ANTARCTIC

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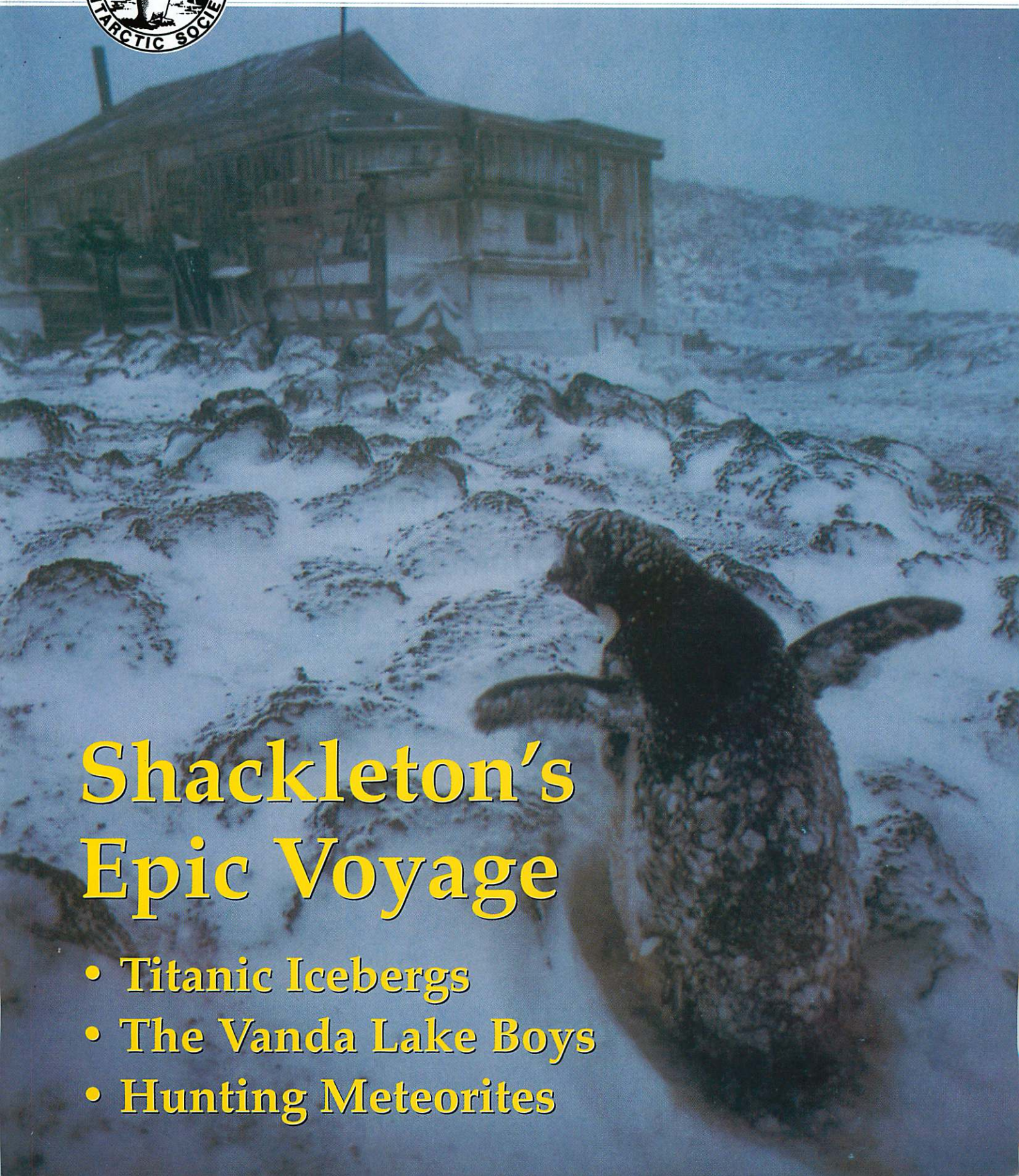

Shackleton's Epic Voyage

- Titanic Icebergs
- The Vanda Lake Boys
- Hunting Meteorites

ANTARCTIC

COVER PICTURE

Our cover illustration of Shackleton's Hut is courtesy of © Colin Monteath of Hedgehog House and is sourced from his magnificent book 'Antarctica: Beyond the Southern Ocean', published 1996 David Bateman Ltd, reprinted 1997, 160pp. Price NZ $50.

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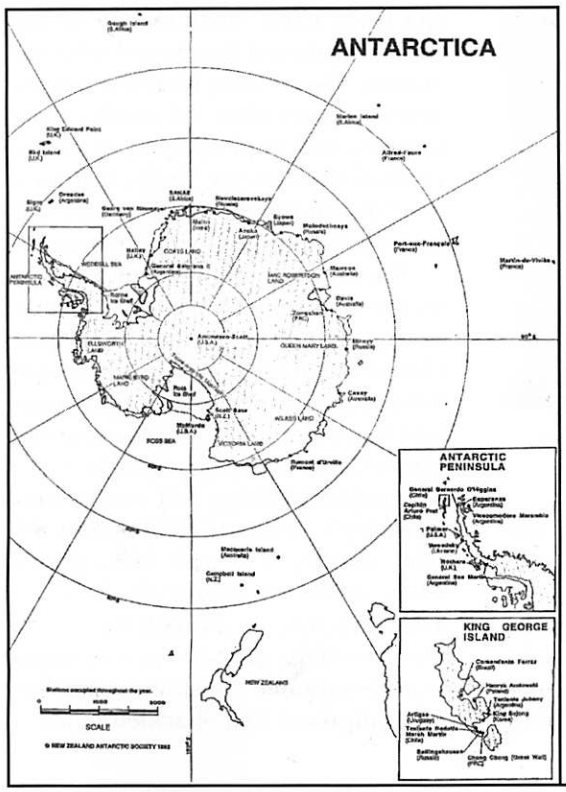


CONTENTS

SHACKLETON'S EPIC BOAT VOYAGE RE ENACTED

Four men have successfully re-enacted Shackleton's epic 1916 open boat journey from Elephant Island to South Georgia, including his climb over the island to the Stromness whaling station to raise the alarm for his stranded men.

Several previous attempts by other expeditions to re-enact Shackleton's rescue voyage have been attempted; all but one have failed. In 1994, Trevor Potts and three companions successfully completed the journey from Elephant Island to South Georgia in the *Ernest Shackleton*.

The four men of the Shackleton 2000 Expedition were Arved Fuchs and Martin Friederichs, both of Germany; Sigridur Ragna Sverrisdottir from Iceland; and Henryk Wolski of Poland.

In 1916, Ernest Shackleton's Imperial Trans-Antarctic expedition suffered a major setback when the crossing party's ship, the *Endurance*, was beset by pack ice in the Weddell Sea and was eventually crushed. From that point on, Shackleton's highest priority was ensuring the survival of his men. The group moved to Elephant Island and from there, Shackleton left for South Georgia with five others in the *James Caird*, leaving behind 22 men under the leadership of Frank Wild.

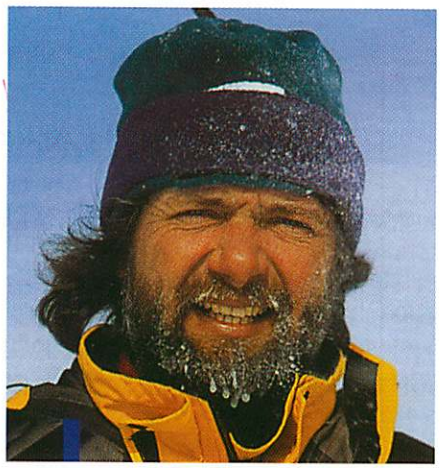
Shackleton's voyage with Worsley, Crean, McNeish, Vincent and McCarty across 1300 km of ferocious sea in what was a modified open boat is one of the greatest Antarctic epics. Reaching King Haakon Bay on the south coast of South Georgia, the rescue group them climbed across the spine of the island to the whaling station on the northeast side to raise the alarm.

The Shackleton 2000 Expedition, together with *James Caird II*, a replica of the famous whaling boat, was transported from Ushuaia, Argentina, by the German-owned Hapag Lloyd tour ship, *Hanseactic* on 6 January 2000. The tour ship was accompanied by a 20-metre sailing vessel, the *Dagmar Aaen*, which had a German Television network film crew aboard making a documentary of the re-enactment.

The *James Caird II* was launched at Hope Bay on January 19th, and travelled to Point Wild, Elephant Island, arriving nine days later, shortly after the *Dagmar Aaen*. Arved reported that the 230 km journey from Hope Bay had been very cramped.

The *James Caird II* left Point Wild for South Georgia on 30 January, shadowed faithfully by the *Dagmar Aaen* and its film crew. They encountered difficult weather and adverse winds initially, but eventually the winds backed to the northwest, and progress to the northeast improved.

Their best day's run was 160km.



Arved Fuchs and his expedition team traced the legendary route.

Before arriving at South Georgia, the small boat encountered winds of 60 knots as well as a significant number of large icebergs that made the approach to King Haakon Bay difficult. On 12 February, Shackleton's former camp was reached at Peggotty Bluff near the head of the bay.

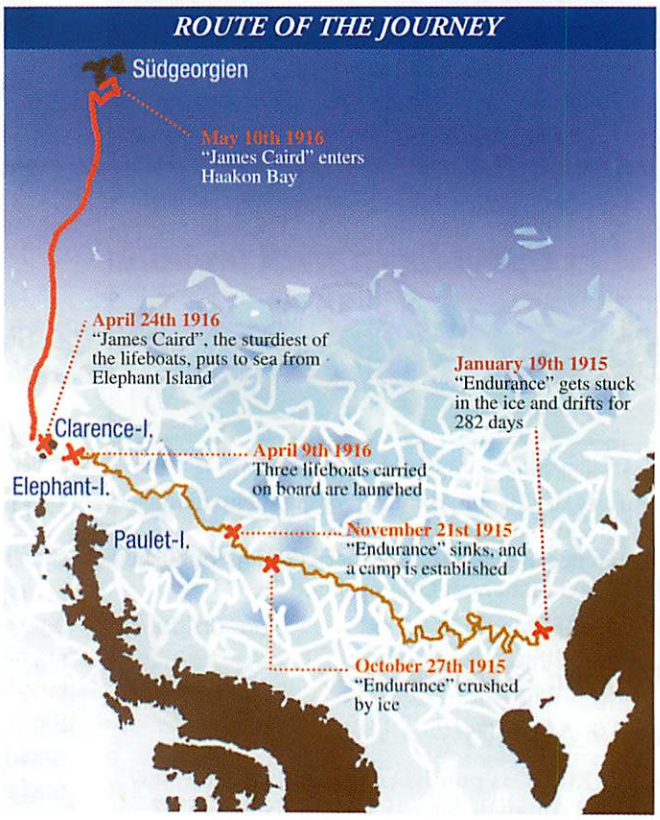


Photo & Map courtesy Hapag-Lloyd

The re-enactment was complete when the four men followed Shackleton's route across South Georgia from King Haakon Bay to the now-abandoned Stromness whaling station. The crossing took seven days, with poor weather for much of the journey, and difficult open crevasses on the Crean Glacier. The men arrived on 23 February, and were later picked up from Grytviken by the *Hanseactic*.

