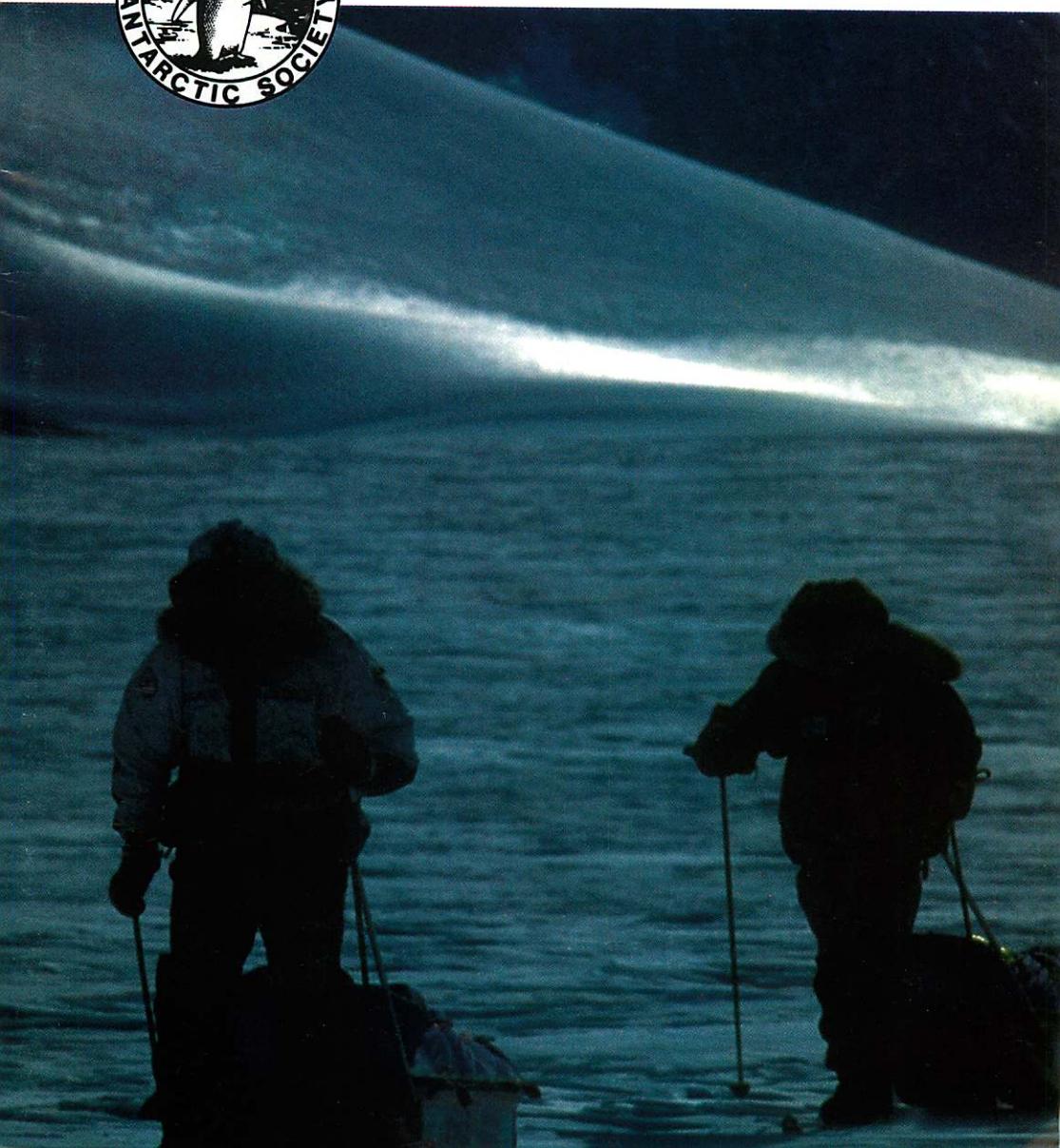


ANTARCTIC

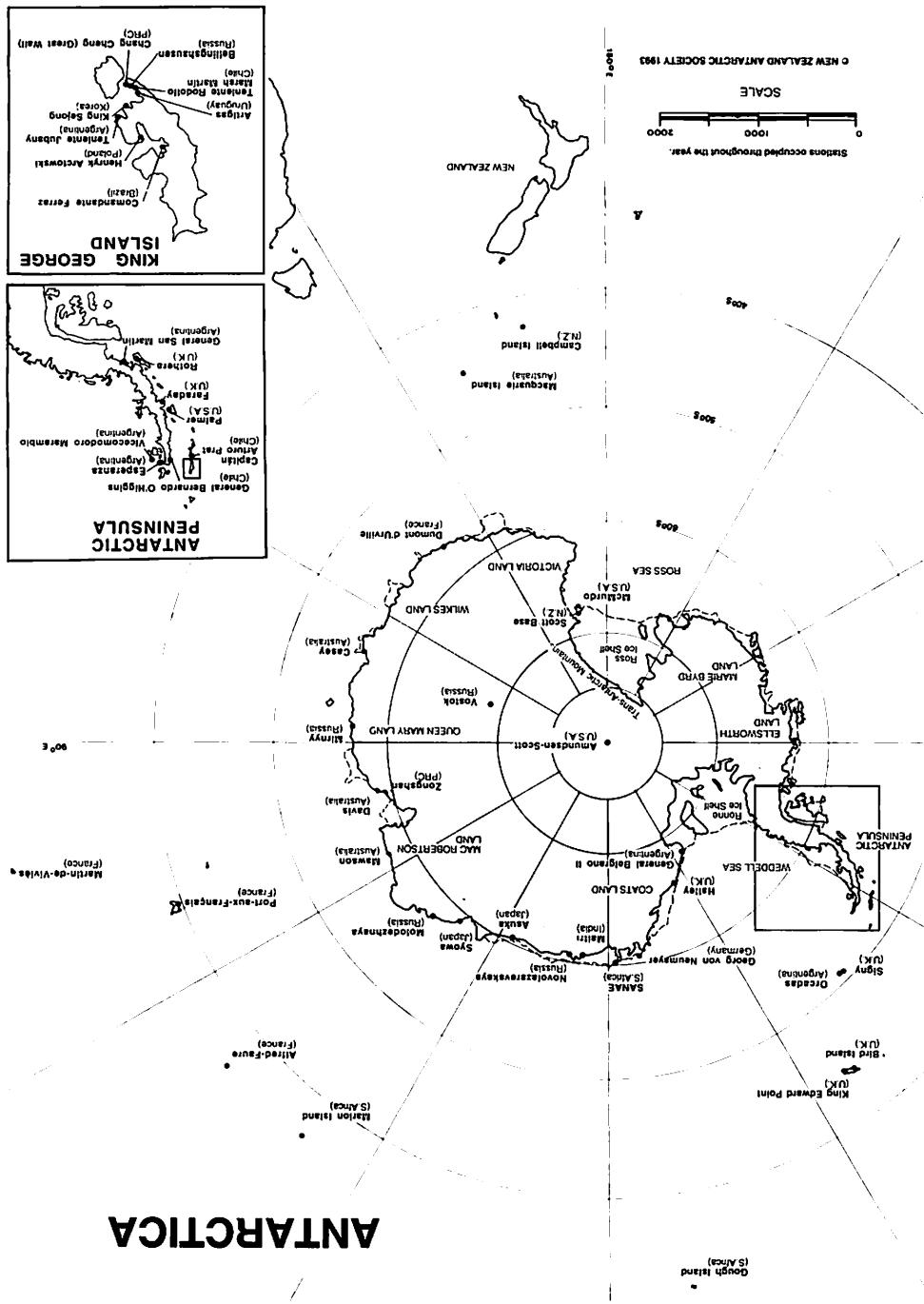


Bulletin Vol 14. No. 1, March 1996



ANTARCTICA

Gough Island
(S. Africa)



ANTARCTIC



Cover: Canadian explorers
Bernard Voyer and Thierry
Petry against the back drop of
the Ellsworth Range.
Courtesy of Gilbert Van Reenan,
Clean Green Images.

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Please address all editorial inquiries and contributions to the Editor, P O Box 404, Christchurch or telephone 03 365 0344, facsimile 03 365 4255, e-mail headcon@chch.planet.org.nz.

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PRESIDENTS NOTE

Perusal of our membership indicates that a good third of our members live outside New Zealand. It is therefore important that the Society keeps an eye on international events that affect Antarctica.

Ozone depletion, global warming (the Greenhouse Effect) and world pollution are matters of concern that are linked closely with Antarctica. In the initial case Antarctica was the laboratory in which the Ozone Hole was first demonstrated. In the second case, any global warming will be quickly reflected by changes to the Antarctic icecap and its glaciers. And in the last case, monitoring of the Antarctic environment will determine the seriousness and speed at which the rest of the world is becoming polluted, providing a global warning.

Over the last few decades we have seen many controls established through the Antarctic Treaty to protect the Antarctic environment and its life. One of the most important has been the Environmental Protocol which set rigid guidelines for any human activity on the continent. It will be some time before this is legally binding for all countries involved, but it is a major and necessary step for environmental protection of an extremely vulnerable continent. When one reflects on how the early explorers treated the continent, not realising its fragility, one can appreciate how far we have come, and how responsible the world is becoming.

Eighty four years ago Scott's Western Party reached Granite Harbour on the Ross Sea Coast, and named Botany Bay for the abundance of mosses and lichens that grew there. But they would have broken every rule in the modern environment book when they gathered moss to stuff between the blocks of the stone house they built at this site. Modern scientists, appreciating that these plants have taken hundreds of years to grow under the hardest of conditions, have made sure this won't happen again by doing the paper work to ensure that this, and other sites, are specially protected under the Treaty. With the advent of tourism, such protection, as well as education and strict guidelines, are of the utmost importance to the well being of Antarctica.



Life in the Southern Ocean around Antarctica is equally important, and many Antarcticans greeted the 1994 International Whaling Commission (IWC) Moratorium on Whaling with relief. The Society awarded its Conservation Trophy that year to Sue Miller for her reporting of the IWC meeting to New Zealand. But loopholes appear to exist in the agreement. Firstly there was much concern that Russia had deliberately falsified its catch in its favour. Then there is the concern that the 300 Minke whales Japan is allowed to catch under the agreement for "research purposes" may not be being used entirely for scientific purposes. One asks what research requires so many carcasses, and what happens to the whale meat after these whales have been killed. The Society continues to be deeply concerned about this issue.

Antarctica has been described as a continent for science. Certainly it is the one place where international harmony exists and science knows no political boundaries. Yet science in Antarctica is subject very clearly to the whims of politics. Many scientists will say that politicians are not providing enough funding for science in view of how important research is for the future. Many will also say that their country's Antarctic science budget is far lower than it should be.

My sympathy is with the American science programme who are about to commence detailed planning for the next Antarctic season without any clear idea of the funding available because the NSF budget has yet to be approved. For the first time in many years there will not be a midwinter air-drop to McMurdo Sound from Christchurch, and scientists and base personnel at McMurdo Base, and Scott Base, will have to do without their mail and freshies, the highlight of the long polar winter. When I commented that this would increase the winter-overs' sense of isolation, an Antarctic colleague pointed out that it was hardly isolated when you had an instant satellite link back to New Zealand and even the new Cape Roberts drilling camp had e-mail and fax facilities! However, neither a phone call or an e-mail message is quite the same thing as a good newsy letter, or a faxed photo of a tomato quite the same as the real thing!

Margaret Bradshaw
President
NEW ZEALAND ANTARCTIC SOCIETY



INTERNATIONAL

CAPE ROBERTS PROJECT

DELIVERY SUCCESSFUL

The 18-tonne drill rig and other heavy equipment for the multi-national geological drilling project at Cape Roberts in Antarctica were successfully off-loaded onto the sea ice and safely transported 26 km to land, it was reported on 19 January.

Weakened sea ice had been a concern for the off-loading of the Italian cargo ship, *Italica*. The drill rig and 11 seven tonne containers for use as laboratories and accommodation were towed across the sea ice following a flagged route to Cape Roberts.

