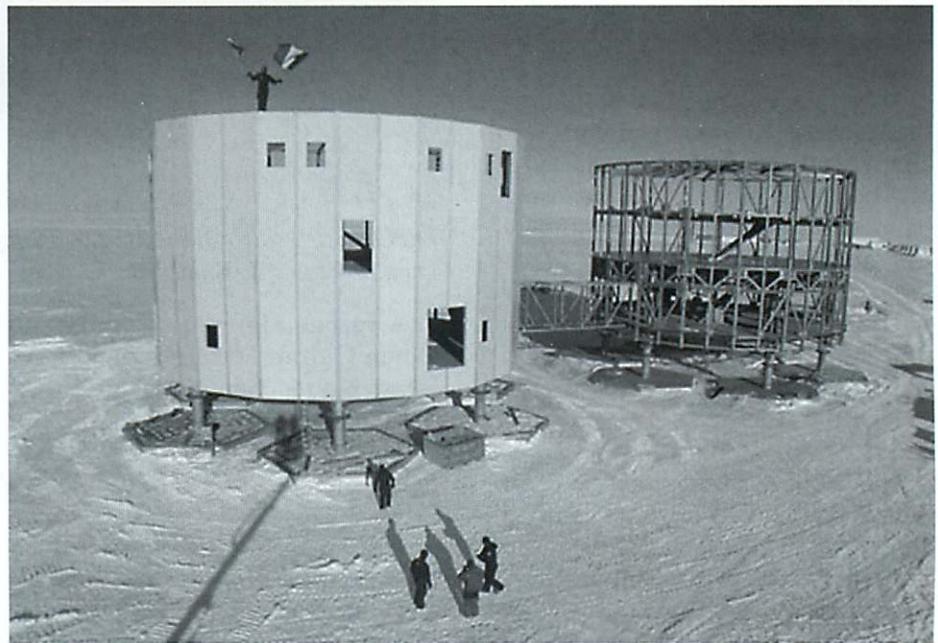
The base consists of two elevated, cylindrical buildings with 36 'faces' and three floors, connected by an enclosed bridge about 10 m long. This has created a 'quiet' building housing the laboratories and accommodation rooms that is separate from a 'noisy' building, which contains the kitchen, dining room and storage area. Like the new South Pole building, the Concordia buildings have the capability of being raised by large hydraulic jacks every 10 years to keep them above the snow.

As well as the base building, the site has a number of tents of different sizes that are linked to ice drilling operations, and tower-like structures to support scientific equipment for astrophysics, astronomy and aeronomy research. The site has been

Right: Map of Wilkes Land showing the position of Dome C.



Below: Concordia Base under construction.



occupied since 1996, with overland caterpillar trains bringing in supplies from Dumont d'Urville Station three times a year, largely in support of the ice drilling programme. The site is also important for micrometeorite studies and research on 14 subglacial lakes, the largest of which has been called 'Lake Concordia'.

Last season, Concordia 'Base' and its satellite scientific community averaged 50-60 people, mainly Italian and French, but also including scientists and technicians from the US, Britain, Denmark, Switzerland, French Algeria and Australia, making

it a truly international site.

During the last season the base construction site was opened 9 November 2002 by four Italian and two French workers who arrived by Twin Otter from Terra Nova Base. Later in the season seven Italian and nine French building specialists concentrated on the assembly of internal walls and ceilings.

The camp was closed during the first week of February 2003. Work next season will focus on the installation of a power plant and the internal equipment that will make the station operational.

Latitudinal Gradient Project Starts at Cape Hallett

Research for the Latitudinal Gradient Project (LGP) will start this season at Cape Hallett, the most northerly of the project's sites along the Victoria Land coast.

The Latitudinal Gradient Project (LGP) is aimed at increasing our understanding of the coastal marine, freshwater and terrestrial ecosystems of a range of latitudes along a north-south line in Victoria Land, and to document environmental variability. Five sites have been identified for study over a 15-year period.

The Project includes collaboration between New Zealand, US and Italian scientists from several different disciplines. A New Zealand LGP Science Steering Committee has been appointed to co-ordinate the New Zealand component. Committee members are: Dr Jackie Aislabie (Landcare Research), Prof Allan Green (University of Waikato), Dr Ian Hawes (NIWA), Dr Megan Balks (University of Waikato), Dr Clive Howard-Williams (Chair; NIWA), and Dr Dean Peterson (Ex-Officio, Antarctica New Zealand).

Antarctica New Zealand has the role of project facilitator for the New Zealand component and this season will organize a substantial base camp at Cape Hallett with the assistance of the US Icebreaker *Polar Sea*.

Cape Hallett was the site of a jointly manned station (US and NZ) established for the International Geophysical Year (1956-57). It continued as a joint station until 1964, when New Zealand withdrew and it became an American only base. Cape Hallett was abandoned in 1973 and environmental concerns, especially regarding leaking fuel tanks and drums, led to major cleanup operations by New Zealand between 1984 and 1987.

The spit on which the base had been built was also the site of a large



Hallett Station on Seabee Spit with the Admiralty Range behind. Photo: Trevor Hatherton Collection.

Adelie penguin colony, which had to be moved and fenced off while the base was being built. Today, though some of the old buildings remain, the penguins have reclaimed the land, and with the help of numerous penguin mounds built by New Zealand to encourage nest sites, now form a very healthy colony.

Lichens that Live Inside Rocks

Last season a New Zealand party of international experts visited Mt Kyffin on the south side of the Beardmore Glacier to collect samples of the lichens, mosses and insects that had been reported abundant by a New Zealand Alpine Club expedition in 1959-60.