The re-enactment was much earlier in the year than Shackleton's actual voyage, which had begun on 24 April (Easter Monday), at a much colder time of the year. In addition, six men had been crammed into the original James Caird with none of the benefits of modern clothing and equipment. Worsley's account ("Shackleton's Boat Journey") records some pretty hairy moments during the original voyage, while the difficult three-men traverse of the island in just 36 hours was remarkable considering the basic equipment that Shackleton had.

SUCCESSFUL SEASON AT CAPE ROBERTS

With the closure of its third season this summer, the Cape Roberts Drilling Programme has been an undeniable success, both in terms of international co-operation and in obtaining new information about the geological history of the Transantarctic Mountains and the development of the Antarctic ice sheet.

The total cost of Cape Roberts has been NZ $11m, including the price of the drill rig and running costs, shared by a consortium of seven countries: New Zealand, the US and Italy with a 26% financial stake each; Germany, 10%, Australian and the UK 5% each; and the Netherlands 2%. Professor Peter Barrett of Victoria University, New Zealand, was Chief Scientist. The drilling rig, drillers and the overall management of the project were provided by New Zealand, with Jim Cowie as Project Manager.

Geophysical surveys of the Ross Sea floor indicate that up to 14km of sediment has accumulated in downfaulted troughs, and the Cape Roberts Programme has concentrated on drilling near the margins of the basinwhere the sediments are thinnest and more accessible. Each year the drill site has been moved to a new position to reach different parts of the sediment pile.

Pat Cooper, chief driller, watches the drill stem at Cape Roberts 3. Photo: Malcolm Laird

During the first year (1997-98), drilling had to be abandoned after coring 148 metres, due to a storm-generated ice break out. In the second year (1998-99), 624m of sediments were drilled and beds of Oligocene age reached. New inflatable floats were used to help support the weight of the drill rig.The accommodation buildings for the programme were just off the mainland at Cape Roberts, but the drill site on the sea ice had a science lab, a mud hut and a lounge. Alex Pyne was Technical Manager and Pat Cooper the Chief Driller. Different scientists, most of whom lived at McMurdo or Scott Base, were responsible for different aspects of the core as it emerged.

In the 1999-2000 year they planned to focus on older sediment lower in the sequence, which might record the onset of the polar glaciation.

Cape Roberts 3 was drilled 12km seawards of Cape Roberts in water that, at 295m, was 100m deeper than the previous site and was technically more difficultEach night the core, split down its length, was flown by helicopter from Cape Roberts to the Crarey Lab at McMurdo in 20m lots. The remaining half-cores were taken to Cape Roberts Camp and, at the end of the season, would be taken for storage in the US.

The cores at McMurdo then underwent 'fast track sampling' under very controlled conditions. The cores, kept at a constant temperature of 4 degrees C, were supervised by a Core Curators Tom Janacek and Matt Curren. Each morning, at 8am, the cores would be brought into the lab and examined by the sedimentological team. Then, after a public presentation and discussion by the team, and under the curator's strict control, a team of specialist scientists was able to study the new core

Continued on page 78

TWO TRAVERSES PLANNED BY WOMEN

Two separate pairs of women will attempt crossings of Antarctica via the South Geographic Pole during the 2000-2001 season.

Liz Arneson of Norway and Ann Bancroft of the United States plan to cross from Dronning Maud Land to the Ross Sea via South Pole and the Axel Heiberg Glacier. Both women have previously skied to the South Pole, Arneson being the first woman to do this in 1994-95.

The expedition is being organised and promoted by the US-based company Base Camp Promotions.

Extensive medical studies on Sorby and Slettemark are being undertaken before and planned for during the Antarctic expedition.

Both women are teachers and plan to correspond with schools in many countries via their Web site and by email during the traverse. The 2950-km crossing will begin from the coast of Dronning Maud Land north of Adventure Network International's blue ice runway, and is expected to last 100 days.

An unsupported crossing was originally planned, but a resupply of food and equipment will now be made at the South Pole. Arneson and Bancroft have both started training on Great Slave Lake in the Canadian Arctic, at

Continued on page 92

Continued from page 77

in a locked room. They were not allowed to touch the core, only to plant miniature flags at the levels they wanted to investigate. The rigid security was necessary to prevent over-enthusiastic scientists breaking up the valuable core and pocketing some 'unofficial' samples for their research. During the afternoon, the curator would then take carefully recorded samples from the flagged sites for the scientists to start studying.

The CRP 3 hole exceeded all expectations, passing well beyond its target of 700m; when it hit 940m, it became the deepest hole to be drilled in the Antarctic sea floor.

Dr Malcolm Laird, sedimentologist and Senior Research Fellow at the University of Canterbury, said that the drill hole had passed through sediments dominated by glacial deposits into earliest Oligocene, less ice-influenced sediments below.

Twenty-two glacial advance/retreat cycles could be recognised in the core, with periods of coarse-grained ice-contact sediment deposition recognisable down to 300m depth, and more distal glacial involvement down to 380m. Despite vigorous discussion as to the detailed environment of deposition, the general opinion was that the core largely represented mid to outer shelf for the glacially influenced sediment.

From 380-580m, the core passed through clean, well-sorted sands, some showing the effects of ocean storm wave disturbance and muds. Coarse glacial deposits were absent, although occasional isolated stones, probably dropped by icebergs, were present.

Fossils, unfortunately, were disappointingly few, and dating the sediments was difficult. Deeper still, the core passed through 30m of an ancient gravel (conglomerate) with boulders up to a metre across, suggesting deposition by rivers.

An erosion surface (unconformity) covered by angular blocks resembling those in scree, lay not far underneath the gravel. Below this, unexpectedly, was typical Beacon Sandstone as found in the Transantarctic Mountains. These rocks were possibly as much as 350 million years older than the Tertiary sediment above.

Finding older Beacon rocks was a great surprise, as geophysical profiles suggested a much greater thickness of Tertiary sediment in this region than was actually found.

Above: Specialist scientists of several nations study the day's new core in the Crarey Lab, indicating with small flags which parts of the core they wish to study in more detail. Photo: Malcolm Laird

Right: Ross Powell in the core lab at Cape Roberts. Photo: Malcolm Laird

Left: The "mess" at Cape Roberts base camp. Photo: Malcolm Laird

SURFING ANTARCTICA

An eight-man expedition to the west coast of the Antarctic Peninsula in early 2000 in search of good surfing conditions had only limited success. The surfers were affiliated with the US-based Surfer's Medical Association, and included three medical doctors, one full-time professional surfer, three journalists and a photographer. The claim has been made that the group contains some of the "best-known and most experienced surfers in the world", most having being involved in surfing for over 20 years; none, however, had had previous Antarctic experience.

The expedition used the Falkland Islands-based 20m steel schooner Golden Fleece skippered by Jeremy Poncet, who has sailed the area on many occasions over the last two decades. The expedition began in Ushuaia, Argentina, on 31 January, and proceeded to search for suitable locations as it travelled southwards from Elephant Island to Gerlache Strait, Anvers Island and the Lemaire Channel. The furthest south reached by the group was the Ukrainian station Vernadsky in the Argentine Islands.

Only Harmony Point and Low Island provided good surfing conditions. The surfers wore specially designed head-to-foot wet suits, which included goggles. None of the group reported any serious cold-related problems during surf sessions, which sometimes lasted an hour or more.

ROWER DOGGED WITH GREAT MISFORTUNE

Lone rower Joe Le Guen was forced to abandoned his attempt to row a boat across the sub-Antarctic part of the Pacific Ocean between New Zealand and Cape Horn on 3 April. Le Guen was just over a third of the way into his planned 8300km voyage when he was taken on board the container vessel *Palliser Bay* on medical advice some 2700km south-east of New Zealand.

The rower was transferred from the ship to a hospital in Punta Arenas, Chile, where, according to media reports, he was said to be "ill with blood poisoning and possible gangrene from wounds on his feet". Eight of Le Guen's toes had to be amputated, and the remaining two were removed in France several weeks later. Le Guen is reported to be healing well and is expected to be able to walk again.

Le Guen left Wellington, New Zealand, on 3 February in a 9m boat, *Keep it Blue*, heading generally east-south-east, meeting heavy seas and high winds over the next seven weeks. His speed during that time averaged 1-2 knots, about the same as the eastward heading current in these regions.

The boat's name reflects the project's aim of "raising awareness of the need to preserve the oceans". The boat had been built in France for the trans-ocean attempt late last year. Oars are its only means of propulsion. With the rower and his supplies on board, the boat's total weight was just over one tonne. Le Guen was directly affected by the shut down of the Iridium satellite-based telephone service in mid-March, and special arrangements had to be made to ensure that a minimum guaranteed telephone service was available for at least part of the journey. The 20m yacht *Kingfisher*, on its way to France to compete in the single-handed, non-stop Vendee Globe around-the world yacht race, was asked to divert to Le Guen's position to deliver equipment to him.

Despite numerous attempts during the 23 March rendezvous, the transfer was unsuccessful due to difficult sea and wind conditions, and the equipment was lost overboard.

On-board satellite transmissions are continuing to be received from *Keep It Blue*, which was abandoned when Le Guen transferred to the *Palliser Bay*.

Data received from its Argos beacon indicate that the row-boat is still afloat, and has drifted several hundred kilometres from where it had been abandoned.

Private Group Studying Ellsworth Meterorites

A private, non-profit organisation known as the Planetary Studies Foundation (PSF), collected 20 "stony" meteorites in Ellsworth Land region during an 18-day expedition last January. The meteorites are currently being examined in an US laboratory and will go on public display later this year.

The US-based Planetary Studies Foundation group is an educational organisation whose objective is to involve students in the study of planetary science and astronomy. It was established in 1989 and sponsors field programs aimed at providing students around the world with direct access to science via the Internet.

It is also working towards building a planetarium and research centre and has established a meteorite exhibit at a NASA facility in the US.

The Antarctic ice sheet offers the best location on the planet for meteorite preservation and recovery. Over the past 40 years, researchers from France, Japan, Russia and the US, have collected over 16,000 samples from a range of Antarctic locations. A large number of research papers have been written about the composition and origin of these objects from outer space, and there has been considerable scientific controversy as to whether or not one collected from the Allan Hills in Victoria Land contains evidence of primitive life on the planet Mars.

The PSF collecting group was led by Professor Paul Sipiera, a US planetary geologist with previous Antarctic experience. The remainder of the 10-person group comprised Richard Hoover, an astrobiologist with NASA, retired astronauts Owen Garriott and Jim Lovell, school teacher Sharon Hooper, field personnel David Butts, Bill Gruber, and James Pritzker, and Amanda Onion and Adam Petlin from a US cable TV outlet. The group was air-lifted by ANI from Punta Arenas, Chile, and then transferred to the Thiel Mountains, using ANI snowmobiles for the meteorite search. One meteorite was collected near the Patriot Hills, but the remainder were found near the Thiel Mountains.

Most of PSF's 200 members are from the US, although a small number come from Australia, Canada, France, Germany, New Zealand and the UK. Funding for the PSF programmes comes from corporate, personal and membership sources. To date, the Foundation has organised six expeditions to various parts of the world, three of which have been to Antarctica.