The New Zealand Antarctic Programme's Jim Cowie, the project manager, says the route through the sea ice was mapped out using a GPS (Geographic Positioning System) and by repeated drilling to test the thickness of the ice. Sections of the route detoured for up to six kilometres around some of the open water cracks and areas of weak ice.

Four tracked snow groomers and a D5 bulldozer towed the equipment on steel sledges for more than ten hours. The convoy stopped to rest three kilometres from Cape Roberts before tackling the difficult transition ice close to land.

Six nations — NZ, US, Italy, Germany, Britain, and Australia — are involved in the \$NZ8 million Cape Roberts drilling project which will help to interpret past climatic changes in Antarctica and shed new light on the break-up of the ancient land mass, Gondwana. Rock formed from sediments deposited between 25

and 80 million years ago will be recovered from the sea floor up to 500 metres deep and 18 km from land.

The equipment will be stored on land at Cape Roberts, 200 km north of Scott Base, over the winter then towed back out onto the sea ice next spring. Drilling will take place in October/November when the sea ice is thick and strong, though temperatures are expected to reach as low as -35 degrees Celsius. The containerised camp — which provides life-support systems for 35 scientists and drillers — is also based on the sea ice to minimise impact on Cape Roberts, an ice-free area, home to a small skua colony.

The drilling equipment for what is the largest science project ever undertaken by the New Zealand Antarctic Programme left Lyttelton on the *Italica*, on 5 January. The drilling platform for the project, built in Christchurch by Southern Cross Engineering, was transported to the wharf by truck over Evans Pass. Twelve refrigerated containers were also transported from the International Antarctic Centre, where they have been converted into accommodation, laboratory and equipment huts. The equipment weighed about 250 tonnes and had a value of \$750,000.

The NZAP offload team of four was led by Science Operations Manager, Alex Pyne. Unfortunately Project Manager Jim Cowie had to stay in touch from his Christchurch office awaiting surgery on an injured knee.

Surveys to assist project

Two survey projects were carried out over the summer which will add to the information on which the Cape Roberts project is based:

A detailed aeromagnetic survey (0.5 km spacing) by GITARA (German-Italian Aeromagnetic Research in Antarctica) to locate and define more precisely the magnetic anomalies off Cape Roberts, which could be caused by volcanic rocks just west of the proposed drill sites. The data

was collected in late November, and results will be worked up in Wellington by Dr Detlef Damaske in mid February.

A seismic survey by the *Nathaniel B Palmer* of 6 lines on a 2 km perpendicular grid. The grid is keyed to the proposed line of the drillholes which is oriented in the regional dip direction (azimuth 083 degrees true). An attempt will also be made to survey the area with the swath bathymetry system just installed on the ship.

BUSY EXPLORATION SEASON

One could be forgiven for thinking that the world's most isolated place was getting fairly crowded this summer with all the expeditions that were mounted.

Anne Kershaw's Adventure Network International was in the thick of the action providing transport and rescue services for many of the expeditions.

Antarctic looks at some of the expeditions in which ANI was involved and the achievements of some very courageous and tough polar explorers.

POLE SETS POLAR RECORD

After 53 days of trekking Polish explorer

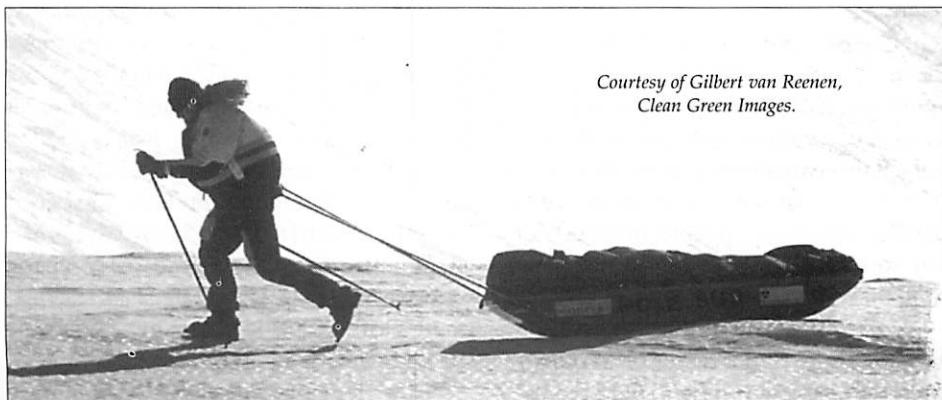
Marek Kaminski arrived on 26 December 1995 at the South Pole, 23:00 GMT, becoming the first man to reach the South and North Poles in one year, unsupported.

On 23 May 1995 Kaminski reached the North Pole after a 72 day unsupported trek.

Kaminski's southern expedition started on 4 November 1995 from the northern part of Berkner Island (at the edge of the Weddell Sea).

He covered the distance of 1400 km to the South Pole pulling a plastic sledge called a pulkhas loaded with about 120 kilograms of supplies. His basic equip-

Courtesy of Gilbert van Reenen,
Clean Green Images.



ment consisted of a tent, protective clothing, fuel for the camp stove and a two-month food supply.

Kaminski had to struggle with the least accessible land on our globe, defy coldness down to -35 degree C, blizzards which reduced visibility to white-out, sastrugi up to 2 metres high and dangerous crevasses.

His vital communication link with the world was facilitated by the Agros satellite system. Through Agros and the Center of the Space Research in Toulouse, France, Kaminski forwarded a daily message to his base. This message consisted of one of 15 codes (eg bad weather, white-out, hard sastrugi, high winds, drifting snow, all o.k.), the temperature, latitude and longitude, date and time of last location and power supply of PTT.

The main goal of Kaminski's expedition was to reach the two poles in one year, alone and unsupported for the first time in polar history.

Another critical goal mission of the expedition was a charity campaign called "Even the Pole can be Yours", to support the work of the Chemotherapy Ward of the Medical Academy in Gdansk, Poland.

In a letter from Patriot Hills Kaminski wrote, "If this expedition can mean something it can be certainly for the children, also for those who are adult. The aim of this expedition can be dedicated to them — never brush aside your dreams. The most valuable dream is not only to reach the Pole, but to do something for other people."

Preparations for the expedition started only two months prior to departure. Kaminski developing and organis-



Marek Kaminski. Courtesy of Gama San.

ing a plan which was implemented by Gama San, his organising team.

Gama San arranged the necessary sponsors, logistics, special equipment, clothes and food. Sponsors located from Poland included Polish TV, Alpinus, Polish Radio pr. III and others.

Sponsors outside Poland included Valvosanitaria Bugatti, RBM, Titan Forte Benessere, Sani.cro, Iori, F.lli Rossi and Vicari Massimo from Italy; Karasjok Husflidssentral, Skandinavisk Huyfjellsutstyr, Swix and Alfa from Norway; Bergsportzentrale, Fjall Raven and Ortovox from Germany; Longines from Switzerland and Casio from Japan.

Key logistics involved arranging

flights with Adventure Network International for Kaminski from Poland to London, then to Rio de Janeiro, then to Punta Arenas, then to Patriot Hills, and from Patriot Hills to Berkner Island.

Equipment such as windsacks, sledges, skiis, clothes (shoes, expedition jackets, trousers, gloves and under-wear clothes) and food (pemmikan, globetrotter lunch and compact food) sourced from Norway, Germany, Austria and Sweden.

Most of the organisation of the expedition involved a team of four, although Kaminski brought in a total of twenty people for the last few days organisation.

(Right) Marek Kaminski. Courtesy of Gama San.



NORWEGIAN GIVES UP ANTARCTIC TRAVERSE

Norwegian Borge Ousland had to give up his attempt to trek across the Antarctic alone due to severe frostbite injury.

Ousland, who arrived at the South Pole on December 21, could not continue across the frozen wasteland, his press spokesman Hans Christian Erlandsen said on 30 December 1995.

The wound developed from frostbites on the inside of his thighs that he got in late November. During the last days the inflammation of the wound became worse. With almost 1300 km ahead of him before reaching McMurdo and the Pacific Coast, Ousland decided that the only sensible solution was to end the expedition.

"The wounds would not heal, they were kept open and became very painful. I had difficulties walking. I had to make a decision, and that was to stop before I was in a position where it would be difficult to reach me," he said by radio to Hans Christian Erlandsen.

"I was very sad when I had to make the decision to stop. I was really looking for-

ward to going down the Beardmore glacier and meeting friends at McMurdo. Now I have accepted the situation, knowing that I have done my best. It was the right decision to take," he said.

When Ousland alerted Hans Christian Erlandsen of his situation through a satellite beacon, an aircraft from Adventure Network International was near by. It was decided to pick him up without delay and bring him to the South Pole. By that time Ousland had already turned and started to walk back to the Scott-Amundsen Base at the South Pole. There he was examined by the Pole physician, who treated his wounds. The physician agreed that he could not continue with his injuries and that a spreading of the inflammation would be dangerous.

The goal he achieved was to be the first ever to walk alone and unsupported to both the North and the South Pole. The almost 1300 km distance to the South Pole was completed in only 44 days, with daily distances reaching an average o

more than 28.6 km.

Ousland began his trek on November 8 with plans to follow the same route that British explorer Ernest Henry Shackleton took in the early 1900s. Shackleton had intended to leave from the same locality, crossing to the South Pole and finishing the trip at the Ross Sea.

Ousland had hoped to be the first to cross the Antarctic alone with no support. He was on skis with no dogs or motorised transport, carrying all the food and materials he needed to survive the journey.

In a race reminiscent of the first showdown at the South Pole in 1911, between Norwegian Roald Amundsen and Briton Robert Scott, Ousland and British adventurer Roger Mear, former member of BAS, set off from Berkner Island in the Weddell Sea in early November.

Mear, aged 45, was forced to give up his attempt and was rescued on 17 December due to worse than expected conditions and problems with his sled.

Impressive polar exploration credentials

32 year old Borge Ousland lives in Oslo with his girlfriend and 7 year old son. He is an explorer, photographer and author who has undertaken four major ski-expeditions in the Arctic during the last ten years.

PREVIOUS EXPERIENCE

Unsupported across Greenland 1986

Ousland crossed the icecap of Greenland with two friends, on skies, hauling supplies on sledges. With temperatures down to -40°C, and at a height of 3000 metres, the conditions on Greenland are much the same as on the Polar Plateau. The 800 km crossing was successfully completed from Angmassalik on the east

coast to Umanak on the west coast in 37 days.

Unsupported to the North Pole 1990.

Together with Erling Kagge, Ousland became the first to ski to the North Pole completely unsupported.

They started from Ellesmere Island in Canada and skied pulling their own sledges across the rough ice of the polar ocean. They reached the North Pole after 58 days, covering 780 km of broken and unpredictable drifting ice. (Thirteen expeditions had tried to reach the North Pole unsupported before them and six expeditions have unsuccessfully tried to repeat their achievement. Today only this 1990 expedition, and Ousland's 1994 solo expedition, have managed to reach the North Pole unsupported).

Frans Josef Land 1993

Ousland and Kagge skied through the archipelago of Frans Josef Land north of Novaya Semyla, and across the drifting ice towards Svalbard in an attempt to complete Fridtjof Nansen's expedition of 1896.

Their situation became critical when they drifted into the Barents sea, and the ice broke up around them due to waves and bad weather. In the end they had to activate the emergency beacon, and were picked up by a rescue helicopter from Svalbard.

Alone and unsupported to the North Pole 1994

Ousland became the first person to ski alone and unsupported to the North Pole. He started from Cape Arctichesky in Siberia on 2 March, and reached the North Pole 22 April. Skiing 980 km in 52 days, this was the fastest skiing expedition ever to the North Pole, including the supported ones.



Polish explorer Marek Kaminski.

Courtesy of Gama San.

Historical background

Ousland's expedition was very much an extension of the achievements of the early polar explorers. In 1909 the North Pole was reached by the American Robert E. Peary, which meant that only the South Pole remained unconquered. The scene was set for a race, and in 1911 both British and Norwegian teams set out with the same goal, to be the first men to set foot on the South Pole.

The Norwegian Roald Amundsen became the first person to reach the South Pole, 14 December 1911. His British competitor, Robert Falcon Scott also reached the South Pole, but a month later. On their return march Scott and his men died of exhaustion and lack of food. The race between the two men, which ended in victory for one and tragedy for the other, will remain as one of the most fascinating stories from Antarctica.