The party was headed by Scientific Leader Professor Allan Green of Waikato University, who was accompanied by Drs Roman Tuerk, Austria, Leo Sancho, Spain, Burkhard Buedel and Hans Reichenberger, Germany. The Expedition Leader was mountaineer Brian Staite, who is currently wintering at Scott Base.

The put-in plane had problems landing near the mountain, with the pilot flying around for an hour before locating a site safe enough to land on. The scientists found themselves with an eight kilometre ski across to the bottom of the mountain, followed by

a substantial climb to reach the first exposed rock. Even though it was deemed too dangerous to climb higher to reach the exact spot where the New Zealand Alpine Club party had seen the flora, the scientists still found an astonishing variety of lichens that made the visit well worth the effort. Fifteen different species of lichens were collected, five of which had never been found in Antarctica before.

Most of the scientists' study, however, was done in the Dry Valley area where endolithic lichens are found. These are lichens which are able to live below the surface of rocks for protection against the extreme dryness, receiving enough sunlight through the rock to photosynthesise and produce oxygen.

Presenting a paper on his findings at a scientific conference in Dunedin earlier this year, Professor Green com-

mented that US microbiologists were becoming very interested in primitive endolithic lichens because of their ability to grow in extreme environments (both hot and cold). US scientists see these lichens as possible candidates for growing on the planet Mars to help produce an oxygen-rich atmosphere. There is even talk of NASA scientists genetically modifying endolithic lichens so that the oxygen on Mars could be produced faster.

Earth's own oxygen-rich atmosphere owes its beginning to the progressive activity of similar primitive organisms thousands of millions of years ago.

(The Editor thanks Simon Collins for help with this article).

SHACKLETON'S PHOTOGRAPHER: The Standard Edition

Photographs of Scenes and Diary of Incidents in Connection with Happenings to the Weddell Sea Party. Frank Hurley's 'Endurance' Diaries, 12 October 1914-16 October 1917.

By Shane Murphy.

Published by the author www.frankhurley.com 2001. ISBN 0-9703148-2-5. Available from Peter D. Cranwell, bookseller, PO Box 620, Rosanna, Victoria 3084, Australia, pcranwell@optushome.com.au NZ\$63.00, postage & packaging included.

Reviewed by Paul Bealing

This "book" on CD-Rom is Frank Hurley's account of the *Endurance* Expedition and includes over 250 of Hurley's original lantern slides, drawings, maps, and colour prints. The book is presented in Adobe Acrobat Reader format, which incidentally does not come with the CD, and contains Hurley's day by day diary entries from the time Hurley joined the ship in Buenos Aires to the day he became a World War I photographer in France. The work also contains entries from many other expedition members including Frank Worsley's *James Caird* journal verbatim, describing the crew's record breaking journey to South Georgia Island.

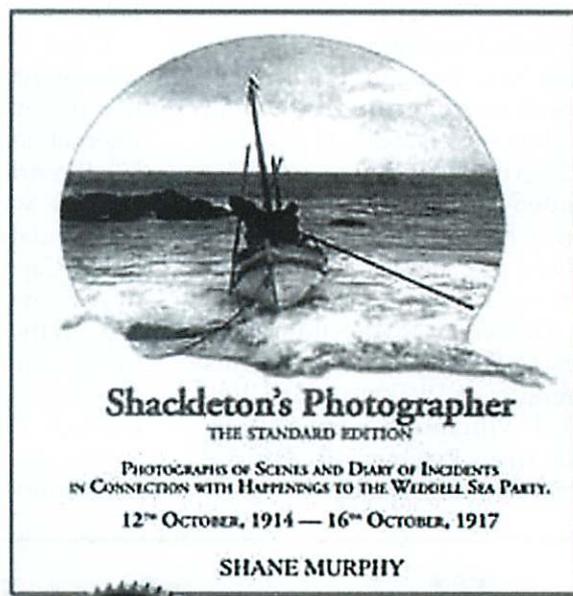
While the story starts off very slowly it soon has you in its grip when events such as the breaking up of the *Endurance*, or the five month journey across the sea ice to Elephant Island occur. Hurley is helped by a dry sense of humour that comes across in some of his writing, particularly during the passages when very little appears to be happening.

The book is complete with a foreword, afterword, eight appendices, comprehensive endnotes, and bibliography. The foreword and afterword I found very interesting as they describe Hurley from other's perspectives, and you get a much better insight into what sort of a man he was.

The CD is broken up into nine books, each made to look authentic by placing typed text on what looks like very old paper. This is a good visual effect for onscreen reading but is not such a good idea for printing as your ink supplies will be hit hard by the end of the 341 page document! Photographs and drawings included in the book have reproduced well at their original size, but you wouldn't want to enlarge them too much as their quality quickly diminishes. Most people will be content with reading it onscreen as the cost of printing the book would be considerable (over \$NZ170 at 50c a page colour printing).

A handy addition to the CD package would be an auto start command allowing you to simply pop the CD in your machine and away it goes. Still there has to be room for improvement in the second edition. The large file size of the document (139Mb) will also result in relatively slow load times on older computers but it is easily handled by any new machine. For those of you without a computer...

It is obvious that a lot of effort has gone into this work. This has not gone unnoticed as "Shackleton's Photogra-



a book on CD-ROM
in ADOBE ACROBAT READER
Printable; fully illustrated

ISBN 0-9703148-2-5
US\$29.95

pher" was chosen as a finalist in the 2002 Independent Publishers Book Awards Biography Category. "It is the most comprehensive account of the *Endurance* Expedition ever offered" is the claim from the publisher's website, and this would not be far off the mark. It is well worth the eye strain you get from staring at you computer screen day after day.