TITANIC ICEBERGS CALVED

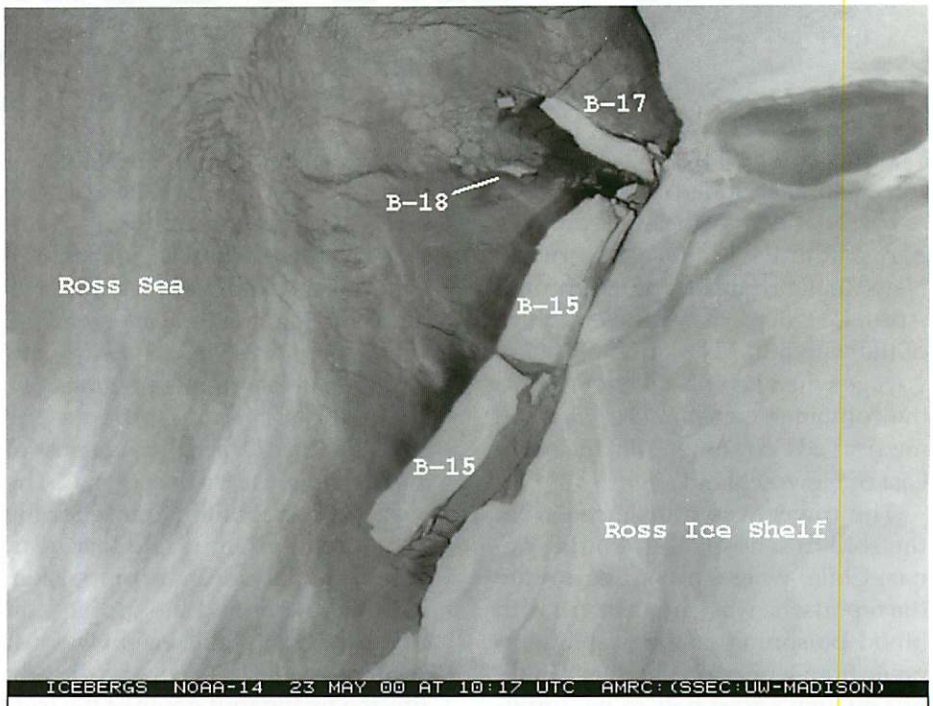
B15 Breaks all records

The largest and longest iceberg ever recorded broke away from the central edge of the Ross Ice Shelf just west of Roosevelt Island in March. The 295km long, 11,000 square kilometre iceberg was dubbed B15 because it is the 15th iceberg to be tracked in the B quadrant of Antarctica (90° W to 180°).

It calved away from the ice shelf with another large berg, B16, and is estimated to be about 100m at its thinnest part at the ice front, thickening to 350m at the inner margin.

Within 10 days of calving, B15 started to exert pressure on the eastern part of the ice shelf where the giant B9 iceberg calved in 1987. On 30 March, B15 caused the calving from there of another massive iceberg, B17. This 110km long berg split into four within a day, and one piece was large enough to get its own name, becoming B18.

Using satellite imagery, Douglas MacAyeal of the University of Chicago produced a model to show how B15 had been jostled by tides. These tides drove the giant berg back into the Ross Ice Shelf where B15 caused the calving of B17 and its fragment B18.



Satellite image of the new mega icebergs on 23 May, processed by the Antarctic Meteorological Research Centre, University of Wisconsin, Madison. North is approximately towards the top-left corner, and the front of Ross Ice Shelf runs approximately west-east. The largest bergs are B15A and B15B, with B15A (165 x 39km) to the west starting a clockwise rotation while drifting WNW. B16, which calved at the same time as B15, is about 200km out of the image to the WNW. B17 and, to a greater extent, B18 are rotating counter-clockwise and drifting WNW. B19 is the long, narrow (43 x 7km) berg at the southeast end of B15B. These two bergs drifted west about 50km along the ice front in the 40 days since escaping from the calving notch in the ice shelf.

Photo: Antarctic Meteorological Research Center, University of Wisconsin-Madison

The B15-B16 calving event involved 11,500 square kilometres of ice shelf, while the total B15-18 calving event represented about 13,500 square kilometres, possibly the largest calving on record. The June-September 1986 calving of an estimated 13,000 square kilometres from the Filchner Ice Shelf north of the long-known Grand Chasm rift appears to be the largest previously documented calving. The January 1996 breakout from the Larsen Ice Shelf produced the previously largest known iceberg A20 which was 9,000 square kilometres (see Antarctic vol. 13 no 9, p. 361).

The calving and small movement of huge icebergs such as B15 would be very difficult to see without the use of modern satellite imagery. Before modern technology, large icebergs were only discovered when observed from a plane or ship, often long after the original berg had begun disintegrating.

B15 is unlikely to have been the largest iceberg ever. Most recent massive bergs have broken up within two years as they have been relatively long and narrow and not thick or coherent enough to withstand forces exerted by swells, tides and grounding. B15 broke in two after about seven weeks, but, interestingly, not at its thinnest or narrowest points.

Another massive berg, A43, which at 250km was the second-longest on record when it calved from Ronne Ice Shelf in May this year, broke in two after only two days. What is now the third-longest berg on record was about 180km long when observed by a whale-catcher in 1927 in the Scotia Sea. It was probably much larger when it first calved as it was a distance of 500-2,000km and possibly some years' drift from probable calving sources. Modern massive icebergs have survived longer than two years drift only when they have been composed of thick ice from single ice streams.

Several institutions are monitoring the floating behemoths B15A and B15B, including the University of Wisconsin Antarctic Meteorology Research Center (AMRC), which tracks icebergs from pictures taken by polar orbiting satellites operated by the US National Oceanic and Atmospheric Administration and the Defense Meteorological Satellite Program. Matthew Lazzara of AMRC reports receiving 10-12 pictures a day.

Understanding global ice budgets is an important contribution to the

Continued from page 80

issue of global change. Icebergs represent the main way the Antarctic ice sheet loses mass. Recently attention has been focussed on ice shelf disintegration in the Antarctic Peninsula caused by rapid regional warming. However only one (A32) of the 26 largest bergs recorded can be attributed to this process.

No scientist has yet hypothesised that the calvings of more than15 other massive bergs recorded since 1980 are anything other than natural calving events. B15 and B17 formed along rifts that had been known since 1987-1997 and formed by normal ice shelf flow. The western front of Ross Ice Shelf is still at its most advanced position in recorded history.

Tracking large icebergs is important as it can provide an early warning for those that look about to drift into shipping lanes, or which threaten the access to base installations. The movement of icebergs is also a guide to the tides and currents around Antarctica, which are still not fully understood. In terms of global climate change, currents are important drivers for moving heat around. We have good evidence that warm currents entering Antarctic waters cause melting from the base of some Antarctic ice shelves and fiord glaciers, and that such melting is the second main way the ice sheet looses mass.

B15A has now escaped from its calving notch and looks set to drift NNW, but at this stage its direction is uncertain. It is rotating counter-clockwise under the influence of possibly two known currents and seems unlikely to cause problems in McMurdo Sound. However some of the smaller but still large bergs that calved with it may begin to enter shipping lanes there from about August. B15A, B and B17 are all likely to break again within the next several months.

Satellite tracking has its limitations because positioning precision is only to the nearest kilometre or so. Consideration is being given to putting technology, such as an automatic weather station and a GPS, directly onto B15A or B. Parachuting a package or landing a plane on a surface of about 6400 square kilometres should be no problem!

– Margaret Bradshaw and Harry Keys

SAVING ANTARCTICA'S 'WHITE -GOLD'

Antarctica may lose its "white gold" — the Patagonian toothfish — but the pirates looting it are not without their critics as a recent TVE Earth Report film, "White Gold", demonstrated at its BBC World global premiere.

The "pirates", who are ravaging the rapidly diminishing stocks of the world's most lucrative fish, call this fish "white gold" because, respectively, of its pale succulent flesh (marketed only in the most expensive fish markets) and because one five-week fishing trip can net the pirates several million dollars.

The fish is better known as the Patagonian toothfish, but when it is sold in the rich fish markets of Japan and the United States, it is marketed as bass: Californian sea bass, Antarctic sea bass, Chilean sea bass, Australian sea bass. The decline in tuna has made the toothfish a valuable commodity.

TVE, an independent non-profit organisation, produced the film after an investigation of Antarctic fish exploitation and its associated threat to the southern albatross. TVE has been working with WWF, Greenpeace, and ISOFISH (a Tasmanian-based NGO dedicated to saving the toothfish) on an undercover investigation into the groups who are not only destroying this fish, but who are also endangering several species of albatross, especially the wandering albatross. The seabirds become caught on the fishing lines as they dive for bait trailed from the fishing boats. The bird's breeding grounds lie on islands adjacent to the continental shelves in the Southern Ocean where the Patagonian toothfish live.

Pooling resources and expertise, the filmers of "White Gold" produced some damning footage in their three-month operation. Working with Greenpeace, they tracked a pirate vessel across 3000 nautical miles of open ocean, documenting the resulting violence perpetrated by the pirates on the high seas. Numerous pirate ships were identified through the computing power of ISOFISH, as well as their captains and unscrupulous owners based in Norway and Spain. They endeavoured to show, using hidden cameras, how the holiday island of Mauritius has become the world's capital for landing illegally caught toothfish. They also documented how a squadron of the French Navy, based on Reunion in the Indian Ocean, does nothing but track down pirate vessels and, when successful, sinks them.

"UNEP believes in giving the public the facts as it strives to alert the world to the grave threats to our shared planet. As we see in these remarkable films, the greed of a few remains a major threat to Earth's rich and irreplaceable bio-diversity,"
– UNEP Executive Director Klaus Toepfer.

The film has been made possible by finance and support from WWF and UNEP.

WWF International Director General Claude Martin added: "This video is a testimony to the urgency to which we must all approach saving species. It is particularly heartening to see the French Navy and Greenpeace working on the same side to give the beleaguered species a chance. The main task must be to close down the markets, harass the Spanish pirate owners and send a message to the world to those who would flout international law that 'you can't get away with it'."

The film comes at a time when discussions of establishing a moratorium on toothfish extraction are under way, a move which has its critics.

"It's ironic that an environmental group is pushing for the moratorium knowing full well it would be a green light for uncontrolled illegal fishing on a grand scale," claims Alastair Macfarlane, Trade Policy Manager of the New Zealand Seafood Industry Council.

Continued on page 83

ENVIRONMENT

WHO ARE THE BEST STEWARDS?

What's the difference between a scientist and a tourist in Antarctica?

This is not the start of a bad joke, but a serious question asked by a group of students participating in the University of Canterbury's Certificate of Antarctic Studies. Their paper, subtitled "A fugue in five voices", dealt with the roles and responsibilities of the scientific and tourist community on the ice, and whether there was any significant difference between the two. The team (Paul Carran, Lester Chaplow, Sarah Hodder, Clair Stafford and Kathryn Yusoff) started their fugue by asking "do the various bodies representing the Antarctic community perceive differences between science and tourism activities, and does discrimination occur as a result?"