Amundsen was a master of logistics. His expedition went as planned and they reached the goal without casualties. As a Norwegian he was used to skiing and liv-

ing close to nature. His expedition was based on respect and humility towards the elements and what each man had to and could go through. Three years later another Englishman, Ernest Shackleton, set out to do what he called "The last great land journey on earth" that is, the crossing of Antarctica. The march to the South Pole was for Scott and Amundsen essentially a sporting achievement. Later Shackleton wanted to be the first to complete the crossing of Antarctica, in order to do what had never been done before.

Shackleton's plan was to cross from the Weddell Sea, reach the South Pole, and then continue across to the Ross Sea on the other side of the continent. Unfortunately his ship was crushed by ice in the Weddell Sea and sank, making it impossible for Shackleton to start on the actual crossing.

With the introduction of aeroplanes to Antarctica in the late twenties, the crossing was completed with Sno-cats in 1958, heavily supported by aeroplanes. Later Antarctica was crossed by Reinhold Messner, Will Steger and Sjur and Simen Merdre, all of whom were supported on route by aeroplanes.

Unsupported

For Ousland the achievement of these expeditions has the taste of a great adventure, but human abilities and skills are put aside by the ever roaring sound of aeroplanes, as they bring in fresh supplies to men on the ice. Success was therefore merely a question of gasoline, logistics and economy.

To go unsupported simply means that all needs in the way of food, fuel and equipment for the whole expedition must be carried or dragged from start to finish, with no dogs, snowmobiles or aeroplanes

support on the way. It is back to basics.

The last great land journey on earth

The spirit of Amundsen, Scott and Shackleton still lives on. This great challenge has never been completed unsupported. In 1993 Ousland's friend and companion Erling Kagge became the first person to ski alone and unsupported to the

South Pole. The same year Sir Ranulph Fiennes and Mike Stroud attempted an unsupported crossing of Antarctica. Covering 2200 km of the total 2700 km, they had to give up after 95 days on the ice due to exhaustion and lack of food. Their expedition still stands as the longest unsupported ski trek.

BRITISH EXPLORER FIRST TO WALK TO SOUTH POLE

Explorer David Hempleman-Adams became the first Briton to walk solo and unsupported to the South Pole when he completed a 60-day trek across Antarctica, his expedition team in Britain announced on 5 January 1996.

The 39-year-old businessman and father of three, based in Swindon, Wiltshire, had pulled his sledge containing supplies for 1100km from Hercules Inlet.

Most of his trek was in horrendous head-wind conditions which his team said had accompanied temperatures of below -40 degrees Celsius — "one of the worst recent summers in Antarctica".

Mr Hempleman-Adam's success came nearly a month after another Briton, 45-year-old Roger Mear, had to abandon his solo unsupported crossing of the south polar ice cap after problems with his sledge.

Mr Hempleman-Adams started his walk on November 7. His sledge then weighed over 150kg, reducing by about 1.5kg a day as he ate his way through his provisions.

His progress often averaged as little as 13km a day as he encountered bliz-

zards and "waves" of ice up to 1.5m high, though he was covering 20km a day towards the end as his sledge got lighter.

A spokesman for him said: "The last few days (of the expedition) were still touch and go as he had aggravated an old back and leg injury and he was steadily getting weaker, burning up over 8000 calories a day yet only eating 5000 calories."

He had lost over 9kg in weight because the amount of food was limited by how much he could pull, the spokesman said.

Eleven years ago he was the first man to walk solo and unsupported to the Magnetic North Pole, and in 1992 he led the team which was the first unsupported to the Geomagnetic North Pole. He has also climbed the highest peak in each of the seven continents, including Everest.

Mr Hempleman-Adam's thoughts were already on another expedition, according to his team. "He has chartered a yacht which will sail from Hobart in Tasmania, Australia, to locate the Magnetic South Pole which lies in the open ocean," said the spokesman.

CANADIAN EXPEDITION PIONEERS TECHNOLOGY



Bernard Voyer and his space-age technology. Courtesy of Gilbert van Reenan, Clean Green Images.

The unsupported expedition of Canadians Bernard Voyer and Thierry Petry was successfully completed on 12 January after a 65 day, 1400 km ski to the South Pole from Berkner Island. The pair become the first Canadians to reach the Pole on skis.

Making the expedition more notable was the technological innovation displayed in its use of pioneering communications technology.

How do two men on skis, towing 300 kilograms of food and equipment behind them in the middle of the vast, empty, cold whiteness of Antarctica, call home?

Mr. Voyer and Mr. Petry have a portable satellite transmitter the size and thickness of two packs of cigarettes, powered by solar batteries.

The transmitter has 16 different positions which can send predetermined messages every two hours such as what the weather is like, what progress the trek is making, if equipment has broken

down, and, of course, if the men need to be rescued.

The message is transmitted to a satellite which is constantly rotating the Earth listening for those transmissions. The satellite carries the message to the closest ground stations, which are in France and Maryland, which then send it to the base through the information highway, while showing them where the pair were on a computer map.

The technology was invented by a US company called Cube Technologies, run by 24 year old Roch Chiasson.

Mr. Chiasson is a mechanical engineering graduate of the University of Ottawa who worked in a co-op program for the Canadian Space Agency. Cube has been a full-time company for only 18 months, but Mr. Chiasson actually set it up several years ago, "more or less to amuse myself."

He got some contracts in Montreal and his reputation for working in satellite automation spread by word-of-mouth,



Thierry Petry and Bernard Voyer of the Canadian South Pole expedition. Courtesy of Gilbert van Reenan.

reaching the ears of Mr. Voyer, who was planning his trek.

"We're not inventing anything new, but we're putting things together that have never been put together before," he says.

It also works. The skiing duo field-

tested the system last summer in Greenland and Mr Chiasson followed them from Shippagan on his computer screen, similar to a space expedition tracking system. This system was employed to advantage during the Canadian's Polar expedition.

NATIONAL PROGRAMMES



NEW ZEALAND

INSTITUTE DETAILS UNVEILED

It has been formally announced that the New Zealand Antarctic Institute (NZAI) will be an independent Crown entity, set up under a special act, and based at the International Antarctic Centre in Christchurch.

The Institute's formation will combine the staff of the New Zealand Antarctic Programme with the resource of the Ross Dependency Research Committee, enhancing liaison with and between the New Zealand and international science communities. The NZAI should be estab-

lished by 1 July this year.

Media reports have pointed to concern about a decline in New Zealand's scientific effort on the ice being an underlying factor in the recent establishment of the New Zealand Antarctic Institute in Christchurch.

A review by the Ministry of Foreign Affairs identified considerable unease about the lack of effective planning and co-ordination of New Zealand's Antarctic activities.

Papers obtained from the ministry

expressed concern that the Antarctic scientific programme had fallen off markedly since the Department of Scientific and Industrial Research was dismantled.

"There is a real danger that if the present structure continues the existing resources will be dissipated and Antarctic science whither away."

The ministry was also concerned that there was no effective means of planning and co-ordinating New Zealand Antarctic activities. A long-term strategy was essential.

The review reported that the New Zealand Antarctic Programme received \$5.2 million a year, Defence contributed \$10 million, the Public Good Science Fund was providing \$1.9 million for science and universities were spending about the same.

However, no one organisation had a substantial interest in Antarctica.

The NZAP was focused on operational and logistic support for scientists. It did not have the mandate or the skills to develop and manage a strategic Antarctic science programme.

The Ross Dependency Research Committee had become ineffective because it was an advisory committee at a time when professional advocacy was required in the contestable science funding environment.

"To overcome present deficiencies and to allow our past investment to be capitalised on, Antarctica needs a specific focus, an organisation for which Antarctica is the core business."

Also underlying the establishment of the NZAI was the view New Zealand had to show it was not losing interest in Antarctica where the Government continues to hold territorial claims to the Ross

Dependency dating back to the 1920s.

The strategy is to promote New Zealand's interests by:

- Maintaining New Zealand's long term interest in, and commitment to the Ross Dependency .
- Keeping Antarctica as a neutral and non-militarised neighbour.
- Enhancing New Zealand's economic opportunities in Antarctica within the parameters of the Antarctic Treaty System.
- Enhancing New Zealand's leadership in the governance of Antarctica.
- Promoting Antarctica as a natural reserve devoted to peace and science."

This review has been a very valuable exercise and I am pleased with the outcome," Mr McKinnon said.

"The proposed changes reflect the value we place on our activities in the Ross Dependency and Antarctica and reinforce our continuing commitment to the preservation and protection of this remarkable continent.

"They will enable us to build confidently on our forty year history of involvement with the Ross Dependency and put us in a position to take advantage of future opportunities for international collaboration in Antarctica.

"We want the Institute to focus on developing and managing very high quality activities in Antarctica and to this end it will have at its disposal the skilled staff of the New Zealand Antarctic Programme. The resources of the Ross Dependency Research Committee will also be available to the Institute," said the Minister.

An Officials Antarctic Committee, to be chaired by the Ministry of Foreign Affairs and Trade, will draw together all govern-

ment departments with Antarctic interests and responsibilities. The OAC will be the Government's primary source of policy advice on Antarctic affairs.

"We want the OAC to take a proactive role to develop a longer term, forward looking policy approach in its fulfilment of the Government's strategic objectives for the Ross Dependency and Antarctica."

The OAC will play a key role in interfacing with the NZAI once it is established.

"The Chief Executive of the Institute will be a member of the OAC to ensure the closest links are maintained between our Antarctic practitioners and officials," Mr McKinnon concluded.

The terms of reference for the OAC approved by the Government are:

- 1 *The Officials' Antarctic Committee is an interdepartmental committee intended to meet the Government's requirement for coordinated strategic and policy advice in respect of New Zealand's interests in the Ross Dependency and Antarctica. It will be the primary source of policy advice to the Government on Antarctic matters.*
- 2 *The OAC comprises the Chief Executives, or their nominees, of the Ministry of Foreign Affairs and Trade (Chair), the Department of Prime Minister and Cabinet, the Treasury, the Ministry of Research, Science and Technology, the Ministry of Defence, the New Zealand Defence Force, the Department of Survey and Land Information, the Ministry for the Environment, the Department of Conservation, the Ministry of Commerce and the New Zealand Antarctic Institute.*
- 3 *The OAC will report to the Minister responsible for Antarctic affairs.*
- 4 *Executive support for the Committee is to be provided by the Ministry of Foreign Affairs and Trade (Antarctic Policy Unit).*
- 5 *The Committee is to meet quarterly, and otherwise when required.*
- 6 *The Committee is expected effectively to coordinate the policy advice of departments in respect of the Ross Dependency and Antarctica, including international relations, statutory responsibilities and monitoring and reporting functions, where this advice bears on New Zealand's strategic objectives in Antarctica. It should be consulted on the briefing for international meetings on Antarctica, and on New Zealand's participation in such meetings.*
- 7 *The Committee will be expected to maintain close relations with the New Zealand Antarctic Institute which will be the developer and manager of national activities in the Ross Dependency and Antarctica. It should invite the Chairman of the Board of the NZAI, or nominee, to participate in its deliberations where appropriate.*
- 8 *The Committee is expected to liaise with domestic stakeholders, including tourism interests, the relevant science community and environmental groups on Antarctic matters.*
- 9 *The Committee is to be actively involved in the preparation and subsequent monitoring of the contract between the Crown and the NZAI.*

The Crown will retain ownership of the shell of Scott Base because of the strategic nature of the asset. Shipley's Aerial Farm, the land adjacent to Christchurch Airport which is currently occupied by Antarctic communications facilities, will revert to Crown ownership also. The NZAI will be licensed by the Government to use these assets. The Scott Base fit-out, vehicles and movable assets of the NZAP will be owned by the NZAI.

BOARD ANNOUNCED

Foreign Minister Don McKinnon announced the New Zealand Antarctic Institute's Interim Management Board, with Sir Robin Irvine accepting the chairmanship.