Paul Bealing spent four years as GIS Technician with Gateway Antarctica, University of Canterbury. During this time he used GPS equipment to conduct topographic surveys of protected areas in Antarctica on Mt Melbourne, the Dry Valleys, and Ross Island. He now works for the Geography Department, Canterbury University.

Ozone Hole Affects Bottom Life

Each year between August and December, the ozone layer above Antarctica becomes thinner due to the destruction of ozone (O₃). The Ozone layer, found between 10 km and 50 km in altitude, is critically important to life on Earth, because it absorbs and protects us from harmful ultraviolet-B radiation.

Depletion of ozone over the poles is a natural phenomenon caused by sunlight, but it is the effect of man-made pollutants, such as chlorofluorocarbons (CFCs), that has accelerated the destruction of ozone to dangerous levels because it has led to excessive chlorine production in the stratosphere.

The Ozone Hole is far more obvious in the Antarctic than over the Arctic, and is the reason for regular ozone monitoring by many Antarctic bases using a Dobson Spectrophotometer. Limited ozone depletion occurs in the Arctic, even though most CFCs originate in the Northern Hemisphere, and the ozone hole there lasts only a short time.

The Dobson Spectrophotometer compares the intensity of two wavelengths of UV light from the sun. One wavelength is strongly absorbed by ozone, the other only weakly. The ratio of the intensities indicates how much ozone is present in the overlying atmosphere. Because it uses sunlight for its results, the Dobson Spectrophotometer cannot be used during the polar winter.

The development of the Antarctic ozone hole coincides with spawning and larval development of many sea floor invertebrates. Being small and living in the upper parts of the water column, the planktonic stages of many of these animals are especially vulnerable to UV radiation that penetrates the annual sea ice cover in spring.

Drs Miles Lamare and Mike Barker of Otago University (NZ) and Dr Michael Lesser of University of New Hampshire (US) are finding that eggs laid by sea urchins are greatly deformed from their normal spherical shape. They have also discovered that the shorter wavelengths of UV are easily able to penetrate what was always thought to be the protective sea ice cover, as well as the underlying water column. It is these shorter wavelengths of UV light that are the most damaging biologically.

By installing protective screens in some areas and not in others, the scientists were able to show that last season the UV radiation had reduced the survival rate of newly hatched sea-urchin eggs by 30-40%. Their research was done between early October and early December last year (2002), a time when the ozone hole had been smaller than in previous years. Research will continue this coming season when the ozone hole may, once more, become larger.

(The Editor thanks Simon Collins for help with this article)

FIRST WINFLY TO McMURDO

The First Winfly flight of the 2003-2004 season left Christchurch on Thursday 21 August after a day's delay due to bad weather at McMurdo.

A massive C-17 Globemaster, piloted by Lieutenant Paul Groven of the 62nd Airlift Wing, safely delivered a total of 137 New Zealanders and Americans to McMurdo, along with 15,000 kg of cargo.

The flight was the first of several at the end of the winter that take scientists south to begin their programmes before the start of the summer. The flight also carried resupply for McMurdo Station and Scott Base after their winter isolation. It is the first flight into the Ross Sea since the end of February.

The C-17 Globemaster is a high-tech cargo transporter powered by four massive Pratt & Whitney engines, each capable of 18,914 kg thrust. The plane has an unrefuelled range of about 4500 km, which means that it does not have to refuel at McMurdo.

The first C-17 Globemaster flight to McMurdo was made 15 October 1999 as an Antarctic proving mission. After a second proving flight was made a month later, the commanding officer, Major Mike Phillips, USAF, is quoted as saying that "The aircraft's performance was exceptional....there were no problems at all. The C-17 handles like a small aircraft. It doesn't feel or fly like the size it

is. There was an ice deflection of about 6.35 cm (2.5 inches) on landing, with the aircraft using about half the runway length". (*Quote source: Gateway to Antarctica by Tony Phillips*)



A C-17 aircraft at McMurdo during last season's Winfly. Photo: Mike Hush.

Antarctic Writer on Ice: Diary of an enduring adventure

by Hazel Edwards.

Common Ground Publishing Pty Ltd, Alona, Victoria, Australia, 2002.

ISBN 1 86335 090 X Paperback, 144 pages, \$A20.00.

Reviewed by Dorothy Braxton

Over the past century there must have been hundreds of publications about Antarctica, mostly by authors who have been explorers, scientists, journalists with a dedicated interest in the subject or, in more recent times, those seeking to challenge themselves against a continent hostile to adventurers. Comparatively few writers have requested – and been given – a place with an official expedition with little prior knowledge of the region.

Australia's Hazel Edwards fitted into the last category. In securing a 'humanities' berth with an ANARE expedition to Casey Base, she admits that while she knew very little about Antarctica, she did know a lot about writing books. With more than 130 publications, both adult and children's, to her credit, in the summer of 2001 she was given an opportunity to join the team on board *Polar Bird* with the object of researching ice-plays for primary school students, to do radio interviews and to write articles for Australian newspapers. She also wanted to write a novel set in the Antarctic.

Following the voyage, she has produced 'a diary of an enduring adventure', a paperback entitled 'Antarctic Writer on Ice'. The book was launched by Dr John Long whose fine book 'Mountains of Madness,' was reviewed in 'Antarctic' (Vol 18 (1) p. 42).