Their paper takes a look at these perceived differences, such as the legislation and control issues surrounding access to the historic huts. Images differ too, with tourists being seen as consumers or objects of consideration, while scientists are regarded as participants in the environment. It quotes Brian Foster at a policy workshop noting "whether scientists (information sightseers) have any more right to intrude than tourists (scenery sightseers)".

Scientists, it suggests, through their participation in an international collective body of knowledge, operate as Antarctic ambassadors. Treaty provisions enshrine the special nature of science in Antarctica and place it squarely at the heart of the region's interests and activities. However, the paper warns, increasing commercialisation of such knowledge, may detract from the spirit of international cooperation that is a hallmark of the ice.

The report goes on to note that scientists should not be too blase regarding their role, as there are many examples of undesirable environmental practices associated with scientific activity. Equally, there are examples of responsible tourism, particularly where environmental protection and management is stressed as a result of this activity.

"It could be argued," the paper states, "that the 'true' environmental stewards are all those involved in the protection of Antarctica, and that the most good will be achieved by co-operation and the pursuit of common goals rather than through differentiation."

The paper discusses how the limitations and restrictions embodied in the Antarctic Treaty System have preserved the cooperative spirit internationally. Increasing commercial activity is seen as directly conflicting with such values, and implicitly opening up potential destructive arguments over ownership and exploitation.

"Institutionalised differentiation may be necessary and justifiable in order to protect the values we have placed on Antarctica," it concludes. "For this reason alone, the institutionalised differentiation between science and tourism (commerce) can be justified."

UNITED STATES

WINFLY 2000 HEADS SOUTH

The annual winter air programme to the Antarctic began on August 21 2000, when a US C141 aircraft departed from Christchurch at 6.20am. The plane arrived on schedule at 12 noon taking 74 passengers, plus cargo and fresh food for the winterover staff at Scott Base and McMurdo Station

Three more flights were scheduled to make the round journey to the Antarctic in the same week.

The flights coincided with the official start of daylight at Scott Base. On August 19 the sun's disk appeared on the horizon for the first time since 23 April this year. It skimmed the horizon for 1-3/4 hours from 12.04pm to 1.49pm. From then until 22 October, there will be an additional 23 minutes of extra (official) daylight each day.

Photo © Antarctica New Zealand

ICE RIDE FOR THE CITY-SIDE TOURIST

By Vicki Hyde, Editor 'Antarctic'

"My Mum went to Antarctica. Her truck fell in a big crack in the ice. Everyone crawled out. Another truck pulled the wet truck out. Then they went back to Scott Base for tea.

My son David was five in 1997 when he took this "news" item to school, along with a photo of the Hagglund pitched up on the ice, the back unit half-sunk and floating in the Ross Sea.

It had been an exciting moment — abandoning the vehicle, crawling across the broken ice to firmer ground and then helping get the remainder of the party out through the window along a crevasse plank. The first time in 12 years of operation that such a thing happened and they had a journalist on board complete with camera....

So it's no surprise Davey was a little apprehensive three years later when I announced I was going to try out the Hagglund adventure ride at the International Antarctic Centre in Christchurch. In the six months since opening, the ride has taken almost 17,000 passengers on a tour of the operational side of the centre and over an impressive course which demonstrates the power and mobility of these Swedish military vehicles.

The Visitors Centre had the Hagglund specially built for the attraction. It's a bit more comfortable than the field workhorses — padded seating, larger windows and extra noise shielding — and there are safety belts and hand straps in deference to the mixed-aged groups of locals and tourists taking the ride. But for all that, it offers a special look at one aspect of Antarctic operations not available anywhere else.

Jam-packed bookings indicate the popularity of the approach. In summer, the tours take in the Hercules and other Antarctic planes waiting to service the South; in winter, visitors get to wander through the deserted departure area. The US clothing warehouse impresses with rack after rack of gear, and anecdotes from the Hagglund drivers concerning nose-wipers are sure to draw a laugh.

Then it's on to the adventure course The circuit around the Centre takes in some steep hillocks demonstrating the vehicle's climbing capability; a small velodrome-style circle for speeding around at a steep angle; finishing off with a three-metre-deep pool to show off the vehicle's aquatic abilities. It may not have had the frisson of my initial Hagglund experience, but it was certainly enough to entertain and impress the visitors.

It hasn't all been joy-riding. During September and October the Hagglund spent four weeks in Queenstown taking movie stars up the Remarkables as part of the filming of, appropriately enough, "The Vertical Limit".

Vicki Hyde first rode a Hagglund in 1997, when on Antarctica New Zealand's Media Programme.

Above: There are some times when even the Hagglund's excellent capabilities are put to the test! Photo: Vicki Hyde

The International Antarctic Visitor Centre's Hagglund ride provides an impressive demonstration of the vehicle's capabilities.

Saving Antarctica's "White Gold"

Continued from page 81

"New Zealand is at the forefront of international efforts to stop poaching, and the industry wholeheartedly supports the current measures. Illegal fishing operators aren't going to pay any attention to a moratorium — it would simply give them a free rein."

Macfarlane noted that the New Zealand seafood industry has contributed significantly to research in the Ross Sea, including looking at toothfish and skate. He estimated that without fishing vessels in the area undertaking this work as part of their ordinary operations, the New Zealand government would need to spend $6 million annually to get the same research done.

"A move towards a moratorium on exploratory toothfish fishing would have dire environmental consequences and would effectively halt all scientific research in the area."

OVER MY SHOULDER

THE 'VANDA LAKE -BOYS'

This abridged extract from 'Tales out of School' by Peter Ingram (1998) provides an insight into Antarctic life in the summer of 1975-76.

The greatest tangle of mountains I had ever seen.

They were completely snow covered and paired so they could dictate the flow of the glaciers, gently lowering them to an eventual eastern exit and the Ross Sea. It was a world of pure white without even the blemish of rock face or moraine and comprised the northern section of the Trans Antarctic Mountains. Robert Falcon Scott had also looked across at the same virgin estate and called it Victoria Land after a queen he could no longer serve - Britons were now Edwardians, seventh time around.

I was looking at the scene through the solitary window of a giant USAF Starlifter's galley, as the continent continued to slide beneath us and now we could make out bright blue sea to the east and ahead, the start of the ice shelf and mighty Erebus with its 12,000-foot cone and smoky breath.

We landed on the sea ice of the airstrip, notification of contact with this unusual surface coming more from a change of sound rather than movement. The large cargo door dropped, the great Cinerama spread of ice suddenly appeared and the biting cold washed its way into the fuselage. It was 1500 hrs on a fine afternoon with a 10 knot "sea breeze" blowing. The sun was already considering setting and the air temperature was -28 degrees Celsius.

I had never experienced such cold. Only a circle of face was exposed, but this was enough to convey the message of what Antarctica was mostly about. The interior of my nose now emitted crackling noises to let me know things were icing up in there and that perhaps the mouth might like to help out for a while. But the teeth disagreed with the passage of this incoming blizzard, so a compromise had to be made or one would probably die in a very short period of time.

I met up with the other members of our small team as they straggled out blinking into the bright afternoon light. Our leader was Harold Lowe, a builder from Gore and of Scottish descent. He had previous Scott Base and Vanda experience, and had proved himself a popular and cooperative fellow, so I saw his promotion as well deserved. Peter Braggins was an electrician from Masterton, who would be our technician and was a known tramper and mountain man.

Sid Woods, a farmer from Geraldine whose family had an earlier association with Antarctica, was our field assistant or "muscle man" and mechanic by turn. He was a quiet and studious fellow who could easily run with the rest when it came to a party night (and we would be seeing plenty of those). I trained Sid in meteorological observations and he proved readily adaptable, which gave me chances to later get away briefly with field groups.

Vanda Base staff 1975-76.
From left: Peter Braggins (technician), Harold Lowe (leader), Peter Ingram (meteorological technician), Sid Woods (field assistant and mechanic)
Photo: Neville Peat.

Several special 4x4 buses now arrived from the nearby base of McMurdo and we gladly clambered aboard into their heated interiors. We were told we could "go shopping" in McMurdo for an hour, then further transport would take us to Scott Base, some two miles further on. In my preparations, it had not occurred to me to study the American establishment and I was still away with tents, huskies, Robert Falcon Scott and all that sort of thing - certainly not shopping!

There was plenty to do in the fortnight preceding our departure for the field. I had to change over the solar radiation measuring installation and carry out the lengthy calibration runs. The Met stock had to be checked and old equipment packed for return. Then the laboratory technicians had to be trained in making weather observations and carrying out climatological readings and recording. I mixed this with volunteering to be a "house mouse", helping in the kitchen, cleaning the dining room and forever shoveling snow clear of the buildings and into the melter. Harold and the boys did similarly and sorted out our gear for airlift.

At "night" after dinner, we usually went for a stroll on the sea ice, roped up and with ice axes and crampons as the pressure ridges near the shoreline could be dangerous. It was an excellent climatisation exercise which was invariably followed by a noisy night in the recreation room which consisted merely of a bar and a small pool table. Scott Base at that time, did not have too much room. Outside, the sun bounced merrily around the horizon, disappearing behind the higher ground at times, otherwise maintaining a changing series of sunset glows. We would sip our beer and think and talk Robert Falcon Scott-type things until our eyelids were ready to shut down.

The Scott Base leader, Hamish Raynham, burst in on breakfast and, with characteristic energetic rubbing of the hands and broad grin, announced that the Vanda party was to go into the field tomorrow and should report for a helicopter briefing with the USN at 1500 hrs this afternoon. There was a massive round

of cheering, as it meant everyone would be in the field within a week.

We were the Vanda boys, four of us off to a frozen lake of that name in the central valley systems of the Trans Antarctic Ranges. But the peculiar thing about our particular valley was that it was usually devoid of snow and known scientifically as "dry". This does not sound very exciting, but to geologists and botanists, it meant all was exposed, as there was no snow or ice cap to hide history.

The glaciologists and hydrologists similarly celebrated as they could study glacial form and movement clearly and had the bonus of a real live river, the Onyx, which flowed brightly through the countryside from late December to early February and then abruptly shut down again. And it was perhaps up to the meteorologist to find out and put a plausible tale forward as to why the valley was "dry".

The explanation for the snow free conditions of the Wright Valley (and her adjacent sisters, the Taylor and Victoria) turned out to be quite simple in the end. The Antarctic continent, away from its coastal regions, is a massive desert with a microscopic annual precipitation record. To be such, it needs to be under the influence of a resident high atmospheric pressure zone (anticyclone) where the air mass is perpetually sinking and warming adiabatically towards the surface.

In its last few hundred feet of descent, it mixes with surface air temperatures typically of -40 degrees C, becomes extremely dense and heavy, and starts to slide downhill away from the central polar region. It is in effect, a gravity wind, or what we call "katabatic". The three valley systems are nicely orientated to accept this gravity wind and let it pass daily without hindrance. This dry wind, suddenly warming some 5 degrees in its downward plunge to the valley floor, is only too happy to accept any meagre surface offerings of moisture, that is, any available ice or snow is ablated into the atmosphere and borne away.

Summer solar radiation also assists in maintaining the arid appearance of these so-called dry valleys.