"While developing a strategic plan for our Antarctic scientists Sir Robin has at the same time built up the international profile of the Ross Dependency Research Committee. His experience will be invaluable during the transition to the new Institute and will ensure continuity with the present structure," said the Prime Minister.

The Interim Board represents an outstanding combination of strategic, scientific, environmental, business and management skills that will ensure the NZAI gets off to flying start, he said.

The board is:

Emeritus Professor Sir Robin Irvine:

Distinguished physician, educated at Wanganui Collegiate, Otago University and the University of Edinburgh. Dunedin based. Has served on many Governmental committees. Chairman of the Ross Dependency Research Committee. Former university vice-chancellor.

Chris Mace:

Prominent businessman. Created Mace Investments. Director of Lion Nathan. Chairman of the Crown Research Institute ESR. Auckland based.

Sue Suckling:

Managing Director of Acemark Consulting Group. Director of the NZ Dairy Board. Christchurch based.

Basil Walker:

Chief Executive of the Ministry of Research, Science & Technology. Former Chief Executive of the Ministry of Energy and Ministry of Defence, former director of Petrocorp. Based in Wellington.

Clive Howard-Williams:

NIWA scientist and regional manager. Wellington based.

The Ministry of Foreign Affairs and Trade will be the contract manager between the Crown and the NZAI. The Crown will purchase the output of the NZAI through a non-departmental Output Class appropriation to MFAT. MFAT will also be responsible for managing on behalf of the Crown the Crown assets of Scott Base (the building shell) and Shipley's Aerial Farm.

NEW ENVIRONMENTAL PANEL FORMED

With the establishment of the NZAI, a new panel has been set up to provide advice to the Ministry of Foreign Affairs and Trade on the potential environmental impact of New Zealand activities in Antarctica.

The Environmental Assessment and Review Panel (EARP) succeeds the Ross Dependency Research Committee's ad hoc environmental group. The EARP will take over the environmental review functions of the RDRC and be responsible for the assessment of environmental evaluations submitted by the NZAI and other undertaking activities in Antarctica (such as tour operators and private expeditions).

The establishment of the EARP is required so the Minister of Foreign Affairs and Trade can fulfill his obligations in respect of the Antarctica (Environmental Protection) Act. This require-

that he be satisfied that the potential environmental impact of proposed activities, by those that the Act applies to, is acceptable. Once the Act comes fully into force, on international ratification of the Protocol on Environmental Protection to the Antarctic Treaty, the EARP might also provide advice on matters associated with the Protocol.

The Panel, established by Mr McKinnon, will comprise four members, two ex-officio departmental representatives from the Ministry of Foreign Affairs and Trade (Ms Louise Sparrer, Antarctic Policy Unit) and the Department of Conservation (Dr Harry Keys) and two

independent experts (one of whom should be representative of the Antarctic NGO community). Mr McKinnon has appointed Professor Vernon Squire from the University of Otago as chairman and Dr Alan Hemmings, a independent Antarctic consultant from Auckland as the independent members to serve for a term of three years. The EARP will be serviced initially by the APU.

For further information on the EARP and a copy of its terms of reference are available from the Antarctic Policy Unit, Ministry of Foreign Affairs and Trade, P O Box 18 901, Wellington.



UNITED STATES

SUCCESSFUL SEASON DESPITE BUDGET THREAT

The US National Science Foundation (NSF), which runs the US Antarctic programme, and the US Navy, which moves men and supplies to the ice and operates the bases there, has called 1995/96 the most successful season in the history of Operation Deep Freeze.

The US Antarctic Program finished its 40th season on February 21 with the last flight north from McMurdo Base.

Operation Deep Freeze is wrapping up a week early this season, because both weather and technology have cooperated with the US Antarctic Program, enabling scientists to complete more than 90 separate scientific projects in Antarctica.

Those left behind in Antarctica will have no physical contact with other human beings until the Winfly support missions in August, which bring in men

and supplies to get the Antarctic bases ready for the summer team.

Once the last flight north is completed, the summer support teams of VX-6 (Antarctic Development Squadron Six) and US Naval Support Force Antarctica will head to their home bases in California to prepare for next season.

The successful season was accomplished despite the threat of the biggest government shutdown in US history as the country struck major budget problems between Democratic President Clinton and the Republican Congress.

Almost all Operation Deep Freeze staff were classified as essential by the US Government so were not suspended like the thousands of US public servants, says Navy Spokesman in Christchurch, Petty Officer Dave Lippman.

Three civilian technicians, employed to calibrate the USAF's electronic equipment were suspended for about one week during the first shutdown, but were soon reclassified as essential and given full backpay, Petty Officer Lippman said.

A third federal shutdown was narrowly averted on January 27 with President Clinton signing a bill to fund the government for another seven weeks.

The Senate passed the bill by a vote of 82-8. The bill funds nine departments including Commerce, Justice and Health and Human Services through to March 15 — though most at lower funding levels than last year.

The NSF head office was left to dig out from its own blizzard of paperwork left by the unprecedented government shutdown. The NSF supports nonmedical science and engineering research and education through competitive grants to about 2,000 institutions nationwide.

The break postponed dozens of panel meetings to review hundreds of proposals for research.

Researchers nationwide could not consult with NSF staff regarding their pro-

posal submissions. Technical support to state, urban and rural education reform projects funded by NSF was suspended, which may adversely impact these multi million-dollar efforts. Hundreds of science projects have been delayed or cancelled, the budgets of researchers at universities nationwide have been disrupted — affecting funding for graduate students and innovative pilot undergraduate courses across the country — and the pace of science exploration has slowed at a time when the U.S. faces more overseas technology competition than ever before.

"I am very concerned about the serious long-term and short term impact that this unprecedented shutdown could have on the nation's research and education community," said NSF Director Neal Lane. "It has already been very disruptive, and the impact will likely reverberate throughout the year."

Lane added that he is "hopeful that an agreement will be reached for our appropriation that will enable us to recover from the backlog and to continue the business of investing in the nation's future."

In attacking the proposal backlog,



Lake Vanda. Courtesy of Craig Potton, Craig Potton Publishing.

NSF's six research directorates will struggle to reschedule dozens of cancelled meetings of top researchers — called review panels — who advise the agency on whether or not to fund new proposals. Dr. Lane worried that "although science will go forward, it will limp painfully." Dr. Lane remains "cautiously optimistic" that the recognition of the obvious value of scientific research will lead to stable funding, but continues to worry about the potential impact of the shutdown and projected budget cuts over the next several years. "Americans have been justly proud of our scientific achievements, and assume that we will retain our world leadership. But that assumption has been rocked by the shutdown and by continuing budget uncertainties," he said.

Concern was evident in the NSF during the early part of the government shut-

down, with the NSF considering a shutdown on the Ice. "At some point soon, we will need to divert our Antarctic funding from science research to shutdown activities in order to ensure we can bring researchers home," said NSF's Director of the Office of Polar Programs Cornelius W. Sullivan at the time of the first, and longest shutdown. As an independent agency, NSF receives its funding from congress through the VA, HUD and Independent Agencies' appropriations subcommittee. "If we have neither a budget nor a continuing resolution — and no hopeful sign of either — soon, then we will have to begin shutting down the Antarctic program and shift into caretaker status," said Sullivan. The first step would be to stop sending researchers to Antarctica, and the second step would be to start bringing home some of those who are already there, said Sullivan.

BUDGET CUTS CANCEL MID-WINTER AIRDROP

Due to limitations in the US federal budget, the US National Science Foundation has been forced to cancel the mid-winter airdrop missions to Antarctica.

The annual airdrop of supplies normally is flown in June by C-141 Starlifters and KC-10 refuelling tankers of the US Air Force. The two drops, one at McMurdo Base, the other at the South Pole, supply US and New Zealand winter-over personnel with fresh food, mail and videotapes, among other supplies.

Last year, more than 40,000 lbs. were dropped at McMurdo, and 4,000 to the Pole, along with 400 lbs. for the New Zealand Antarctic Programme's Scott Base, three kilometres from McMurdo.

Three quarters of the US\$1 million cost

had been covered previously by the Air Force under its training budget. But that money is no longer available because of government budget restrictions and the National Science Foundation can not afford to cover the entire cost.

While the drop has been cancelled, the winter-over personnel are in no danger, as they have been provided with more than enough supplies to see them through until the Winfly missions in August.

Furthermore, this year's winter-over team were told in advance, during the hiring processes when necessary, that the mid-winter drop was not likely. In addition, the Antarctic bases are linked by satellite and the Internet computer net-

work to the rest of the world.

In Antarctica are 236 winter-over personnel at McMurdo Base, 26 at South Pole, and 13 New Zealanders at Scott Base. They will have no physical contact with other human beings until the Winfly support missions in August, which bring in men and supplies to get the Antarctic bases ready for the summer team.

This budgetary problem is not connected to the US budget shutdown as it was known about before the start of the completed Antarctic season, said Navy spokesman Petty Officer David Lippman.

Although the USAF could contribute their three quarters of the cost of the flights, the NSF couldn't come up with the rest, he said.



BELGIUM

LIGHT PROGRAMME FOR BELGIUM

The 1995/96 Antarctic summer saw a limited Belgium research programme, with only one project being undertaken.

The project, conducted by Dr M Vincx, is part of the third phase of the European nations National Scientific Research Programme.

The programme was originally launched by the Belgium government with a view to giving tangible form to Belgium's desire to play an active part in this research field. With a budget of 92 million BEF, the programme allowed the implementation of ten three-year research projects covering Plankton Ecology, Marine Geochemistry, Marine Geophysics, Glaciology and Climatology. The first phase was from 1985-89.

A second phase of the programme (1988-92) was designed along similar lines to the first, so as to ensure continuity of the research and optimal utilization of the results obtained, on the one hand, and to strengthen the international cooperation network developed during the first phase, on the other. A budget of 96 million BEF was allocated to that phase.

In the light of the growing renewal of international interest in matters concerning the Antarctic, the Cabinet decided to launch a third phase of the Programme (1992-95) aimed at maintaining a level of scientific activity that would allow Belgium to continue to shoulder its responsibilities as a founder member of the Antarctic Treaty.

The third phase of the programme was recently given an extra nine months (January-September 1996). The total budget of the third phase amounts now 158 million BEF.

The overall objectives of the third phase of the Belgian Programme are:

- To demonstrate Belgium's willingness to participate in the international research effort on the Antarctic in accordance with the issues set out by the Antarctic Treaty System.
- To contribute towards the development of scientific terms of reference for the protection of the Antarctic and the rational management of its marine living resources and for the assessment of interactions between the Antarctic and

the climate.

- To exploit the scientific achievements and potential developed so far.

There is no permanent structure nor specific logistics devoted to polar sciences in Belgium. The Antarctic Programme is administered by the OTSC, a government department created in 1972 to initiate, design, launch, fund and manage multi-annual research programmes and activities in various areas including marine sciences, health, remote sensing, public transportation, telecommunications, social sciences and space.

Given the third phase of Belgium Antarctic research programme is to be ended by next summer, field activities over the current summer season are very limited. The one team that will participate is under Professor M Vincx of the University of Ghent, the research project being the Role of the Meiobenthos in Antarctic Ecosystems.

This project involves the determination of the role of the Meiobenthos in Antarctic

ecosystems on the basis of:

- estimates of secondary production (calculated on the basis of detailed temporal series of biomass data) and metabolic activity (measurements of respiration and perhaps also production of direct heat);
- relations between the meiobenthos and its abiotic environment (e.g. what role is played by the meiobenthos in the biogeochemistry of the bottom sediments (in remineralization processes) and what is the influence of organic C (POC and DOC), coming from the water column or regenerated on the sea bed, on the distribution and activity of sea floor fauna);
- determination of the POC/DOC biomass balance at the water column-sediment interface and determination of the importance of meiofauna in this balance;
- food experiments (nematodes-bacteria grazing and importance of diatoms as a food for meiofauna in the littoral regions).



BRITAIN

TRANSFER OF FARADAY STATION

The British Antarctic Survey handed over the oldest of its five research stations in the Antarctic to Ukraine in February. The name of the station, which was established in the 1930s on Galindez Island, will change from Faraday to Vernadsky.