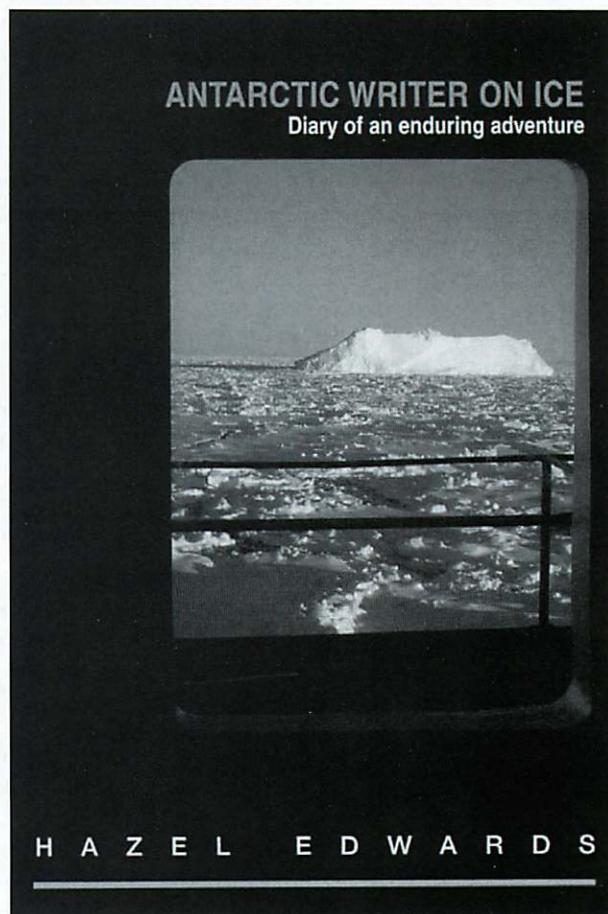
Hazel's book is a publication that differs in format from most other efforts because it is a combination of diary entries, emails, some of the articles she has written and the general writing she undertook.

On what was expected to be a fairly routine resupply expedition, the *Polar Bird* was instead beset in the ice for 18 days, which necessitated the expeditioners and others on board turning to creative (and some not so creative) pastimes, including belly dancing classes instituted by Hazel for the women on board as a way of keeping fit.

One unwelcome diversion occurred when a helicopter flying out from Casey crashed onto the deck of the vessel. No loss of life, no injuries. A barge was damaged, a helicopter was in bits but everyone involved had a miraculous escape.

With the vessel eventually free of the ice, the expedition made it safely to Casey, the closest of the bases to the Australian mainland. Hazel was duly welcomed ashore by a bearded male, wearing a hot pink tutu, shorts and boots, who greeted her with the words, 'Welcome to Casey, darling.'

There was time during the turnaround for Hazel to get some idea of what the base was like, the conditions under which expeditioners, particularly the women, live and the



work undertaken in Antarctica. The homeward journey to Hobart seemed something of anticlimax after the one south but like so many other Australians returning home, the first thing she noticed was the off-shore smell of eucalypts.

The book, already into its fourth printing, is presently on display at Parliament House in Canberra as part of an exhibition called 'Impressions of Antarctica,' where there is also a Braille version available. Another book, 'Antarctica's Frozen Chosen,' (Lothian) was out in July, there's a pre-schoolers TV animation effort called 'Snowcap Station' to be produced within 18 months, and Lothian will be producing a picture book called 'My Dad's Gone to Antarctica' next year, all as a result of the one voyage, a sterling effort in anyone's language.

Dorothy Braxton is a well known journalist who was born in New Zealand and now lives in Australia. She has visited Antarctica several times, and her book The Abominable Snow-Women describes her experiences when women were rarities in Antarctica.

Letters to the Editor

Dear Editor,

Re: Northern Hemisphere Penguins

I am a seaman (previously on *Braveheart* and the *Sir Hubert Wilkins*) rather than an ornithologist, but two recent articles in Antarctic on Penguins prompt this letter to the Editor.

The article "Energy Efficient Penguins" refers to a scientist's suspicion "that it's the bird's short legs that make walking such hard work for them". True, they certainly look as if they have bodies extending to the ground with feet attached almost directly to a very low-slung waist (like Giles' Grandma for those of Northern Hemisphere culture). And that is how all the stuffed penguin toys are made.

However, anyone who has seen the wee skeletons stretched out on the ground at the end of the nesting season, or after the Skuas have just dined (and my mental image is of the Adelie penguins at Cape Hallett), was probably as surprised as I was to see that they looked like miniature Treasure Island skeletons with bony legs going halfway up their bodies. They look to be in similar proportion to humans.

The 'Little People of Antarctica' are bipeds just like us, and have proper legs that they use to good effect climbing icy slopes and walking in horrendous conditions where we can not.

The second article was "Like a Fish out of Water - Norwegian Penguins". The article said a dozen penguins were introduced to Arctic Norway in

1936 to 1938, and "the results were not good" as the last one died in 1954. I thought that was good going.

Penguins did not evolve for the Arctic regions where both humans and wildlife, such as bears, wolves, and tigers, are just a few of the obvious predators of flightless birds. The nearest equivalent to the southern penguin is the Puffin, a member of the Auck family, which can do everything a penguin can do, but can also fly.

However the penguins introduced to Norway did well. In the Antarctic, they live in huge colonies and, even though casualties are high, their numbers give them the critical mass to survive. Nine King penguins and a few others makes such a small group that they had no defence in numbers; and a few inevitable casualties can soon wipe out such a small colony (although who would have thought that one could be mistaken for a Troll and killed). Human settlement has the same problem, one example being the ill-fated Scottish Darien colony in what is now Panama.

But one penguin colony has survived in the Northern Hemisphere for almost a century, and this lives in the Edinburgh Zoo. As a child I used to get taken to the zoo to see the penguins. And every day the penguins would go for a walk around the zoo. The smaller children were allowed to hold the flippers of the larger penguins and walk round with them. The practice continues to this day and a web search provides a lot of detail.