The following morning, we were airborne by 0900 hrs and flying out on a northwest heading from Ross Island to the entrance of our valley some 100km away. Scott had called in an inlet and never ventured into it. The USAF had taken aerial photographs of the region during 1947's "Operation High Jump", but it wasn't until the IGY that the first pedestrian penetration was to be made and by Wellingtonian Ron Balham. The valley was subsequently called the Wright Valley after the Canadian physicist on Scott's 1911-13 expedition. It led due west and inland for some 50 kms, until it came to an abrupt halt at the Upper Wright Glacier and the Polar Plateau beyond.

So we came into this mysterious world, chonking noisily along at about 2,000 feet and providing the first man-made noises of the summer. Glaciers erupted out of ridgetop cols and spat a tongue of white ice down the mountain slopes in an attempt to reach the valley floor, but all failed - they needed an ice age to go the extra distance. How beautifully they contrasted against the colours of the barren slopes and the deep blue of the sky overhead. To our south, the Asgaard Mountains silently observed our intrusion, and to the north, their identical cousins, the peaks and ridges of the Olympus Range, reacted similarly. Surely we were in the lands of goblins and gods.

Lake Vanda and the Wright Valley taken from the top of the Dias. Vanda Station was situated at the far end of the lake. Photo: Tony Bromley.

Ahead now lay Lake Vanda, a broad sheet of white ice and at its eastern end, a small collection of huts which we would call home for the next three months. The helicopter pad was adjacent to the camp's solitary toilet, a doorless villa that took in a millionaire's view of the mountains and, as an added bonus, pointed to the morning sun. Constipated field parties were known to flock to this comfortable shrine before even coming to us to report their arrival. Just don't be in there when a helicopter arrived or it was all airborne toilet paper and dust, coupled with the thumping rotor wash as the pilot attempted to evict the trouserless victim.

Harold warned us not to be dismayed when we opened the door to our lodgings, so we decided to look non-committal at the six-inch carpet of fine snow across the floor. Evidently, the valley tended to get a bit "wet" at times during the winter. So while Peter and I got stuck in with snow shovel and broom, Sid took a fresh 6-volt battery out to the family tractor to wake it up. This machine was a Ferguson from Ed Hillary's TAE stable, and although it hadn't gone on the Polar run, it had done a similar mileage and at least wasn't languishing in some museum like others we had seen. Sid pulled the rag out of the carburettor, hooked up the battery and cranked her into immediate life. Peter and I emerged into the sunlight with our task completed and Harold asked us to take the tractor and trailer down to the lake to get some "water". The tractor was a willing beast, but a periodic rock would strike a front tyre and a terrible oscillation would run right through the whole steering system. Perhaps the kingpins, then, had been on the rigorous South Pole trip.

We drove out onto the lake ice and Peter dismounted and took a mighty swing with a pick at the grinning surface. I thought the lake would be split in half, but no, only a half inch indentation appeared and Peter was left nursing his badly jarred hands. Like Jerome K. Jerome's "Three Men in a Boat" and their can of pineapple, we tried everything out on that lake surface - even getting a bucketful to take back would be something. But to no avail and we reported back to the boss for further instructions. Ah! You took a crowbar, of course, and tackled the pressure ridges. Within 10 minutes we had a full trailer load of ice and threw it into the now heating melter.

Part 2 of the 'Vanda Lake Boys' will appear in the next issue.

THE RIDDLE OF THE ANTARCTIC PENINSULA

The Story of the French Antarctic Expedition 1903-5: Part II

by David E. Yelverton FRGS

Charcot, forced to winter no farther south than Booth Island, had consoled himself that Français Cove lay as far south as Robertson Island, and was exactly suited to supplement the observations by the Swedes at Snow Hill, and Mossman's at Laurie Island.

With the *Français* disencumbered once the huts, instruments, stores and dogs were safely installed ashore, and an awning erected over the fo'castle, the twenty men of the French expedition soon had their larder augmented with copious rations of seal, penguin and fish. Only two men found it impossible to stomach seal meat, readily eating penguin instead.

Adélies and seals remained on the island, so that, by mid-winter, they had amassed enough to last them through to the spring.In spite of the varied menus, on which Argentine beef and veal figured six times weekly, fish three times, seal three times, and penguin once a week, Matha came to Charcot on 18 July 1904 to report that he felt too ill to carry on with the multiple duties he had been carrying out.

Among other duties, he had been carrying out hydrography, surveying, meteorological and pendulum gravity measurements. His rather drawn face, following fits of fainting four days before, had hardly perturbed Charcot, for they all looked pallid and tired by that time.

But here was his second-in-command with swollen limbs, suffering from palpitations and obviously in the last stages of exhaustion on precisely the day Hanson, on Borchgrevink's expedition, had developed identical symptoms, before his eventual death in October just five years before.

Remembering with relief that Lecointe's similar symptoms, in July 1898, had been cured in two weeks by Cook's treatment, Charcot had Matha spend many hours each day naked in front of the red-hot stove. His obvious signs of scurvy were hard to credit, for none could say their diet had lacked fresh meat of one kind or another. All Charcot could do otherwise was treat the cardiac symptoms, augment the patient's diet with copious quantities of fish and tinned milk, and keep him in his bunk.

The fear of losing Matha added a third dimension to the threats already building against his spring sledging plans. Still centred on resolving the enigma of the strait beyond Cape Tuxen, Charcot's every sight of the coast had underlined the impossibility of a land route for exploration. Since the previous month the sea ice had also begun to look like a totally unreliable route for a sledge journey. Even in mid-June the southern bay of the island, on their direct route to Krogmann and Petermann Islands (De Gerlache's Hovgaard and Lund Is) was swept almost clear of ice. If it could break up then, what chance had they of sledging across it in the spring ?

Nevertheless he had to try and establish a depot on one of the two islands. A dangerous but successful ski trip with Pléneau, Gourdon and the dogs down the Lemaire Channel to the far island, a week after Matha had reported sick, convinced him that the southern end of Krogmann Island offered the better site. Three days later, with Matha showing signs of steady improvement, he succeeded in placing the first supplies there, the three men accompanied this time by Rallier du Baty, and Paumelle in charge of the two sledges pulled by the dogs.

The journey was a painfully slow progression, with Charcot in front probing every step of the way, and might well have been disastrous, for, after their return that same evening, a storm burst upon the cove. It threatened to end the expedition and smash their small ship to pieces, trapped between the shore and the advancing masses they could faintly see at the gates of their haven, as the wind hurled and the swell broke, grinding the ice in the cove against the hull.

In the gloom of the polar night, amid the threatening din of the storm, they hastily evacuated the ship, getting Matha ashore in his sleeping bag, to lie in the portable hut among the orderly ranks of stores, now invaded by a jumble of vital things from the ship. For eight hours the others lay in their tents outside, the threat of being marooned and losing their ship hanging over them until the storm began to die down.

By 5am it had passed, and Charcot and his weary team returned to their bunks for a few hours' sleep. The ordeal was repeated on 4 August, and for the second time the ice massed at the entrance to the cove, the swell threatening to hurl the ship on to the land. Again he ordered everyone ashore as the wind suddenly reversed, and the perilous prospect of shipwreck loomed. For several hours Charcot felt their luck had run out, and that they would be condemned to more than a year in tents awaiting rescue. But again the storm had subsided, and they all got back aboard.

For Charcot the relief that they had survived was tempered by the certainty that his sledging plans were in ruins. They would have to make the spring journey by boat, and who was to say they would survive among ice driven by such storms. But at least the cove had saved them, and if the ship could survive those two storms, he could not imagine worse. They would start when the weather improved.

Following two vain attempts to set up a depot on Krogmann Island, during which fog stranded them on an islet barely 20 yards square, Charcot had only managed to reach the island on 3 September 1904.

Intent upon reaching his first goal beyond Cape Tuxen in the whaler, he had at last succeeded in augmenting the small emergency depot sledged to Krogmann Island the day of the first storm. This time his party woke to find themselves marooned there by the state of the ice. Three days later, at considerable risk among the grinding floes, the party regained their base just in time to escape the next in a succession of north-easterly storms that held the ice in their bay Attempts to establish a second depot on

Petermann Island were repeatedly baulked during the greater part of the following three months.

If that frustrating period saw the worry about Matha lifted when the second-in-command improved sufficiently to resume his surveying at the end of September, Charcot's patience had been tested to the limit when, once more stuck on Krogmann Island for three days, no sign of a break in the ice showed to the south. Climbing the island's highest peak he thought he saw a ribbon of water running south along the mainland shore. They would just have to use that.

Back at the ship final preparations for the crucial journey began on 21 November, and when the ice looked feasible in the southern bay on the 24th, Charcot gave the word to go.

With his four companions — Pléneau the geologist, chief engineer Gourdon, midshipman Raymond Rallier du Baty (a qualified mercantile officer and son of an admiral), and the seaman Besnard — and the boat loaded with 20 days' supplies, a collapsible sledge and the instruments, they set off at 2 o'clock in the afternoon. They dragged the boat, weighing perhaps 850kgs in all, over the ice for three hours before reaching open water. It was almost dark when they dragged the boat ashore on an islet off the southern tip of Krogmann Island. A second exhausting day brought them to Petermann Island, and on 26 November they fought their way over to the mainland only to find the channel leading south was no such thing.

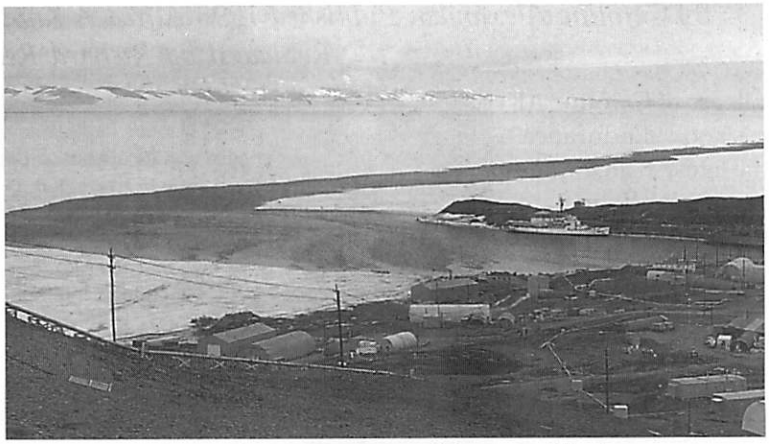
The return to the island was followed by days of interminable labour — 14 hours on the 27th, 18 the next day and scarcely less to bring the boat to shore at the foot of Cape Tuxen on 29 November 1904. Here, leaving Pléneau in camp suffering badly from snowblindness, the other four scaled the jagged 3000ft summit of the cape, there to find that they could not see into the bay they hoped would prove to be a strait. Some four miles to the south out among the pack, however, lay an island from which they could settle the question once and for all.

Leaving a cairn at the foot of the cape, they began the long haul over the uneven ice, often dragging their unwieldy load while up to their

Continued on page 91

McMURDO'S FOOTPRINT

Ross Sea Workshop Spotlights a Messy Situation



McMurdo Station: More flak over pollution

McMurdo Sound is probably the most polluted harbour in the world.

That was one comment which stuck in the mind of Tamsin Falconer and other attendees at the recent workshop on the Ross Sea State of the Environment Report, organised by Antarctica New Zealand and the Ministry of Foreign Affairs and Trade.