The formal agreement on the transfer of Faraday Station to the Ukraine was concluded in July last year. An Exchange of Notes between the Governments of UK and Ukraine was presented and signed by the Minister of State at the FCO, Mr David

Davis MP and the Ukrainian Ambassador, Professor Sergui Komisarenko. A Memorandum of Understanding containing detailed terms of transfer was signed by Dr Heywood for BAS and Dr Gozhik for the Antarctic Research Centre of the Ukrainian Academy of Sciences. The ceremony was witnessed by FCO, OST, NERC and BAS senior staff, a delegation from Ukraine, various parliamentarians, the Secretary of SCAR and the media.

Detailed plans for the physical transfer

were implemented. These included training Ukrainian staff at Cambridge and Faraday, a short period of joint operation of the station and finally the withdrawal of BAS staff in February this year.

There will be a continuing close relationship with Ukraine through the sup-

ply of long-term geophysical and meteorological data from Faraday to BAS which is a key feature of the agreement. The Ukraine has also formally agreed to operate the station in accordance with the prescriptions of the 1991 Environmental Protocol to the Antarctic Treaty.

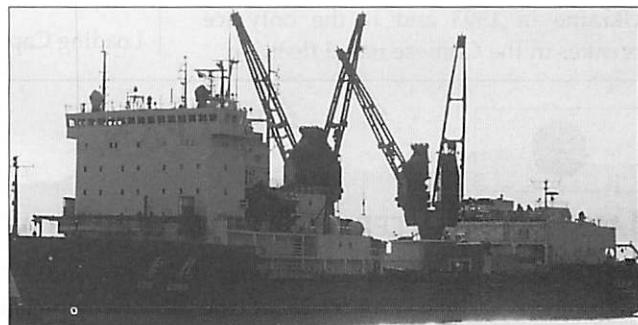


CHINA

ICE BREAKER VISIT

New Zealand has the aircraft and China a powerful icebreaker and both countries are now trying to work out how they can collaborate in Antarctica, the New Zealand Antarctic Programme (NZAP) says.

Cooperation talks coincided with the arrival in New Zealand of the



The Xue Long. Courtesy: Ian Harkess.

Chinese ice breaking research ship *Xue Long*, docked in Lyttelton Harbour near Christchurch. It sailed to resupply China's two bases, Zhong San Base in the Australian Antarctic Territory, southwest of New Zealand, and the Great Wall Station on the Antarctic Peninsula, south of Cape Horn.

NZAP spokesman Tim Higham said China does not have airstrips at its bases and is

dependent on using *Xue Long* to maintain the bases.

He said scientists from *Xue Long* toured the International Antarctic Centre at Christchurch Airport and saw the operations of New Zealand and United States aircraft which leave from there for McMurdo Sound.

"They were quite impressed, in fact once on a Hercules they didn't really want to get off," he said.



Courtesy: Ian Harkess

New Zealand is equally impressed with *Xue Long* and has reached an agreement to place air sampling equipment on board during the current voyage.

New Zealand is anxious to expand on the cooperation as NZAP has no vessels of its own.

Higham said China had around 20 personnel at each base doing a range of upper atmospheric, meteorological and biological research.

The 167m-long *Xue Long* was built in Ukraine in 1993 and is the only ice breaker in the Chinese naval fleet.

XUE LONG'S MAIN SPECIFICATIONS

Total length	1670m
Max Speed	18 Knots
Beam	22.6m
Cruising Radius	14000 miles
Depth	13.5
Main Engine	13,200 KW
Full-loaded draft	9.0m
Auxiliary Engine	(x3) 3x800 KW
Full-loaded displacement	21025T
Loading Capacity	10225T



JAPAN

JAPANESE WINTERING TEAM ARRIVES AT ANTARCTIC BASE

A 14-member Japanese wintering expedition arrived on January 13 at the Dome Base.

It took 19 days to cover a 1000km traverse from a transport base near Japan's main Showa Base which the team departed December 15 aboard snow mobile vehicles.

The Dome Base stands on an ice peak 3800m above sea level.

All members were reported in good physical condition although some of them fell sick en route due to altitude and cold.

The party was welcomed upon arrival at the Dome Base by four expedition members who have been at the base since January last year.

At the Dome Base, the expedition would engage in a scientific mission to survey environmental changes on Earth over the past 200,000 years, group mem-

bers said. They said the survey would be conducted by drilling the ice cap to a depth of about 2500m and examining bubbles trapped in ice.

They said their drill had so far reached a depth of 590m and the mission would be completed by the wintering team over the next year.

JARE FINDS SEED PLANT GROWING

Japanese researchers in Antarctica think the surprise discovery of a seed plant growing near their base camp may be linked with global warming.

The researchers, taking part in Japan's 37th mission to the icy continent, told reporters yesterday that the plant is believed to belong to the rice family and that they will make additional studies after returning to Japan.

Antarctica is covered by thick ice, and creatures are limited to certain kinds of

animals such as penguins and seals, and simple plants such as moss.

The exception is the Antarctic Peninsula where some seed plants grow due to temperatures 5-10 degrees higher than in the Showa Station area.

Hiroshi Kanda, leader of the team, said he was surprised to see a seed plant growing outside the peninsula. He also

said possible global warming might have some connection to growth of the discovered plant.

The plant was first found by a team member in July last year in a rock fissure about 25 km south of Showa Station.

It has dozens of leaves and is about 20 cm tall. In February, the plant grew flowers, the researchers said.



INDIA

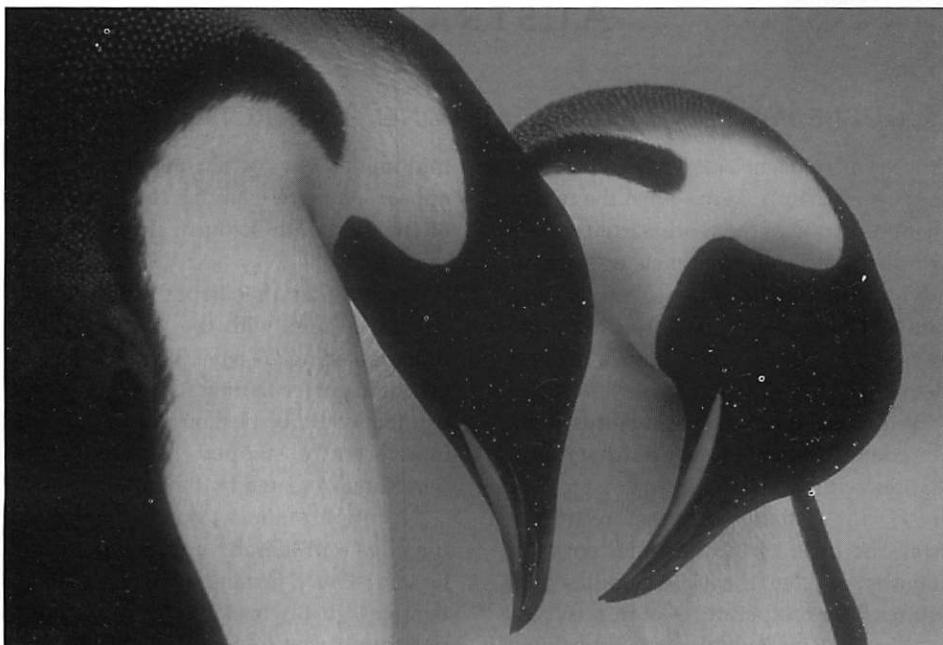
THE ANTARCTIC CLUB OF INDIA

One of the world's most populated and hottest countries has further consolidated its involvement in the globe's coldest and most remote continent with India forming its own Antarctic Club.

According to Chairman M R Joshi, the

Club was inaugurated on 21 June 1995 (Antarctic Mid-Winter day) by Maj Gen N I K Murthy at Dighi, Pune where the Headquarters of the Club is situated.

The goals of the Antarctic Club of India are:



Emperor Penguins. Courtesy of Craig Potton, Craig Potton Publishing.

1. To bring together on one platform all ex-Antarcticans and like minded people interested in Antarctic activities.
2. To promote knowledge about Antarctica.
3. To stimulate thoughts for exchange of ideas, furtherance of information, knowledge, research, techniques and new exploration schemes.
4. To conduct or to assist in conducting conferences, meetings, lecturers/seminars or similar programmes in furtherance of the objective and to create general awareness of Antarctica.
5. To foster fellowship among its members and to promote understanding and goodwill among all persons working in the field of Antarctic studies.

A signatory to the Antarctic Treaty

and the ANTARCTIC Environmental Protocol, India has so far launched 15 scientific expeditions with about 1000 scientists and logistic team members having so far visited Antarctica.

India has a permanent station called Maitri for carrying out scientific work throughout the year.

Scientific studies being carried by Indian scientists in Antarctica are:

- Earth sciences and Glaciology
- Atmospheric science
- Polar Biology
- Human Physiology
- Environmental sciences
- Geomagnetism Engineering sciences & communications

Antarctic will carry full details of Indian Antarctic science programmes in its June issue.



AUSTRALIA

COUPLE RETURN FROM YEAR LONG ANTARCTIC SOJOURN

A year in a lashed-down survival hut measuring 2.4m x 3.6m — just the two of them — in one of the world's coldest and windiest places in Antarctica, was a great adventure which came to an end in January when Don and Margie McIntyre stepped off their yacht onto a Hobart dock.

With marriage intact and spirits high, the couple celebrated their return to civilisation with a spa bath and a meal of fresh fruit — that's after they recovered from the thrill of carpet underfoot after months of condensation puddles and winter floor temperatures of minus five.

Winds of up to 140km an hour, zero visibility because of snow and the 21

mid-winter days when the sun did not appear at all were among the low points of the 12-month sojourn, the McIntyres said.

The weather often kept them inside for days at a time, with the longest stretch indoors lasting 20 days. But they had to go out to get ice to melt for water, a short trip that could be perilous at times if you inadvertently stepped outside of the wind break created by the hut, Don said.

"A couple of times (Margie) just got on the edge and literally got blown away," he said. "She'd just literally get blown off her feet, just whack, gone." Another pressing reason to venture outdoors was the dreaded "bucket run" to empty fil-



Antarctica's inhospitable landscape — Bull Pass. Courtesy of Craig Potton Publishing.

tered liquid waste from cooking, washing and other purposes.

Despite having permission to dispose of human waste in the sea, the McIntyres had intended to bring back all waste, human as well as other. But that meant separating faeces from paper and everything else, a process which got messy, Don said. "We persevered for about a month and it just wasn't working," he said.

"Our storage containers were a bit funny . . . so in the end, our human waste was put into the sea."

The McIntyres spent the year at Cape Denison on Commonwealth Bay, just outside the historic area surrounding the hut Australian Antarctic explorer Sir Douglas Mawson built as the main base for his 1911-1914 expedition.

MAJOR ANTARCTIC RESEARCH VOYAGE DEPARTS HOBART

A major survey of marine life and the waters they inhabit, in a vast area of the Southern Ocean adjacent the Antarctic continent, will be the focus of a research voyage that departed Hobart 11 January.

The Australian Antarctic Research and

They did a complete photographic survey of Mawson's hut so the Australian Antarctic Division can compare it with 11-year-old photographs to help determine the rate of deterioration.

Other projects undertaken included surveying penguin populations, a comparison of weather with that recorded by Mawson and collecting seal excreta for biologists at the Australian Antarctic Division.

A television documentary of the experience is also being made and the McIntyres will publish a book of their adventure. They also had weekly 30-minute conference calls via a satellite telephone with schools around the world. Information from the calls was put on the Internet to reach an even wider audience.

Margie said she cried almost every day for the first six months they were in Antarctica but her outlook changed over time. "Some days you used to wish it was a tropical paradise," she said. "But then, I always wanted to go to Antarctica and all the way through the year the most frustrating part was that if an ice-breaker did turn up on the doorstep, I probably wouldn't have got on it."

Don, who considers the day they were left alone on the ice as a high point of the year, agreed. "Leaving the place was pretty tough," he said.

Supply Vessel *Aurora Australis* will travel to the Antarctic to carry out one of the most comprehensive research studies of the Southern Ocean region ever attempted. Thirty eight scientists will spend 77 days sailing some 5000 nautical

miles of the Southern Ocean carrying out a diverse range of experiments and surveys.