For many years I have explained the penguins' presence in Edinburgh as gifts from old whalers. Edinburgh's Port o' Leith was a home base

for Salvesen's whalers, and as a nautical student I mixed with the whalers and won a Salvesen prize, which carried with it the offer of an apprenticeship in the Southern Ocean. (The exotic Orient, as it then was, prevailed and Antarctica came much later). The Scottish story seems to be that the whalers would bring home penguins for their children, because there was nothing else that could be brought home as gifts from their expeditions.

During the first few hours their children and wives probably enjoyed the company of the penguins, but then found that they were noisy, smelly, messy, aggressive, and wanted lots of fish to eat. Some were very large penguins. Within the day the penguins were donated to the local Edinburgh Zoo, whose collection steadily grew.

I don't discount the stories completely, but looking at the websites now, they have a sanitised version of Lord Salvesen formally supplying over 800 penguins since 1914, of which 120 remain in the colony today.

The 'Penguin Parade' started in the 1950s when a keeper accidentally left a gate open and the penguins paraded all around the zoo and, by some accounts, into the neighbouring streets. It remains a popular summer afternoon event with some two thirds of the penguin colony choosing to participate.

So at least one colony of surprisingly long-legged penguins has prospered in the Northern Hemisphere, but probably only because there was a large enough number of them to start with. And the Edinburgh climate probably helped too.

Iain Kerr

Dear Editor,

Route to the Pole

I hope that the following questions about the 'Route to the Pole' (*Antarctic* Vol 20, p. 38) will stimulate further debate amongst the Antarctic community about this significant and unprecedented event.

1. Does the US road to the South Pole constitute symbolic violation of the image of Antarctica as the one continent not yet dissected by national boundaries? The planned

route from the continental margin to the interior determines a territorial ingression on the surface of Antarctica. Does it mark a segmentation as in pre-Treaty maps, formalising the geopolitical intentions of nations to mark and divide the territory? This simple line has profound material and symbolic implications. Has it been adequately debated by an IEE for proof of principle?

2. Is there a legal argument that the road contravenes 'aesthetic and wilderness values' designated for protection under the Protocol on En-

vironmental Protection? 'Aesthetic and wilderness values' are perceptions that are culturally and historically determined and are notoriously open to interpretation and partiality. We are under an obligation to subject the proposal of the US Antarctic road to intense critical scrutiny and not to allow the real questions to be obscured by shifts in language, from road to 'route'. If we fail to do so, we shirk our obligations to the continued status of Antarctica as a site of wilderness in our real and imaginative geographies.

continued on Page 36

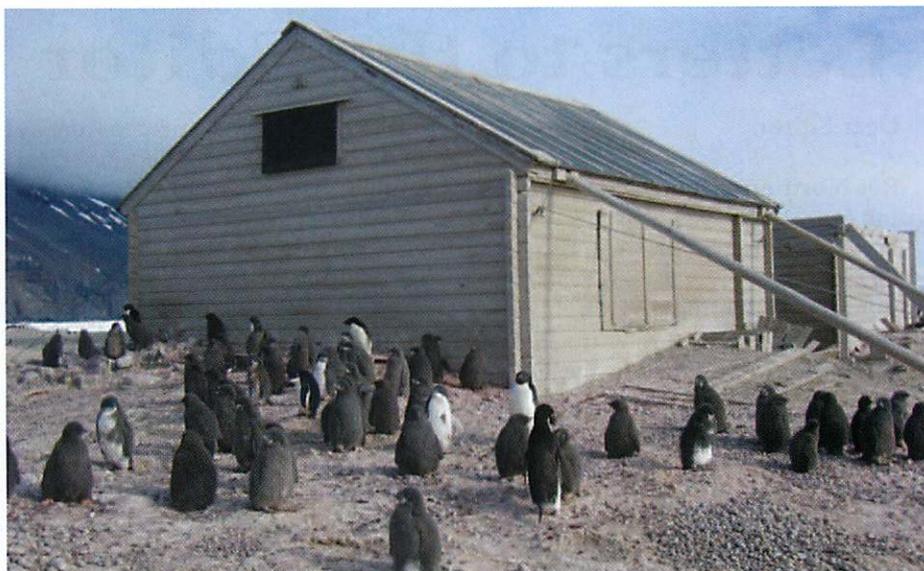
metal tripod and wire and a heavy iron drawbar, will be moved out of sight or removed.

Cape Royds was visited in January after part of the party had visited and assessed the igloo site at Cape Crozier, and the Granite House at Granite Harbour. The Cape Royds Hut is the first for which the Trust has commissioned a Conservation Report (see last issue). Condition reports were done on all artefacts and a digital photographic record made. Ice was cleared from the stables. A reel of sounding wire and a box, left at a depot in 1908, is now in the middle of the Adelie penguin colony and its removal is recommended to prevent damage to birds.

The specific proposal for Shackleton's hut proposes significant amounts of repair and maintenance to the original fabric and artefacts. Replication of some of the artefacts is a proposal to deal with increasing loss of the collection from decay and theft. The focus on rearranging the internal layout of the hut (last amended in the 1990's) to better reflect Shackleton's *Nimrod* expedition is to redress some of the conservation efforts put in to the site which have overshadowed the major period of Shackleton's occupation at the site. Reconstructing some lost elements of the stables and garage including the roof are based on the notion that what is there currently is based on 1960's efforts and a more scholarly reconstruction will become ultimately impossible as decay continues. It is not the intention of the Trust to create a shiny new hut crammed with replicas. Nor do they intend to destroy the ambience which has been created at this site.

At the end of January, the AHT party boarded the icebreaker *Kapitan Klebnikov* to work on the Cape Adare historic huts. This was the first visit that the Trust has been able to make since January 1990. Three helicopter flights took the party to shore, where they camped in four polar tents. They were picked up twelve days later by the same ship. Because of the remoteness of these huts, the Trust will focus on conservation work that is feasible in such a remote location.