The 300-page report, published in 1999, marks an important benchmark for the environment of the Ross Sea region and will be of vital importance in assessing the future impact of human activities in the area. Organised by Emma Waterhouse, Antarctica New Zealand Environmental Manager, the report contains different chapters on the state of the land, atmosphere and marine environments of the Ross Sea region, and the principle pressures currently affecting them. During the report's preparation, various drafts underwent extensive national and international peer review.

Following a preliminary workshop in March, the May meeting provided an opportunity for the various authors to discuss the report's contents with other interested Antarcticans. Attendees included people from MFAT, Antarctica New Zealand, Gateway Antarctica, most of the universities and Crown Research Institutes, Antarctic Heritage Trust, strategic and funding organisations such as the Marsden Fund and the Foundation for Research, Science and Technology, and those with a keen Antarctic interest.

Presentations covered a range of areas, including the state of the soils and ice-free areas as well as the coastal ecosystems, and pressures due to global threats, tourism and other private sector activities. Tourism was separated out on its own from other activities, and some attendees felt that it might be useful to also separate logistical impact from science impacts, difficult though this might be.

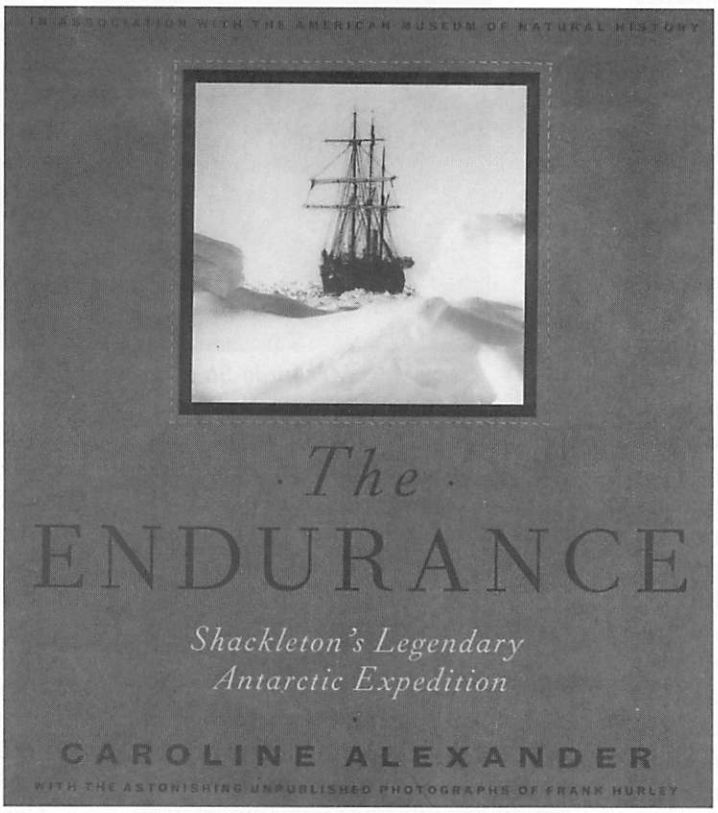
The comment regarding McMurdo Sound was accompanied by the suggestion that the best management option would be to leave it as it is, rather than make any concerted attempt to clean the limited area where the pollution is found; such a move may well cause more problems than it solves.

One speaker, who took the trouble to estimate the size and impact of an average boot and its pace length, calculated that a person in the field walked, on average, about 10 km a day.

Others commented on the marked absence of any sort of framework regarding the state of the environment of the historic buildings in the Ross Sea region. There will be abundant opportunities for people to continue to be involved when report cards are prepared on specific issues, such as the historic huts and protected areas. One attendee reported that the workshop provided an interesting insight into the processes used by Antarctica New Zealand in gauging the support of the Antarctic community.

THE ENDURANCE

Shackleton's Legendary Antarctic Expedition.
By Caroline Alexander. Published 1998 Alfred A Knopf, New York 211pp. Price NZ$70
Reviewed by Richard Reaney



The release of Caroline Alexander's book "Endurance" marks the latest in an impressive list of published accounts of Sir Ernest Shackleton's 1914-16 expedition. Its publication in 1999 was timed to coincide with the American Museum of Natural History's Exhibition, Endurance: Shackleton's Legendary Expedition, for which Caroline Alexander was the Curator.

The "Endurance" expedition is legendary and needs no introduction to polar enthusiasts. In 1914, Shackleton left the shores of Great Britain, a country about to enter the Great War, to undertake what he described as the last great polar journey — a crossing of the Antarctic continent from the Weddell Sea to the Ross Sea via the South Pole. Shackleton first told the remarkable story of what happened to the expedition in his classic account "South", published in 1919. Yet in Caroline's telling, the terrifying details of the journey come vividly to life.

In December 1914, Shackleton sailed in his ship, the *Endurance*, for the Weddell Sea. The *Endurance*, built in a Norwegian shipyard, was a 300-ton barquentine specially ice strengthened for polar work. Although Shackleton delayed his departure from South Georgia — a sub-antarctic isle — in the hope of better ice conditions, he was soon surrounded by heavy pack ice deep in the Weddell Sea.

By January 1915, the ship became icebound less than 100 miles, or a day's sail, from their destination, Vahsel Bay. The ice never let go, carrying *Endurance* north, crushing and eventually sinking it in November 1915. Shackleton abandoned ship taking, among other things, the three lifeboats. For another six months the men drifted northward on floes until the ice broke up. The breakout permitted them to sail for land, the nearest being Elephant Island, a remote and hostile dot of land some 600 miles south of Cape Horn.

After a nightmare seven-day journey in the open boats with several men close to collapse, they reached the Island. Shackleton realised that no one would ever find them there so he made the incredible decision to take the largest of the three lifeboats, the 22.5-foot *James Caird*, and sail to South Georgia for help. It was a desperate measure — the journey meant travelling 800 miles across the most formidable ocean on the planet in winter.

Shackleton chose five men to go with him: Tom Crean, Tim McCarthy, JohnVincent, Harry McNeish and his captain, Frank Worsley, a New Zealander. Amazingly they succeeded, landing on the West Coast of South Georgia 16 days later in what can only be described as one of the most incredible survival epics of all time. But as if this wasn't enough, no help was available on the island's west side and Shackleton had to trek over the mountains and glaciers to reach the whaling station and civilisation. From here he set out to rescue the 22 men left on Elephant Island, which was achieved without the loss of a single life. If the story were written as a fiction novel, it would have been too incredible to be plausible.

A feature of this publication is the 140 photographs, many previously unpublished, taken by Frank Hurley, the expedition's photographer. The photographs are all black and white, abstractly beautiful and graphic, creating a wonderful visual record of the expedition. Hurley's attention to detail is quite outstanding and he went to extraordinary measures to secure a shot. It is known that Hurley took some of the Antarctic's very first colour photographs but none of the 20 known surviving Paget colour transparencies have been included in this publication.

Of significance is the correct portrayal of the famous "rescue" photograph. Hurley was known to doctor some of his photographs to suit a specific purpose. In many previous publications this photograph has been captioned as the men being rescued from Elephant Island. In reality it is a "goodbye" photograph taken as the *James Caird* departed on the incredible open boat journey. Hurley deleted the *James Caird* from the picture,

leaving visible only the *Stancomb Wills*, purportedly the rescuing boat.

Caroline has managed to retell Shackleton's adventure vividly. She has availed herself of most prior sources and brings together diary entries and memoirs so as to evoke both the beauty and harshness of the Antarctic:

"The eerie landscape of ice blocks piling up like sugar cubes, the sound of penguins crying as if grieving the loss of the ship."

The account also covers the story of the men's life aboard ship during the winter of 1915, their privations and the ordeal of losing their ship. She looks at the backgrounds of most of the men and the particular skills they bought to the expedition, such as Worsley and his magical navigation of the *James Caird*. Reference to Shackleton's leadership skills focus on his uncanny ability to care for his men and to know the right moment to lift their spirits. (It is disappointing to see naming errors evident in previous publications being perpetuated in this account.)

In the final chapter, there is some valuable research into the post-expedition lives of the men and Caroline's acknowledgements give an indication of the diversity of source material. A disappointment is the lack of an index, although a short bibliography is provided and some valuable detailed notes about the photographs.

As is typical with many publications covering the "Endurance" Expedition there is no reference to the Ross Sea Party. This support party was required to lay depots across the Ross Ice Shelf to the foot of Beardmore Glacier in anticipation of Shackleton's crossing, and thereby provide him with valuable supplies in the latter stages of his journey. Being without radio and unaware of Shackleton's predicament, they proceeded to lay the depots under the most appalling conditions imaginable. The privations and ordeal of this party make their story an epic of survival on its own.

Yet if history distances Shackleton's exploits, Hurley's photographs return them to immediacy.

***Caroline Alexander** (Above) has written for **The New Yorker, Granta, Conde Nast Traveller, Smithsonian, Outside,** and **National Geographic,** and is the author of four previous books. She has been the curator of **Endurance: Shackleton's Legendary Expedition,** an exhibition at the American Museum of Natural History. She lives on a farm in New Hampshire.*

We can look into the diaries of the men and recall their feelings. Thomas Orde-Lees, a Royal Marine, wrote in his diary after one failed attempt by the crew to march over the ice pack:

"Were it not for a little natural anxiety as to our ultimate progress I have never been happier in my life than I am now, for is not this kind of existence the 'real thing' I have for years set my heart on....."

Such effusions of romantic agony coupled with Hurley's wonderful visual record make this book excellent reading and a valuable addition to any Antarctic library.

All in all, it is the story that founded the Shackleton legend:

"For scientific endeavour give me Scott,

For speed and efficiency of travel give me Amundsen,

But when your ship is sunk and all is lost get down on your knees and pray for Shackleton."

Book of Memories Taken to Scott Base

A hand-bound album of memories from more than 100 relatives of people who died on board flight TE901 at Mt Erebus in November 1979, and people who were closely involved in the recovery operation that followed, was flown to Scott Base in August.

The book will be kept in perpetuity at Scott Base with a 50 year access moratorium on it.

Chief Executive of the New Zealand Antarctic Institute, Gillian Wratt says the idea for the book came from some initial messages from family members of passengers who had died in the crash at the time of the 20th commemoration of the disaster last November.

"We invited people to send us messages which could be kept at Scott Base. Because the response was so overwhelming, we decided to make two copies – one to be kept in Antarctica and the other to be kept at National Archives in Christchurch."

The archived copy would be available to close family members and those people who had contributed to the book, at the National Archive offices in Auckland for two months beginning 1 September, in Wellington from 20 November to 26 January 2001, in Dunedin from 5 February to September, in Wellington from 20 November to 26 January 2001, in Dunedin from 5 February to 9 March and then in Christchurch. It was the first time National Archives had supported regional availability of an archive and this way it would provide easier access to those who wanted to see it.

"Because there is a 50 year access moratorium on the book, anyone who has not made a contribution or is not a close relative will not be able to read it," Wratt says. "This is to protect the special nature of the messages and their meaning for the people who wrote them and those to whom the messages are addressed."