The scientists, from both Australia and overseas, will be combining their skills to further understand the distribution of krill and other marine life and of the physical oceanography of the region between Prydz Bay and the Balleny Islands in the Antarctic, including the distribution of bottom water.

"Krill are the mainstay of the Antarctic ecosystem providing food for most of the larger animals of the region — the whales, seals, birds, fish and squid — as well as being the focus of the largest fishery in the Southern Ocean. Management of this fishery must take into account the requirements of krill predators and should be based on the best scientific information available.

The aim of the krill survey is to provide the international management body — the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) — with information on the distribution and abundance of krill off the Eastern Indian Ocean Sector of the Antarctic so that it can set a "precautionary limit" on the krill fishery in this area. Precautionary limits are conservative estimates of safe harvesting levels that allow for the needs of the krill-feeding animals. These limits also allow for the orderly development of the fishery which is

thought to be still well below its potential sustainable level." says Dr Steve Nicol, a principal research scientist with the Australian Antarctic Division and voyage leader of the marine science expedition.

The region to be surveyed for krill is also a source of Antarctic bottom water. Bottom water is an important factor in climate and global change because it acts as the pathway into the deep ocean for cold waters to spread into Northern Hemisphere waters. This redistribution of cold waters helps to make the earth's temperature more uniform.

Dr Nathan Bindoff of the Antarctic Cooperative Research Centre in Hobart said, "The primary aim of the survey will determine the location of the sources of bottom water, estimate the amount which is formed and observe the way it evolves as it flows westward along the continental margin. In addition, the joint analysis of the biology and oceanographic data will mean that the biologists will be able to relate the distribution of krill in this region to the underlying circulation and nutrient sources which sustain them.

The oceanographic measurements will provide data on the ocean currents thus giving an idea of how the krill and their larvae are transported in this coastal region, whether they are active or carried passively by ocean current. This has important ramifications for fishing and the krill stock."

HERITAGE STUDIES AT DAVIS AND MAWSON STATIONS

Sam Rando of the Australian Antarctic Division and Martin Davies an historical archaeologist have spent two months at Davis and Mawson stations recording and assessing the many historical sites.

Some 20-30 old station buildings remain at both Davis and Mawson stations. These structures reflect early life at Australia's Antarctic outposts and include early domestic buildings such as sleeping

quarters, kitchens and recreation huts, stores and scientific laboratories. The spartan and simply functional nature of these buildings are typical of those utilised by expeditioners for a period of almost 40 years up until the rebuilding program. Also present at these two stations is an assortment of old field huts, traverse vans, vehicles, machinery and early scientific equipment.

Mawson has the distinction of being the oldest continuously occupied station on the continent, being established in 1954. Davis station was established some three years later.

Within the hinterland of both of these stations are numerous proclamation sites, typically consisting of rock cairns and containing documents detailing territorial claims. Some such sites associated with the Australian explorers Sir Douglas

Mawson and Sir Hubert Wilkins have already been located.

Mindful of the cultural heritage values of these old stations, and the desirability of retaining something of their historic nature, the Australian Antarctic Division is currently undertaking heritage studies of Mawson and Davis.

Such studies include collating historical background information, analysing the evolution and integrity of the stations and their individual components and changes in use, alterations and the physical conditions of each structure. The cultural significance of each structure will be determined, as will the obligations and constraints within which this material can be managed. Based on this information, recommendations will be made concerning the future management of the old stations at Mawson and Davis.

HISTORIC ANTARCTIC LANDING SITE REDISCOVERED

Australians have rediscovered a cairn and flagpole that marks the landfall in 1935 of what could be considered the first woman in Antarctica.

On the 20th of February 1935, Captain Klarius Mikkelsen, master of the Norwegian fuel tanker the *Thorshavn*, set out in a boat accompanied by his wife Caroline and seven crew members, to make a brief exploration of a previously uncharted section of the Antarctic coastline.

Taking with them some provisions for a short stay together with materials to build a cairn, they set foot on a rocky island off what is now known as the Vestfold Hills. The party hoisted the Norwegian flag and constructed a small cairn to mark the spot, naming the

region Ingrid Christensen Land — in honour of the wife of the Norwegian whaling magnate Lars Christensen in whose enterprise they served. They also left a box of supplies. This was the first landing in this part of Antarctica. But it was significant also in that Caroline Mikkelsen was the first woman to set foot in Antarctica.

The team of expeditioners who have served at Australia's Davis Station during the 1995 Winter season, wishing to mark the 60th anniversary of the Norwegian landing, began the long search for information on the location of the cairn and the life of Caroline Mikkelsen. The cairn was last sighted by an Australian team in 1962. With information from the records of earlier

visits and leads from many sources, Davis Station leader Diana Patterson, together with heritage assessment personnel Sam Rando and Martin Davies, set out to rediscover this historic site.

The cairn was located on the western side of the largest of the islands in the Trynne group, which is at the northern end of the Vestfold Hills, some 29 kilometres north east of Australia's Davis Station. The 1935 explorers reported that the island was home to a large Adélie penguin colony with large numbers of half grown chicks and penguin guano up to a metre thick stretching as far as the eye could see from the cairn. sixty years later, the site still remains home to many hundreds of Adélie penguins.

The site and contents of the cairn appear to be undisturbed, and Australian officials are considering how to recognise the site and best protect it and its contents.

The Davis expeditioners' exhaustive search for information included a request to the Norwegian Polar Institute in Oslo, which eventually led to an advertisement being placed in the Norwegian press seeking information on Caroline Mikkelsen.

To the joy of all who have sought information on this remarkable woman, the advertisement was noticed by Caroline Mikkelsen's son.

Caroline, now 89, she still lives in Toensberg, near Sandefjord, in south-eastern Norway and is said to have very clear memories of her Antarctic explorations earlier this century with husband Klarius.

HOBART BUILT ANTARCTIC BARGE LAUNCHED

The Australian Antarctic Division launched a newly constructed fuel and cargo transfer barge in early January.

The 12.4m 32 tonne capacity fuel and cargo barge was constructed by Taylor Brothers of Hobart. The barge, which was shipped to the Antarctic in mid-January on board the *Aurora Australis*, will be used for fuel and cargo transfer operations at Australia's Antarctic stations. The barge is designed to be off-loaded from the ship when it reaches the Antarctic station, filled with fuel carried on the ship and then towed to the shore where the fuel can then safely be pumped to the station.

The barge has been specifically designed with multiple fuel compartments which provides a safeguard against fuel spillages should the barge be damaged. The use of the barge also alleviates the need to pump the fuel ashore through hoses laid over the sea ice, again further reducing the risk to the environment from any accidental fuel spillages. The barge may also carry cargo ashore on its deck.

The barge is to be named the *Bob Jacklyn*, in honour of one of Australia's longest serving Antarctic cosmic ray scientists.



SUB-ANTARCTIC

POLAR BIRD VISITS SUB-ANTARCTIC ISLAND

The Antarctic supply ship MV *Polar Bird* left Hobart in early January for Macquarie Island. Previously known as *Icebird*, the *Polar Bird* is currently under charter to the Australian Antarctic Division for a re-supply voyage to Macquarie Island, as well as for a major supply operation to all three Australian Antarctic stations that will commence later in January.

The *Polar Bird* delivered personnel, supplies and fuel to this subantarctic island wilderness that lies some 1400 km southeast of Hobart. While at the Island, helicopters carried onboard the *Polar Bird* will also undertake the re-supply of the various outlying field huts on the island which are used by scientists working on a wide variety of research projects.

On board for the round trip to Macquarie Island will be His Excellency The Honourable Sir Guy Green, Governor of Tasmania. Sir Guy, who will be making his first official visit to the Island, is hoping to use his Macquarie Island experience in support of Tasmania as a centre for Antarctic and subantarctic activities. Macquarie Island was declared a Wildlife Sanctuary in 1933, a (Tasmanian) State Reserve in 1972, a Nature Reserve in 1978 and was internationally recognised by UNESCO as a Biosphere Reserve in 1977. Macquarie Island is a dependency of the State of Tasmania.

The Commonwealth Government, through the Australian National Antarctic Research Expeditions, has operated a research station on the Island since 1948.

Macquarie Island is extensively vegetated with herbs and sedges, grasslands and mires — but no trees. The Island is renowned worldwide for its diverse wildlife population, including elephant and fur seals, penguins and a great variety of birds including the magnificent wandering albatross.

Following its return from Macquarie Island the *Polar Bird* will be reloaded in readiness for a 50 day voyage to the Antarctic continent, that will involve the delivery and return of personnel and supplies to Australia's Casey, Davis and Mawson stations.

WHALING CONTROVERSY

Greenpeace has questioned the validity of research conducted by two Japanese vessels that visited Wellington in early March.

Greenpeace's whale campaigner Nikki Searancke said the two vessels, minus their harpoons, were an unwelcome sight in Wellington harbour. For two months the vessels have been conducting a "sight and count" Minke whale research project funded by the Japanese government.

"While Greenpeace welcomes scientific research on all whale species, the public should not be fooled. This type of research, covering many thousands of miles of Southern Ocean Sanctuary counting Minke whales and other endangered whale is obsolete. For

example, in New Zealand, scientists study and count southern right whales in their breeding grounds (the Auckland Islands) each summer, a far more efficient way to validate the data than travelling thousands of miles," she said.

The great body of evidence already gathered concludes only that there could be as few as 50,000 or as many as 700,000 Minke in the Sanctuary, due to the inherent difficulties of counting Minke in a vast ocean.

Greenpeace continues to lobby the government to ban whaling supply ships from New Zealand ports and to stop Japanese whaling under the guise of "scientific" whaling. This year Japan made an increased kill in the Sanctuary rising from 330 Minke whales last year to 440 this year.

Responding to Greenpeace's statement on National Radio, DOC spokesman Mike Donoghue said: "The

Scientific Committee of the Whaling Commission supports whale research of varying kinds all around the world.

The vast amount of money put up for this crew, which probably costs in the order of \$3 million US dollars, has been put by the Government of Japan."

The main purpose is to get abundance estimates for Minke whales in the Antarctic in the hope that some time in the future the international community will agree to a resumption of commercial whaling in the Southern Ocean."

" . . . of course the reality is that the Southern Ocean is now whale sanctuary until at least 2004 and world opinion is very solidly against commercial whaling. So my view is that this is really the old guard in Japan still trying to maintain the same types of cruises that they have been doing for the last ten years and I think it really is time that these cruises came to a stop."

GENERAL NEWS



40 YEARS AGO

As the Antarctic community prepares for the celebration of the forty year anniversary of New Zealand's establishment on the ice and of the International Geophysical Year, *Antarctic* has delved in to its archives to reprint some interesting snippets from previous bulletins. These clippings come from the first edition of *Antarctic*, March 1956, which replaced the earlier *Antarctic News Bulletin*.

SITING NEW ZEALAND BASE

The main task of the New Zealand observers with American Operation Deepfreeze was to locate a suitable site for the base camp to be established in the McMurdo Sound area next summer by the New Zealand expedition under Sir

Edmund Hillary, which is to provide the supporting party for the Trans-Antarctic crossing under Dr Vivian Fuchs.

To this end the observers carried out two long sledging journeys, and several long-range reconnaissances made possible by the helpful cooperation of the

American expedition.

(*The Antarctic News Bulletin* had reported in December 1955 that the New Zealand observers were Dr T Hatherton, Mr B M Gunn and Lt. Cdr. W J L Smith)

After hearing Dr Hatherton's report the Ross Sea Committee approved a site at the foot of the Ferrar Glacier as the New Zealand expedition's base.

The position is at the north-east spur of the northern foothills west of Butter Point at 163 degrees East. Two triangular-shaped glaciated terraces have been cut on this spur. The lower rises from sea level in a series of steps to almost 300 feet. It is perhaps 600 yards wide at the eastern end, tapering to a point to the west. It has a 60 yards wide "beach" apparently covered throughout the year by snowdrift ice.