The British Southern Cross Expedition 1898-1900, led by Carsten



Borchgrevink's Hut at Cape Adare with close neighbours.
Photo: N. Watson, AHT.



Michael Morrison (left) and Aaron Smail working on Borchgrevink's Hut at Cape Adare. Photo: N. Watson, AHT.

Borchgrevink, erected two huts on Ridley Beach, which they linked together with timber framing covered in canvas and seal skins. One hut was the living hut and the other the stores hut. The roof of the store hut was removed when Borchgrevink's party departed, and though the connecting part has since disappeared, the main hut is in reasonable shape. The huts are situated within a very large Adelie penguin colony, and guano surrounds the huts and penguins nest very close to them. The Trust work party noted its concern that penguins are getting trapped in the staves of old barrels near the hut. One had to be rescued by the Trust party, and a similar rescue was performed by the staff of a tour ship (*Shokalskiy*) earlier

the same month. The barrels could be removed or replaced with complete barrels. Penguins are also getting trapped between boards in what remains of Scott's Northern Party hut.

Condition reports were made on all structures, provisions and artefacts in the living hut, with some of the latter in poor condition. Urgent conservation is needed on the mess stove in particular. Data loggers have been installed for environmental monitoring.

Hanson's grave on the peninsula was also visited and reported to be in good order, although the adjacent depot was in poor condition. The Trust party returned to New Zealand 14 February after an extremely successful season.

Vacher planning Solo Trans-Antarctic Flight

British pilot Polly Vacher plans to fly solo across Antarctica in November this year in her single engine Piper 'Dakota' aircraft.

She took off from Birmingham, England on 6 May. Travelling north through Scotland, Norway and Svalbard, she flew across the North Pole on 26 May then on to Resolute Bay in Canada.

Her 14 hour flight across the Pole was uneventful until the aircraft's engine suddenly stopped as she approached Ellesmere Island.

Vacher managed to restart the engine but it continued to run rough at times during the last two hours of the flight to Resolute Bay. Vacher described these hours as truly terrible and the longest of her life.

After travelling south from Canada Vacher plans to visit various locations and air shows across the United States until early September, before flying through Central America and down the west coast of South America to Ushuaia, Argentina, where she is due on 8 October.

The proposed trans-Antarctic flight is believed to be starting from Ushuaia rather than Punta Arenas, and will end in Christchurch, New Zealand.

Part of the fuel for the Antarctic leg of her around-the-world journey was delivered earlier this year to UK Rothera station by the tourist vessel *Kapitan Khlebnikov*. The ship also delivered fuel to Ross Island for storage at Scott Base over the winter.

Vacher also proposes to refuel in the Patriot Hills and at South Pole using fuel supplied by Adventure Network International (ANI).

Vacher was recently made a Member of the British Empire by the British Government for her services to charity. In 2001 she flew solo around the globe from west to east, raising the equivalent of \$US320,000 to fund an annual scholarship for disabled people to learn to fly.

After crossing Antarctica, unquestionably the most difficult leg of her journey, Vacher intends to return to England via Australia, Indonesia,

Thailand, India, the Middle East and Europe to complete her round the world trip via the geographic Poles.



Polly shows Prince Charles around her aircraft before leaving Birmingham International Airport 6 May. Photo: courtesy Polly Vacher.



An aerial shot of Vacher's Piper Dakota, showing the sponsors names on the wings, and the signatures of Queen Noor and Prince Charles. Photo: courtesy Polly Vacher.

MOMENTS OF TERROR: THE STORY OF ANTARCTIC AVIATION

by David Burke.

New South Wales University Press P.O.Box 1 Kensington N.S.W. Australia 2033, 1994.

ISBN 0 86840 157 9, 320 pages

Reviewed by Bill Cranfield.

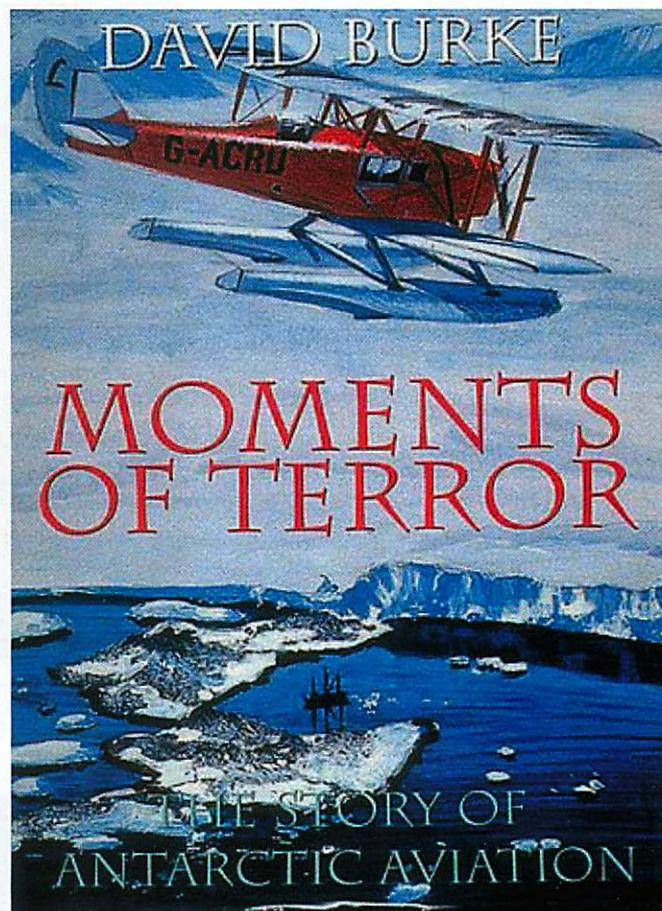
This book provides a historical record of Antarctic aviation from Captain Robert Falcon Scott's balloon ascent on 4th February 1902, to aircraft-supported adventure tourism in the 1980's. It traces the development and use of aircraft as an exploration, field support and mapping tool, and its political use to claim new territory. The photographs and layout are excellent, but the author's journalistic background and lack of personal flying experience is reflected in the text.