SECOND 2000 CROSSING OF SOUTH GEORGIA

Sir Ernest Shackleton's historic 1916 crossing of South Georgia was retraced for the second time in less than two months when three noted mountaineers, Reinhold Messner, Stephan Venables and Conrad Anker, completed the journey over a three-day period in mid-April.

Their film was the culmination of an operaton to produce two film versions of the story of Shackleton's "Endurance" voyage. White Mountain Films of New York and NOVA, of the US Public Broadcasting System, are producing a science documentary for PBS and a large format 40-minute feature film for exhibition in IMAX(r) theaters worldwide. Both films, which are scheduled for release in 2001, are based on the recent book by Caroline Alexander, "The Endurance".

Support for the filming was provided by the vessels *Akademic Shuleykin*, from Marine Expeditions, Canada, and the *Laurel*, of the Chilean company Ultragas. The two ships arrived in South Georgia at the end of October 1999 and began filming near Grytviken and Stromness. *Laurel* carried a single Aerospatiale A-Star 350 B3 ("Squirrel") helicopter to support filming and general expedition work. This was required to operate under guidelines set by the Government of South Georgia and the South Sandwich Islands (GSGSSI), each flight carrying a GSGSSI Observer to ensure compliance with the conditions set and to advise on wildlife concentrations. On the south side of the island, filming involved a replica of the *James Caird* which had been carried south on the *Shuleykin*.

The film group then moved to the Antarctic Peninsula, where bad weather delayed operations, although Shackleton's Iceberg Camp was reconstructed on an iceflow and filmed, together with scenes of the replicas of the *James Caird, Stancomb Wills* and *Dudley Docker*. The replica boats were again used when the team moved to Elephant Island, but on November 20th, in particularly bad weather, the boats were all lost while under tow.

The *Akademic Shulyekin* returned to Ushuaia, in Argentina in late November for the first of its eight tourist voyages in the Antarctic Peninsula, Scotia Arc region. The ship returned to South Georgia on April 10th, carrying 25 film and logistics support crew.

Reinhold Messner, Stephan Venables and Conrad Anker left the ship at King Haakon Bay in the southwest of the island and started their traverse. For the first day of their four-day trek, they were accompanied by cameraman Mike Graber and two mountain guides, who then returned to the ship to travel round to the north coast.

The three climbers found the route up over Trident Ridge and across the Crean and Fortuna Glaciers significantly different from the conditions that had existed in Shackleton's time. According to Messner, the glaciers were far more broken up than 84 years ago, and long detours frequently had to be made around the most dangerous areas. Messner was reported to have suffered a broken foot during the crossing of the Crean Glacier, but this did not stop him completing the journey. The trio camped on the Crean Glacier overnight and on the Fortuna Glacier, before descending to the former whaling station at Stromness, arriving on the morning of April 14.

After their arrival at Stromness, the three climbers boarded the *Shulyekin* and filming continued for a few more days, with the ship visiting Grytviken before departing for Montivideo.

Moratorium Spur to Illegal Fishing

Fisheries Minister Pete Hodgson understands the importance of allowing responsible, sustainable fishing in the Ross Sea Antarctic Toothfish fishery, says Alastair MacFarlane, trade policy manager of the New Zealand Seafood Industry Council.

"A move towards a moratorium on exploratory Toothfish fishing would have dire environmental consequences and would effectively halt all scientific research in the area," says Macfarlane. "It's ironic that an environmental group is pushing for the moratorium, knowing full well it would be a green light for uncontrolled illegal fishing on a grand scale."

The New Zealand seafood industry has spent tens of millions of dollars on research in the Ross Sea since 1996, covering a range of species including Skate and Toothfish he says. Recently, this research was highly praised by CCAMLR, the international body which monitors the area.

"If our vessels were not down there for the fishing season conducting this research, it would cost the Government upwards of $6Milion a year to undertake the same research on its own," Macfarlane.

"New Zealand is at the forefront of international efforts to stop poaching, and the industry wholeheartedly supports the current measures. Illegal fishing operators aren't going to pay any attention to a moratorium – it would simply give them a free rein," he claims.

The Riddle of the Antarctic Peninsula
Continued from page 87

waists in half-frozen water. Not until 2am on 1 December could they at last launch the boat in an open channel. Arrived at their goal half an hour later, it took the weary men another three hours to find a landing place adequately sheltered from the NE gales they had come to fear most.

Waking again that morning, Charcot had his reward as he hastened to climb the 650ft summit of the island, which proved to be the largest of a group, rather than a single one. (1) The answer to the enigma lay before him — there was not the least sign of a strait. Deeply indented into two bays, the ice capped coast stretched south to another deep bay beyond Cape Perez, as it was later named (2), and then south-west to Cape Garcia about 30 miles distant.

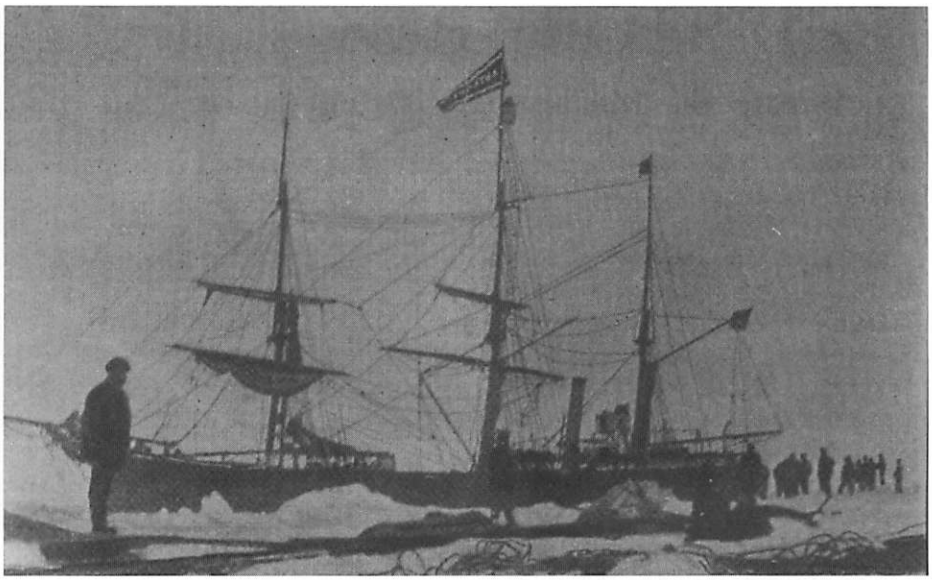
Favoured with two more days of fine weather they were able to take angles from the highest of the Argentine Islands (65°15S 64°15W) on the second day of their return journey, reaching Petermann Island the same evening. Hampered by snow and mist, a long third day saw the five men safely back. They found the ship still trapped by ice filling the bay (later named Port Charcot) outside the cove.

If 1904 had yielded resolution of the first great question about the coast of Graham Land, denied to De Gerlache from his track a mere four miles further away, how much more might they see on the way to Alexander I Land ?

A week later there seemed to be a fair prospect of blasting and sawing a channel to open water 650 yards away along the shore. After five days' work, they woke on 18 December to find Nature had done the job for them. The bay outside was clear of ice. Work began immediately to recommission the engine.

Leaving the steam launch, huts and a depot of supplies with a record of their achievements and intentions in a large cairn, all was ready by Christmas Eve, and, after the customary celebration, the *Français* cast off as the tide reached its high mark.

But it was not to the south west that they went, for, clear as the bay was, the pack formed an unbroken plain to the horizon across the direct route south. Charcot planned to outflank it by heading out from Dallmann Bay after making a full survey of the harbour at Wiencke Island, which they would aim to touch at on their return.



The Français in Français Cove on Booth Island, 1904.

Arrived there the next day, they completed the task by December 30, establishing that Mt.William was not the highest peak on Anvers Island. A higher peak in the centre of the island was promptly named after their ship. Trapped there for four more days by ice blocking the exits, they weighed anchor early on 4 January 1905, and, stopping only to alter the message in the cairn, emerged into an open sea north of Anvers Island three days later.

Forced far outside De Gerlache's and Evensen's tracks by the pack and the dangers of fog, and by now seriously short of coal for emergencies, Charcot forbade raising steam, except in extremity, as they headed south. Rapidly overtaken by north-easterly storms, and twice narrowly avoiding icebergs in the fog, they saw nothing of the coast until the evening of the 11th, when the horizon suddenly cleared to reveal a conical summit south east of them. Hasty reference to De Gerlache's charts showed it could be nothing other than Alexander I Land.

Matha's sights put them in 67°25S, some 40 miles west and 75 miles north of its position according to the Belgians, when they had sighted it twice from a westerly course just north of the 68th parallel.

But the pack stood across their line of sight as far as the eye could see in either direction, and after thirty hours of probing east and west, Charcot gave up and followed its edge away north-east on the 13 January 1905, hoping for another chance. Twice more that evening they sighted the prominent mountain (later named Mt. Bayonne), at about the same time as a snow-capped peak (later named Mt. Gaudry) rose over the horizon ahead, with a chain of mountains dwindling away north of it.

Retreating north eastward on 13 January 1905, with their first sight of mountain peaks ahead of them, Charcot and his men were some 20 miles south of Biscoe's reputed position when, also approaching from the west, he had first sighted Adelaide Island on 14 February 1832. (3)

When the wind fell calm the following evening Charcot did not hesitate to order steam, and as the speed picked up to 6 knots, the short four or five mile coast, which was all the fog allowed Biscoe to see when he had to turn away a few miles from it, lengthened northward for the approaching Frenchmen. To them it seemed that it must be the mainland, and, in the clear weather they were enjoying, there was every chance they could follow it north to their farthest south of the previous February.

Even so, the edge of the pack was moving north-west across their direct track, and, early on the January 15,

Continued on page 94

Two Traverses planned by Women
Continued from page 77

times experiencing temperatures of -40 degrees C.

By the end of May they had also conducted several field trials in Norway. Various public appearances are planned before their departure from Cape Town in October.

A second pair of women, Sunniva Sorby of Canada and Uiloq Slettemark from Greenland, plan to cross from Berkner Island to the Ross Sea via the Gould Coast at the head of the Ross Ice Shelf. The traverse will be known as the Trans-Antarctic Expedition 2000 (TAE 2000). Two resupplies of food, equipment and fuel are planned, to make loads lighter and the traverse potentially faster. TAE 2000 is promoting an environmental and educational focus on Antarctica via its Web site.