The surface is entirely morainic and is mainly gravel and sand. Drainage is excellent. The site is well protected by the Bowers Piedmont ice and by the hills, except to the north. Four miles away at Butter Point materials and stores can be unloaded upon permanent ice direct from ships and taken to the site without delay. With a little route-finding access to the Ferrar Glacier should be possible for vehicles and dogs.

REINDEER IN THE ANTARCTIC

"*The Polar Record*" (September 1955)

confirms the report in *Antarctic News Bulletin* (March 1955) that reindeer have been introduced into the Kerguelen Islands. Two pairs were taken from Lapland by air and were set free almost immediately. It is hoped that they will acclimatise themselves and become the basis of a reindeer stock in the islands. Reindeers have been well established on South Georgia since 1911, when three bucks and seven does were brought from central Norway. There are now several hundreds on the island.

PENGUINS IN THE ARCTIC

It is also no longer true to say that "there are no penguins in the Arctic". The newspaper "*Lofotposten*" reported on July 5 1954, that a penguin had been seen by a farmer at Selsoyoddan in Hamaroy. A writer in the Norwegian Whaling Gazette while admitting that penguins and auks may easily be confused, thinks that the farmer may have been right in his belief that it was a penguin he saw.

Nine king penguins were released in Lofoten and Finnmark in 1936, and in 1938 some birds of smaller species were released.

There have been several reports up until 1949 of penguins being seen in various parts of north Norway.

THE OZONE DEPLETION SCAM

This article is taken from an appendix in Peter Toynbee's book "Greenhouse — the Biggest Rort in Christendom" and is largely based on "The Holes in the Ozone Scare" by Maduro and Schauerhammer.

Solar radiation reaching the Earth, contains ultraviolet radiation, of wave-

length shorter than that of visible light. Most of the dangerous component of this UV is absorbed by ozone in the stratosphere, only a small proportion reaching the Earth. Ultraviolet light is essential for many of Nature's needs, but over-exposure can, in certain cir-

cumstances, be dangerous.

Sunburn with human beings is a case in point. UV has a varying effect on people, depending on their colouring and their accustomed exposure to the sun. Most New Zealanders, through their various recreational pursuits, spend a great deal of time in the sunshine, and many of them do not take enough care to prevent sunburn. Inevitably, they run the risk of developing skin cancer — with its varying degrees of seriousness.

Ozone is a three-atom molecule of oxygen that exists mainly in the stratosphere at a height of some 20 to 25 km and at a concentration, in that area, of about 1 ozone molecule per 20,000 molecules of oxygen. It is formed by the incidence of UV on oxygen, and it is destroyed by other UV, the ozone reverting to oxygen — a continual destruction and replacement of the ozone which Nature's forces have always managed somehow to balance.

Despite its very low concentration, stratospheric ozone absorbs UV being converted to oxygen as described above, preventing most of that UV from reaching the Earth. The presence of ozone in the stratosphere is recognised as essential for the protection of Earth's inhabitants in this way.

UV exists in three distinct bands, designated A, B and C. UV-B, the biologically-active radiation, is the only one to cause sunburn. When we speak about UV generally, we are referring to UV-B.

Concern for any ozone depletion relates only to UV-B. UV-A is relatively unaffected by ozone. UV-C, of which the most important role is the reverse process, the



Cracks in the Ozone theory?

Courtesy of Craig Potton, Craig Potton Publishing.

conversion of oxygen to ozone—at an inconceivable rate of several billion tonnes per second — reaches Earth only in trace amounts.

There is no doubt that ozone levels in the stratosphere vary widely on a seasonal basis — from natural, and poorly understood, causes. (The early measurements were always only at one local point). There is an example in Scotland, where ozone levels fall each year by 50% and return to the normal level, all within a month — it's natural, unexplained. The extent of these variations has been confirmed in recent years with the introduction of satellite measurements that can cover every part of the Earth.

There are also variations (with a range of about 5%) in the stratosphere's average ozone level, which occur in step with the sunspot variations of the solar cycle — without there being any overall trend. In 1988, the Ozone Trends Panel (OTP) claimed that their research showed that ozone levels had fallen 0.2% per year over the previous 17 years, without any mention that this 17 years covered a period between a high (1969) and a low (one-and-

a-half solar cycles later) in 1986. They could just as reasonably, have used the same record, as illustrated by Angel (1989), to prove that the ozone levels were increasing by a like amount — between a trough and a peak!

(This reasoning by the OTP, is no more logical than comparing a February temperature with an August temperature 18 months (or one-and-a-half annual cycles) earlier, to prove that global warming had occurred. They certainly would not get away with any such six-month span, and it would seem unlikely that many would accept this eighteen-month one.)

It was certainly not good Science on the part of the OTP. Several well-known scientists objected, but their voices were unheard. There is record of one — there were probably more — who submitted his criticism to a "reputable" scientific journal, only to have that article rejected.

The natural variation in stratospheric-ozone levels has been seized by the ozone doomsayers who ascribe it to Man's use of manufactured chloro-fluoro-carbons (CFCs). The lack of comparable measurements of ozone before CFCs were introduced, limits the logic of any such argument — as happens with so many of these environmental scares.

These CFCs were the perfect chemicals for use in aerosol sprays, in fire extinguishers and especially as refrigerants, in which application they soon took over almost completely. They are insoluble in water, of high density (both in liquid and gaseous form), non-toxic, non-combustible, non-explosive, chemically very stable and inert, whose boiling points and latent heat made them most suitable for use as a range of refrigerants.

However, it was their most valuable

property — the stability of the CFC molecule — that led to the supposition, in 1974, that some CFCs, which inadvertently escaped into the atmosphere, would remain there unchanged, to become distributed around the world, before they eventually wafted up into the stratosphere. Here, it was claimed, the CFC molecules were broken down to chlorine by the UV. This chlorine "destroyed" ozone molecules which then were not available to prevent the UV radiation from streaming through to Earth.

With a high degree of publicity, this prognosis caught the public imagination and pressure was applied to prohibit the use of these CFCs in aerosols, fire extinguishers, etc and a decision was taken to phase out their use as refrigerants — the date of that final phase out is fast approaching.

Then, in February 1984, an extensive National Academy of Sciences report presented the finding that there had been no discernible change in the average ozone level between 1970 and 1980. Reflecting the change in public opinion, an editorial in the *Wall Street Journal* (1984) condemned the policy that had banned CFC aerosols as "rash judgments unsupported by conclusive scientific evidence".

But the doomsayers still had another shot in their locker. In 1985, they "rediscovered" the "southern anomaly" of ozone variations during the Antarctic Spring, as reported in 1956-57 during the International Geophysical Year. Those earlier measurements had been carried out with equipment that restricted operations to very limited areas.

The prophets of doom called this brief, annual reduction in ozone levels, the "Antarctic Ozone Hole" and again most

people fell for the publicity and for the implication of a "hole" through which UV radiation would "pour". Panic again set in, and again, the public largely accepted the horrendous stories of the effect of these CFCs.

Now, some ten years later, sanity seems to be reasserting itself, with an ever-greater realisation of the nonsense of it all — while the doomsayers fight a rearguard action to sustain their scam.

However, a few points which illustrate the nonsense of the ozone depletion claims, are briefly described:-

The so-called "ozone hole" is a completely-natural reduction in ozone levels, localised and transient, which had been observed before CFCs could have caused it. It is associated with the naturally-occurring polar vortex which, in turn, depends on the cold conditions of Antarctica (there is no comparable vortex in the Arctic where it is less cold — and no "Arctic Ozone Hole"). Each year, the polar vortex effectively seals off the Antarctic atmosphere from the normal (high-level, equator to pole) circulation, and the normal replenishment of ozone within that enclosure does not occur. When the polar vortex breaks up in Spring, and the normal circulation of ozone-rich air is restored, normal ozone levels are immediately restored! The transient reduction in ozone levels, emotionally referred to as the "Hole", lasts for only about two months each Spring and at such a time and place that, if there were any increased UV, it would have no ill effect at the Earth's surface.

The breakdown of CFCs by UV is no more than a hypothetical interpretation of the complicated and little-understood photochemistry of the stratosphere — it is

unproven. If chlorine were an effective agent of ozone destruction (the effect of the polar vortex, as explained above, does not necessarily depend on the presence of any chlorine), it is far more likely to be derived from the naturally-occurring chlorine that exists in the stratosphere in far-greater quantities — from salt spray, and from volcanos. Mt Erebus is a continuously-erupting volcano in Antarctica and during the extremely-cold period of reduced-ozone levels, there is little moisture in the atmosphere which, as rain, could carry the hydrogen chloride down to Earth. Remember, too, that during the period of concern, Mt Erebus' chlorine is being discharged into small enclosure of the polar vortex, and at a rate roughly equivalent to the chlorine in the World's production of CFCs. Imagine how much chlorine within the polar vortex would be derived from CFCs (generated mainly in the other hemisphere, about as far away from Antarctica as you could get, and which are evenly distributed in the Earth's atmosphere before they rise into the stratosphere, to become concentrated within this closed vessel), and how much would be derived from Mt Erebus "right slap bang" in the middle of the polar vortex!

There is urgent need for extensive surveys of the incidence of UV-B reaching the Earth. This is a relatively-simple and straightforward measurement that could quickly prove or disprove the argument as to the effect of fluctuating ozone levels in the stratosphere — but such measurements are certainly not in the interests of those who want to sustain the ozone scare. Tests at nine locations in USA were carried out between 1974 and 1985 (Scotto et al 1988). These showed some variability in

UV intensity, without any long-term increase — in fact, there was a small, probably — insignificant, decrease over the period. At that point, the survey was quickly stopped. Scotto, who (honestly but perhaps unwisely) argued the importance of such tests and the need for their continuance, has been finding it hard to obtain research funding since!

The doomsayers seem never to consider measuring the incidence of UV at the Earth's surface (the ultimate criterion of the dangers of ozone depletion) — presumably because that would inevitably destroy the credibility of their claims.

There is no correlation between this UV incidence and the naturally-varying levels of ozone in the stratosphere; there is no proof that chlorine is actively destroying ozone there; there is little likelihood that chlorine in the stratosphere is derived from CFCs. Yet the doomsayers develop some scenario involving these several facts, and promote futile argument supporting their spurious, unsubstantiated claims that have no bearing on the essential issue — that the incidence of UV is not increasing.

A parallel situation arises, just as farcical as that already described with global warming. The established Truth in respect to the constancy of the incident UV at the Earth's surface, is not mentioned — while some loony scenario is presented, which has nothing to do with said established Truth, and horrific tales of the effect of UV-B on melanoma deaths, drive the layman silly with fear.

Exposure to the Sun and the prevalence of skin cancer are very grey areas indeed. Man's changing habits are increasing the risk of his being affected by such cancers. Sedentary work is leaving him less pre-

pared for his expeditions into the Sun, for instance on his increasing holiday activity, and he is much more likely to travel great distances to his holiday place — invariably a sunnier spot. Under these conditions, a considerable increase in skin cancer could be expected.

It is not hard to develop an emotional response to the tales of skin cancer resulting from the false claim of increases in UV at the Earth's surface. The brainwashing would class all skin cancer as the dreaded melanoma, whereas in fact, the proportion of melanoma is less than 4% of all skin cancers. By far the most common form is basal cell carcinoma — something you want to avoid but which seldom has any serious consequence. These carcinomas become more annoying in later life, and it is not unnatural that an ageing population can become convinced that they result from some current increase in UV at the Earth's surface — when, in fact, they are primarily the product of age and of great times enjoyed, over the years, in the Sun.

These remarks are not meant to dismiss any concern for basal cell carcinomas — or to imply that there is no need for the publicity programme that encourages everyone to avoid excessive, unprotected exposure to the Sun. They are meant to counteract the unreasonable publicity that all skin cancers are melanoma and potentially fatal.

Medical science has no clear understanding as to the cause of melanoma — of which many features are distinct from those of normal sunburn. For instance, melanoma frequently occurs some twenty years after a period of increased exposure to the Sun. It frequently occurs on a part of the body which is not subject to normal

sunburn — for instance, the soles of feet, or the buttocks. Melanoma can occur with dark-skinned people who are normally little affected by sunburn. It is not increasing significantly in New Zealand.