As a retired pilot with some Antarctic flying experience, I find David Burke's apparent lack of understanding and appreciation of the increased risks of operating aircraft to, or over, the coldest, windiest and most isolated continent on earth, without the need for specialist training, careful planning and supervision of operations, somewhat disingenuous. He does not draw conclusions from, or comment on, the aircraft accident statistics of the countries and military services that have operated in the Antarctic since World War 2, when these statistics quite clearly demonstrate the effectiveness of well trained personnel completing quality operations, with limited resources, rather than relying on almost unlimited resources by personnel with less training. Maybe without the use of United States Navy aircraft, David Burke would have found another title for this book.

There are two misstatements in the text regarding New Zealand activities. Sir Edmund Hillary and his party drove Ferguson tractors to the Pole, not Fordson. The RNZAF Beaver, in 1960, crashed while descending in cloud, not in whiteout conditions. The two crew members were not hurled out of the aircraft on impact and the cabin area remained intact. I also feel that the 'Flight 901, approaching Mt Erebus' section should have been balanced with the inclusion of the official findings of the Civil Aviation Accident Report.

Despite my somewhat ascorbic comments about the journalistic style, this book provides a very useful and certainly exciting record of Antarctic aviation and deserves to be on the book shelf of all collectors of Antarctic memorabilia.

Bill Cranfield wintered over at the newly established Scott Base in 1957. He flew extensively in small planes for the New Zealand component of the Trans-Antarctic Expedition, as well as in support of New Zealand's first deep field parties.



Icy Slips

Colossal squid Antarctic

The author apologises for not attributing the illustrations in the article on the Colossal squid found in the Ross Sea to Kim Griggs, a Wellington based independent journalist. This article was gleaned from a number of internet sites and the ownership of the illustrations was overlooked. Kim also points out that in the photograph Steve was handling the beak, and not the eyes (as in caption), which had disintegrated. The Editor belatedly thanks Kim for allowing the use of this photograph.

Scotia Expedition Antarctic

Type setting errors occurred in preparing this article. The caption for the camera photograph on p46 should read "Modern film canister for scale" and p47 line 3 should read "...for in exchange the Argentines paid for the overhaul of the ship." Apologies to David Yelverton.

Father Edward John Coleman

15 December 1931 - 9 May 2003

Father John was active for almost 20 years in the US and NZ Antarctic programmes in his role as priest at the Chapel of the Snows, McMurdo Station. He became one of the Society's most respected and loved members (Ed.)

At 9.20 p.m. on 9 May 2003, Father John Coleman died in the company of his friends after a seven month struggle with bowel cancer. John was born in Geraldine on 15 December 1931. His parents, Andrew and Catherine Coleman, were people of great faith. John received his primary education at All Hallows School, Geraldine, continuing on to St Kevin's College, Oamaru. In 1951, John entered Holy Cross College beginning his studies for the priesthood, being ordained priest on 16 July 1957.

John served in the parishes of Rangiora, Dallington, Addington, Lyttelton, Burnside and Sumner. While in Addington, John was involved with the Spencer Street dances with musicians like Ray Columbus. John excelled on the piano and drums. He was also involved with the youth club. On one occasion, responding to his challenge to put Christ into Easter, the youth group informed him that they would put on a passion play if he would direct it! John rose to the challenge, which placed him in contact with people who had various expertise in the areas of production.

From these contacts John was invited to join Jaycees, where he rose to district leadership. One of John's great strengths was in the area of leadership. He subsequently adapted and developed a leadership-training programme, for which the Christchurch Chapter was given an International Jaycee Award. The Chapter later presented the award to John.

As his leadership skills became recognised, John was directed into the area of radio and television. Having studied journalism, he graduated with a diploma. He was also successful on a New Zealand Broadcasting Corporation television producer's course. During this period John was working in the area of Catholic Communications, establishing the National Catholic Communication Centre in Wellington. He was appointed secretary to LINDA Oceania, the Vatican's International Commission for Social Communication.

After nine years in communications, John returned to the Christchurch Diocese and was elected Chairman of the Senate of Priests. When Father Gerry Creagh died, John took over his Antarctic ministry. His dedication and work for the Operation Deep Freeze was outstanding. His connections with people were extraordinary, and his communication with them was enhanced by e-mail. In recent years John was instrumental in placing the Antarctic Chaplaincy on a sound footing. On his seventieth birthday John was given the honour of having a geographical feature on Mt Erebus named after him by the New Zealand Geographic Names Board. In January 2003, Father John Coleman was presented with an award "In appreciation of Chaplain services performed on behalf of the National Guard Bureau for the USAP Chaplaincy Program."



In 1983, John was appointed the National Secretary of the Combined Churches of New Zealand. Many will remember the passion plays that he produced in Jellie Park. Being a respected member of the Sumner Minister's Fraternal for fifteen years, his ecumenical work was a great interest for him.

Children were precious to John, and he had a special gift of being able to communicate with them. In the recent months while he was ill, John treasured especially the messages he received from the children of his beloved school, Our Lady Star of the Sea.