Lately, it has been suggested that melanoma could be connected with artificially-induced suntan. Also, there's the suggestion that it might be associated with UV-A against which he is receiving no protection.

This confusion between sunburn and melanoma raises a lot of doubts as to the fears commonly generated by all the scaremongery.

Finally, a body blow to the doomsayers' wild predictions — and to their 100-year, "worst case" scenario (which is certainly not accepted by the sceptics) for a projected increase of 10% in the UV reaching the surface of the Earth. Now, we have to know that the incidence of UV increases with decreasing latitude, with an approximate increase of 1% for

every 10km one moves closer to the Equator.

So, the effect of this worst-case scenario, a 100-year change in UV at the surface of the Earth, would be equivalent to moving 100km towards the Equator — ie., from Dunedin to Oamaru, Christchurch to Cheviot, Wellington to Palmerston North, or Auckland to Waipu.

Do CFCs with their wonderful properties, really present such problems that their use must be prohibited. Might it have anything to do with the fact that the CFC — manufacturing rights of the international chemical companies have now lapsed — could it be that these industrialists want the World to buy their new, patented, inferior, dangerous and grossly more expensive replacement refrigerant, rather than be free to manufacture the far superior safe, low-cost CFCs for themselves? *Peter Toynbee is a retired DSIR scientist who lives in Wellington.*

References:

- Angel (1989) "On the Relation between Atmospheric Ozone and Sunspot Number" *Journal of Climate* 2 404 November.
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ANTARCTIC ETYMOLOGY

An Australian project is seeking to capture the rich culture and history of the continent in a unique way with a dictionary of "Antarcticisms".

Bernadette Hince, an Australian scientist, is compiling the 1000 word dictionary while on assignment over the current summer as a weddell seal watcher for the Australian antarctic programme. Her project aims to record words or phrases either originating from, or of special significance

on the continent.

"This includes the common names of birds (such as snow petrel, Adélie penguin, etc) and other fauna, names for items associated with human habitation and activity here (such as apple hut, expeditioner, fids, whizzer, mukluks, ventiles, Haggs, hoosh, pemmican), words for the ice (such as pancake, tabular berg, grease ice, frazil, one-year ice), landforms (such as nunatak), meteorology, climate and other

astral things (ozone hole, whiteout, southern aurora), and of course slang which is always fun to talk about (such as getting slotted, having a kodak attack, or a greenout when you get home, or counting ellies — elephant seals). Also any words which include "antarctic", such as antarctic midge, antarctic convergence etc," says Ms Hince. She is also including the subantarctic in the dictionary, including a couple of inhabited areas (Tristan da Cunha, the Falklands) as well as New Zealand's subantarctic islands.

The dictionary will cover all the English-speaking bases in the Antarctic—New Zealand, Britain, South Africa and the United States, as well as Australia. However she admits that ". . . it will probably have an Australian bias, given my nationality and access to resources, but then so do the territorial claims have such a bias!"

Language says a lot about the culture of a certain place or civilisation. Ms Hince perceives two key forces behind the development of White Continent's unique vernacular.

"One is the extraordinarily different environment of the place. Because it's so different, we have to search for new words to describe what we're seeing. That's why we've borrowed quite a number of arctic words to use here, such as sastrugi, mukluk, nunatak, and archaic words like finesko — another skin boot."

The second is the isolation: jargon and strange words can develop easily in a small and completely isolated community. The words I'm interested in are the ones which last beyond one single group in one single year, the ones which get passed on from year to year and get used in print."

Ms Hince's etymological project is the

first of its sort for Antarctica. "I'm using the big Oxford English Dictionary as the template (which is a) "historical" dictionary, which means that you include quotations from published sources in each definition. So if you're defining Adélie penguin, you look for the first use you can find of Adélie penguin in print, and then a good scattering of later ones, and you put some of these into your dictionary under "Adélie penguin" to show people how long that name's been around (and) who first might have used it."

Although this is the first Antarctic dictionary, a dictionary has been compiled of Alaskan English which contains similar words such as mukluks and banana belt.

The history of a unique Antarctic language is as old as exploration of the region itself, says Ms Hince. The first person to record crossing the Antarctic circle, Captain James Cook, provides early quotations for some words in the dictionary as well as the early 19th century sealers and whalers, and explorers like James Clark Ross in the 1840s.

A whole spectrum of interesting new words emerge from the so-called "heroic age" (a dictionary entry in itself) of the late 19th and early 20th centuries. There has been a steady trickle since then with an increasing number in the last 20 or 30 years.

The dictionary demands painstaking research and attention to the smallest facts, says Ms Hince.

"I have been reading as many publications as possible, and writing down any small segments including words I'm interested in. So I have about 11,200 quotations on my database at the moment, and I guess these might average somewhere between 50 and 100 words apiece. I'm

reading all sorts of things: scientific papers and books, novels plays and poems set in Antarctica, ordinary newspapers and magazines, coffee table books on Antarctica: literally anything that talks about the place.

"I have also been talking to people and of course just by being here listening and looking. I couldn't have written this without coming here: I just wouldn't have been familiar enough with the things I am now defining."

Ms Hince gained experience in compiling dictionaries during a three year stint working on a dictionary of Australianisms in the mid 1980s.

"I wrote most of the natural history part of this, which actually amounted to quite a lot of the total (about a third). That experience got me hooked on dictionaries. They are such fun to write and to think about," she says.

A stint at the Bureau of Mineral Resources in Canberra (now the Australian Geological Survey) followed. Ms Hince was able to develop her interest in Antarctica by talking with the many scientists from the Bureau that had "gone South".

"As I listened to their tales, they'd use words I didn't know. And I started to think there are probably enough words here for a little dictionary. So I started collecting my words then, about 6 or 7 years ago. I'm very interested in Antarctica and its history, in words, their history, how scientists use language, and in natural history in general. Antarctic words are very much natural-history focused, so it was a good way of combining these different interests."

The dictionary is currently listed in the Australian Antarctic Division's approved research topics but the division is not providing funding.

The Museum of Victoria has assisted by awarding Ms Hince the 1995 Sir Thomas Ramsay Science and Humanities fellowship. This enabled her to work fulltime on the dictionary for the whole of 1995, whereas before it had been a part-time pre-occupation.

Ms Hince expects to complete a draft of the dictionary in 1996, with publication due in 1997. She hopes it will be available for sale in New Zealand and has started compiling a mailing list for those who would be interested.

CAN YOU HELP?

Bernadette Hince's project is a ground-breaking foray into the Antarctic lexicon, one that would be enriched by contributions from fellow Antarcticans.

She has had little trouble compiling Australian entries but would be very interested in any contributions from the Antarctic lingo of New Zealand, United States, Britain and South Africa.

Ms Hince can be contacted over the Antarctic summer at:

Davis Station,

email: bernad-hin@antdiv.gov.au, or fax number (672) 10-658.

And from May 1996:

Communications, Bureau of Resource Sciences, PO Box E 11,

Queen Victoria Tce Parkes, ACT 2600,

email: bhince@brs.gov.au, tel: (616) 272-5960, fax: (616) 272-5050

BID TO SALVAGE CRASHED PLANE FROM ANTARCTICA

The first aeroplane to land in Antarctica, which still lies where it was wrecked in 1929, may be salvaged and restored if a Christchurch man's plans are realised.

Chris Rudge, who worked in the Antarctic with the Department of Scientific and Industrial Research, said it was sad the Fokker monoplane (*Virginia*) used on the 1929 Byrd expedition had been left to the elements.

As the first aeroplane casualty in Antarctica, *Virginia* had a place in polar history. Although lying in the open for 66 years, the aircraft was in remarkable condition. Mr Rudge is trying to generate interest in an expedition to retrieve the aircraft and bring it to Christchurch. He thought it would be an appropriate exhibit at the Antarctic Centre or the Canterbury Museum.

The Antarctic Heritage Trust, which administers 34 officially listed historic sites in Antarctica, including the Fokker crash site, indicated it was not opposed to the Fokker monoplane being removed for restoration.

The trust's executive officer, Paul Chaplin, said that although the aircraft lay in the Ross Dependency and was technically within New Zealand territory, questions of ownership might arise because it was owned by an American expedition.

The Fokker was one of three aircraft used for Admiral Richard Byrd's 1929 Antarctic expedition.

During a field expedition to a remote part of the Ross Dependency it was damaged beyond repair in a storm in March 1929.

Mr Rudge said the Fokker was in a remarkable state of preservation. The fuselage framing, tail and tailplane were still intact and some of the aircraft fabric had also survived.

The Fokker's engine was salvaged in 1934 and the aircraft had been visited several times between the 1950s and 1987 when Mr Rudge accompanied an inspection group.

Mr Rudge hoped sponsorships from New Zealand and America could be found to rescue the Fokker.

CAN YOU HELP?

Does anyone have any information about the Virginia N4453 Fokker Super Universal? It was built by the Atlantic Aircraft Company in New Jersey, USA. No matter how small the information please contact Chris Rudge at 43 Cornwall Road, Lyttelton, Christchurch, New Zealand OR Andrew North, Dominion Road, Seadown, RD 3, Timaru, New Zealand.

Any other information or data about aircraft used in Byrd's expeditions between 1928-1941 would also be welcomed by Messrs Rudge or North.

BOOK REVIEWS

ARCTIC & ANTARCTIC; THE WILL AND THE WAY OF JOHN RIDDOCH RY MILL

John Bechervaise. Compiler & Editor.

(Bluntisham Books. 1995, 230pp., 25 illustrations, 4 maps, text notes, bibliography, index. Trade paper back. £14.00 postpaid surface mail from the publisher, Air Mail is extra). ISBN: 1 871999 07 3.

This very welcome addition to the Arctic & Antarctic biography genre examines the life and times of a dedicated polar explorer John R. Rymill (1905-1968).

An Australian who at a very young age became interested in the polar regions, Rymill deliberately set out to educate and train himself as a polar explorer. He took courses in anthropology, ethnology, and navigation at the Royal Geographical Society, acquired a private pilot's license and was already a very accomplished ski-er.

Rymill received his first practical polar experience with the British Arctic Air Route Expedition, 1930-31 (BARRE), in Greenland, under the leadership of Gino (G.H.) Watkins. On the 2nd Arctic expedition, 1932-33, he became leader after Watkins drowned.

The next highlight of his polar career, and a dream of Watkins, was an expedition to Antarctica, The British Graham Land Expedition, 1934-37 (BGLE). This expedition's goal was to explore the little known area along the west coast of what is now called the Antarctic Peninsula. It was a very successful expedition on a very small budget and laid the foundation for future exploration in this area.

John Rymill wrote an expedition narrative called "*Southern Lights*", which was published in 1939.

After paying off the debts of the expedition and finishing the expedition narrative, Rymill's life took a completely new turn. He became a pastoralist on the family estate in South Australia; a sheep farmer, bringing to it the same enthusiasm and determination that he used in his exploration. He married Dr. Eleanor Francis who bore him two boys.

He worked hard to improve the station eventually converting it to cattle. At the same time Rymill established a very successful international seed co and became a very enthusiastic horseman well known in Australian equestrian circles.

Rymill died on the 7th September 1968 in a car accident.

The book's compiler and editor, Dr John Berchervaise, is to be commended for this outstanding biography. The difficulties of compiling an accurate record were compounded by the fact that Rymill did not leave a written record of his accomplishments.

The book has an attractive soft cover, with 25 photographic illustrations and four maps. A bibliography and a helpful index are included.

This is a must for any polar library and anyone who collects biography, particularly fellow Australians.

Reviewed by John Millard.

The New Zealand Antarctic Society Inc., was formed in 1993. It comprises New Zealanders and overseas friends, many of whom have been to the Antarctic and all of whom are vitally interested in some phase of Antarctic exploration, history, development or research.

The annual subscription entitles members to: Antarctic, published each March, June, September and December. It is unique in Antarctic literature as it is the only periodical which provides regular and up to date news of the activities of all nations at work in the Antarctic and the subantarctic. It has a worldwide circulation. Newsletters for New Zealand members and an annual newsletter for overseas members. Regular meetings are held by the Auckland, Wellington, Canterbury and Otago branches.

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