John the sailor enjoyed the beauty and freedom of the sea. He has sailed from New Zealand to Australia in a yacht. Over the years he owned various boats, which he used mostly for the enjoyment of others. His solace was in the Marlborough Sounds where he appreciated the beauty and tranquility. Whether it was fishing, visiting his many friends in The Sounds, or just sailing, John was in his element. He loved The Sounds.

John was always a good and generous pastor especially with his time. His ability to listen, to understand, counsel, and not be judgmental enabled him to touch so many people. He had a great depth of knowledge of scripture, spending many an hour using different translations in order to gain the maximum out of the various texts. He was a man of prayer and through his illness he came closer to his God.

By Father John Collins

*Grounded Vessels Pose Problems**For South Georgia**Continued from Page 2*

Later the *Lyn's* crew members were carried to the Falkland Islands by both the *Typhoon* and the *Sigma*. The crew of the *Moresko 1* left the island on the South Korean jigger *101 In Sung* on 5 May.

At about the same time the *Moresko 1*, known to be infested with rats and cockroaches, heeled over and suffered iceberg damage to some of its deck railings. Longline fishing tackle and other flotsam from the wreck began turning up on local beaches.

Both the *Lyn* and the *Moresko 1* are now environmental hazards. A total of around 800 tonnes of relatively light diesel is reported to be on board the two vessels. *Moresko 1* started to lose fuel immediately after she grounded. The *Lyn* was leaking internally in May and it will be only be a matter of time before her fuel is released.

Reports from King Edward Point in early June said that there was a strong smell of diesel when the wind was blowing towards the station and

that an oily sheen lay on the water around the wrecks. The South Georgia website, which currently features an unofficial report of the situation as it prevailed on 14 May, says that the fuel "is a potential environmental disaster were the ships to break up" before they can be salvaged, although given its nature it may disperse quite quickly during winter storms. The Government of South Georgia and the South Sandwich Islands (GSGSSI) said that salvage divers and a salvage master from the highly experienced Dutch salvage company, Weissmuller, carried out an inspection of the two vessels in the period 21-24 May. The four-man team travelled from the Falkland Islands on the chartered trawler *Kalatxori*. A GSGSSI spokesperson said that Weissmuller would be providing the insurers of the two fishing boats with their assessment of the situation. Both insurers are said to be "cooperating fully" with the GSGSSI government in order "to ensure as rapid a solution as possible".

5. The road's potential environmental impact has yet to be evaluated in a consultative manner, but as with most activities in the Antarctic, its symbolic and environmental impact are connected. One can imagine the cultural production of the 'Highway to the Pole' in which the road becomes a device to advance the 'Frontier'. Like Route 66, its permanence in the imagination is likely to have a stronger afterlife than that of the route itself. If we are in any doubt about the symbolic significance of roads we only have to think about the roads West, or the 'Road Map' in the Middle East. The geographer Harold MacKinder called the Poles 'zones of absorption' because they alleviated the anxiety of a closed world system. Antarctica is perhaps the one place on earth left where we can find real sites of meaning in which to rethink our relation to place, and 'perchance to dream'... For this we need a real and symbolic clearing within the geographic imagination.

Yours etc.

Kathryn Yusoff, London, UK

*XXVI Antarctic Treaty Consultative Meeting 2003**Continued from Page 15***MARINE ACOUSTIC RESEARCH**

Papers were presented on the effect of acoustic research discharges on marine mammals. Further reporting will be made at the next Treaty Meeting to consider ways of minimizing this effect.

WASTE CLEAN UP

Several countries presented information papers outlining efforts to clean up waste sites. These included Australia (Thala Valley near Casey), Argentina (Marambio Station), The United Kingdom (abandoned bases and waste dumps) and China (clean up and removal of old power building, Great Wall Station).

REGULATION OF ANTARCTIC TOURISM

Two full days were set aside for this tricky subject, but little consensus was reached. Discussion will continue at a meeting in Norway March 2004.

Debate focused on three topics: the establishment of a Treaty based database, adoption of visitor site specific guidelines, and tourism safety. The International Association of Antarctic Tourism (IAATO) reported that it was close to completing its own web-based database, but it was felt that the Treaty should have ownership of its own database. There was a certain amount of difficulty defining the terms "Adventure" or "Extreme" tourism. ATCM was able to agree on the adoption of Antarctic shipping guidelines based on those recently adopted for the Arctic.

LIABILITY FOR ENVIRONMENTAL DAMAGE

This important topic was discussed at length, chaired by New Zealand's Don Mackay. It is likely that discussion will be concluded during the next two Treaty Meetings.

ANTARCTIC TREATY SECRETARIAT

The 26th Antarctic Treaty reached an agreement to establish an Antarctic Treaty Secretariat in Argentina once final approval of the 27 Consultative Parties has been gained. As this may take some time, the Secretariat will begin operating for the interim period running on voluntary donations. An Executive Secretary will be selected end of March 2004.

*Letter to the Editor**continued from Page 31*

3. Basic facts about the road project are unclear. For example, it has been reported that a fibre-optic cable will be part of the project, although Karl Erb, Head of Polar Programs affirmed that, 'There is no optical cable associated with the traverse'. This does not, however, rule out the future possibility of such an addition. We need to be mindful of the increasing ways in which Antarctic governance could recognise boundaries beyond those of nationalism and physical geography. These include cultural, trans-national, biological, symbolic, virtual and even psychic perceptions.

4. Why has the Antarctic community been so silent in its critical evaluation of this proposal? The argument in favor of the road is that it will reduce flights to South Pole station. What are the benefits? One cited has been the reduced fuel flights for servicing Pole Station. But with an increasing science programme at the pole (e.g. 'Ice Cube') aren't the number of flights going to be the same?

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