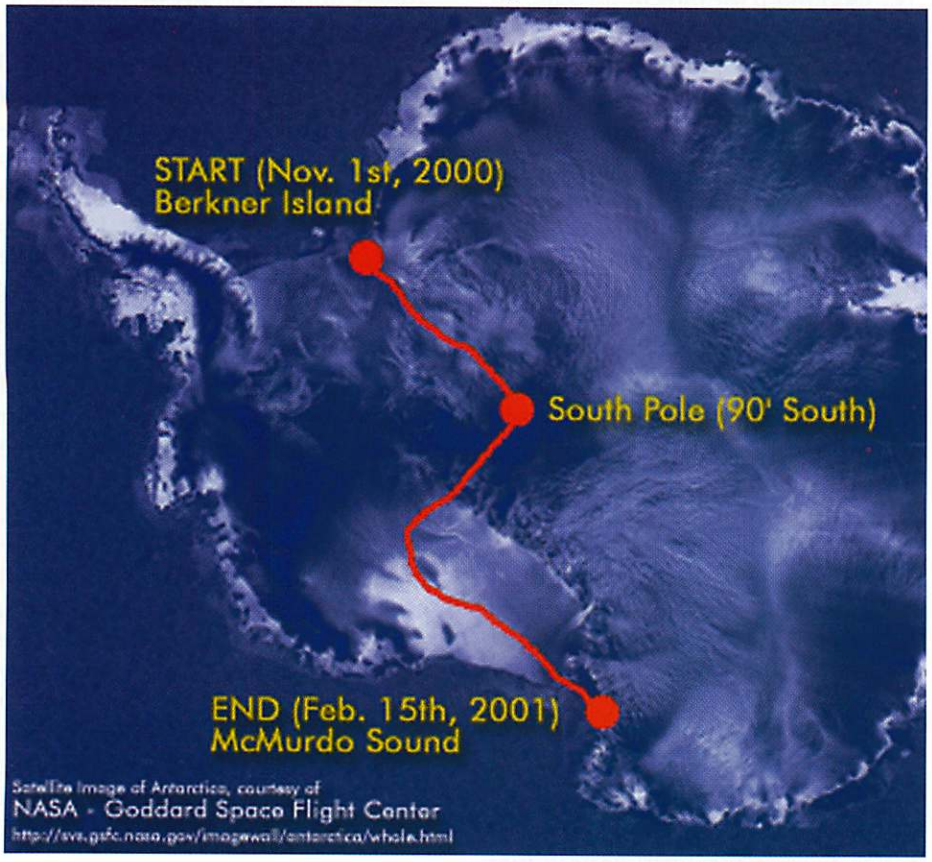
Sorby was part of an earlier all-women crossing attempt in 1992-93 that began at the Patriot Hills. However, after a 67-day traverse to the South Pole, the crossing was abandoned because of injury, poor weather and funding difficulties. (Ann Bancroft was also part of this four-woman team.) In December 1997, Sorby took part in a traverse of King George Island in the South Shetlands, and has been a guide and lecturer on tourist voyages operated by Canadian company Marine Expeditions in the Arctic and Antarctic Peninsula region.

Sorby and Slettemark, the two Antarctic traversees.

This will be Slettemark's first visit to Antarctica, but she has travelled across Greenland, climbed Mount Aconcagua (the highest peak in South America), taken part in number of other adventure pursuits, and is a highly rated cross country skier. Both women have been training in Norway and Northern Canada.

A medical institute in Canada will undertake a research programme on the two women involving physiological, psychological and immunological studies. Considerable baseline testing on the two subjects has already been conducted. It is understood that during the two resupplies, researchers from the institute will accompany the aircraft to carry out a range of tests on the two women in the field.

Map of the traverse route for the TAE2000 expedition.



Lieutenant Colonel Daniel Dunbar (above) has been posted as Operations Officer, Air National Guard Detachment 13 at Christchurch for the next four years.

He has responsibility for overseeing flight operations for the logistical support for Operation Deep Freeze.

As a member of the New York Air National Guard Lieutenant Colonel Dunbar made regular visits to Christchurch on training missions between 1989-2000.

He has been joined in Christchurch by his wife and 11 year old son who has settled into a local school where he is playing soccer and having a go at rugby.

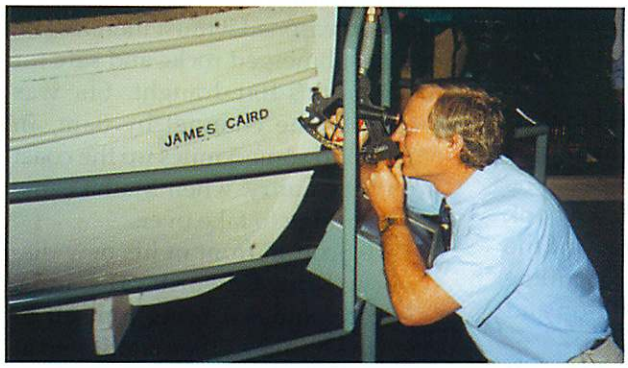
SHACKLETON'S ENDURANCE EXHIBITION

Caroline Alexander, author of the recent publication "Endurance", was instrumental in arranging with the American Museum of Natural History to present an exhibition on Shackleton's Endurance Expedition last year.

The American Museum of Natural History is a grand building situated adjacent to Central Park in New York. The exhibition ran from March to October 1999 and was housed in a small enclave of the museum. The story of Shackleton's *Endurance* Expedition was featured through the lens of the expedition's photographer Frank Hurley. In a beautifully set out and comprehensive display, Hurley's photographic work was presented from the plates that survived the expedition. The enclave was partitioned in such a way that each series of photographs told the story of the expedition.

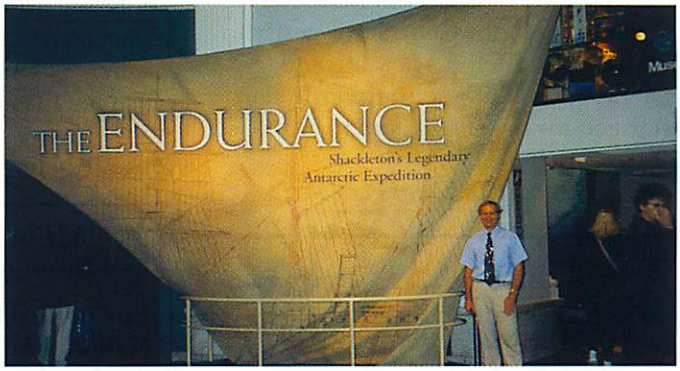
The coup-de-grace of the exhibition was the presence of the *James Caird*. The trustees had graciously given permission for the vessel to be uplifted from its home at Dulwich College, England, and transported to the museum to be part of the display.

The photographic story was designed to culminate with the *James Caird* featured in a setting of virtual reality. Standing astern of the boat while watching computer-generated waves play across movie screens off her bows, I could almost feel the sting of the freezing sea thrown up by the mountainous Cape Horn Rollers. So convincing were those big video waves that a person could get seasick just watching.



Dick Reaney sighting through the sextant mounted alongside the James Caird.

Dick Reaney at "The Endurance" Exhibition at the American Museum of Natural History, New York. Photos: Dick Reaney



Adding to the reality was the mounting of two sextants on either side of the Caird. You were invited to take a bearing against this heaving horizon to test your skills in securing an accurate fix of your position. The result left me with nothing but a greater appreciation of Worsley and his amazing navigational feat in getting the *James Caird* safely to South Georgia.

Although I had seen photographs of the boat before, seeing it for the first time was a surprise. It was larger than I had anticipated and made me realise just how difficult it would have been for six starving, emaciated men to drag it up the beach on South Georgia, let alone turn it over for a shelter at Peggotty Camp.

Meeting the organisers and museum staff was a pleasure but unfortunately I missed Caroline Alexander as she was away at the time of my visit. The exhibition was well attended throughout the period, with queues of people still seeking admission when I visited in the closing days of October.

The surge of Shackleton interest seems to have continued unabated with the opening of a school in the US based on Shackleton's leadership principles, and the wish to see those taught in today's society.

– Richard Reaney

Tribute to Harding Dunnett, 1909-2000. Founder, James Caird Society

Harding McGregor Dunnett, an authority on Sir Ernest Shackleton, died on April 22 at the age of 91. Dunnett was a driving force behind the recent surge of interest in Shackleton, especially with the recent Endurance Exhibition in the United States. He was a friend and contemporary of the late Lord Shackleton, son of the explorer, and in 1999 was present at the opening of the Shackleton Memorial Library at the Scott Polar Institute by Shackleton's grand-daughter.

Harding Dunnett was perhaps best known as the founder and chairman of the James Caird Society, named after the open boat in which Shackleton and others sailed to South Georgia in a rescue attempt for men stranded in the Weddell Sea following the destruction of the Endurance.

Dunnett had been a pupil at Dulwich College when the *James Caird* was presented to Shackleton's old school In 1924. Years later, after a productive career in display design, writing on industry, and in industrial relations, Dunnett began his retirement by writing a book on eminent pupils of Dulwich College. From here sprang a deep interest in Dulwich's most famous pupil, Sir Ernest Shackleton.

Dunnett began with a campaign

Continued on Page 94

Continued from Page 93

for the return of the *James Caird* to Dulwich from the Maritime Museum at Greenwich, where the boat had been restored. He also produced a video called "Shackleton's Boat Journey". In 1994, when Trevor Potts repeated Shackleton's journey from Elephant Island to South Georgia, Dunnett exhibited the James Caird at the Earl's Court Boat Show. He set up the James Caird Society which now has 500 members from all over the world, and in 1996 published a book "Shackleton's Boat - the Story of the James Caird", an illustrated outline of the the Endurance expedition and its aftermath.

In his 90th year Harding Dunnett travelled to South Georgia to verify details of Shackleton's landing and to visit his grave. Shortly afterwards, he arranged for the *James Caird* to be exhibited in the US.

– Dick Reaney and John Parsloe.

TRIBUTE

The Riddle of the Antarctic Peninsula
Continued from page 91

the French ship had to push through it to reach an open channel, barely two miles wide, along the piedmont ice cliff fringing the coast. Peopled with menacing icebergs on the move, Charcot reasoned it must therefore be free of submerged rocks and safe for the *Français's* 10ft draught. She was well into the channel by 8am, in 66°40S and some 5 miles up the coast from Mt.Gaudry, when Matha came on the bridge to take over.

Like Scott in front of his new discovery (King Edward VII Land), Charcot could not bring himself to leave the bridge as they continued at 6 knots towards a cape, behind which further coast lay hidden. Without warning, as a tremendous shock literally bent the foremast, the two men saw the forecastle rising up almost vertically before them. Near enough to grab the handle of the engine room telegraph, and avoid being flung to the deck, Charcot slammed it round to 'Full Astern', as the ship slipped back into the water and half-clothed men tumbled out of the hatches. Almost mesmerised by the realisation of what had happened, Charcot could hardly take his eyes from the water ahead as the deadly rock appeared, glimmering dully beneath the surface.

To be continued

NOTES

(1) They had reached the Berthelot Islands in latitude 65°20S, which Charcot named after a member of the Institut Francais who had supported the expedition.

(2) The cape Lecointe showed on his chart in 65°35S

(3) Hugh Robert Mill (in The Siege of the South Pole) describes Biscoe as "running east-southeast to 67°S 72°W where he sighted land on Feb.14th [1832]", and that he later sounded "3 miles off shore". The map in Mill's book shows Biscoe's course running on to ± 67°15S 69°15W, which, incidentally, is very near to De Gerlache's course at that point. If there was reason to doubt Biscoe's chronometer and longitudes from his assertion that he could see the summit of "Adelaide Island" from 72°W, Charcot's first sighting of the 8,335ft Mt.Gaudry, from about the same distance (± 60 miles) as Biscoe, lends much credibility to their accuracy.

MEMBERSHIP

The New Zealand Antarctic Society Inc was formed in 1933. It comprises New Zealanders and overseas friends, many of whom have been to the Antarctic and all of whom are interested in some phase of Antarctic exploration, history, development or research.

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

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

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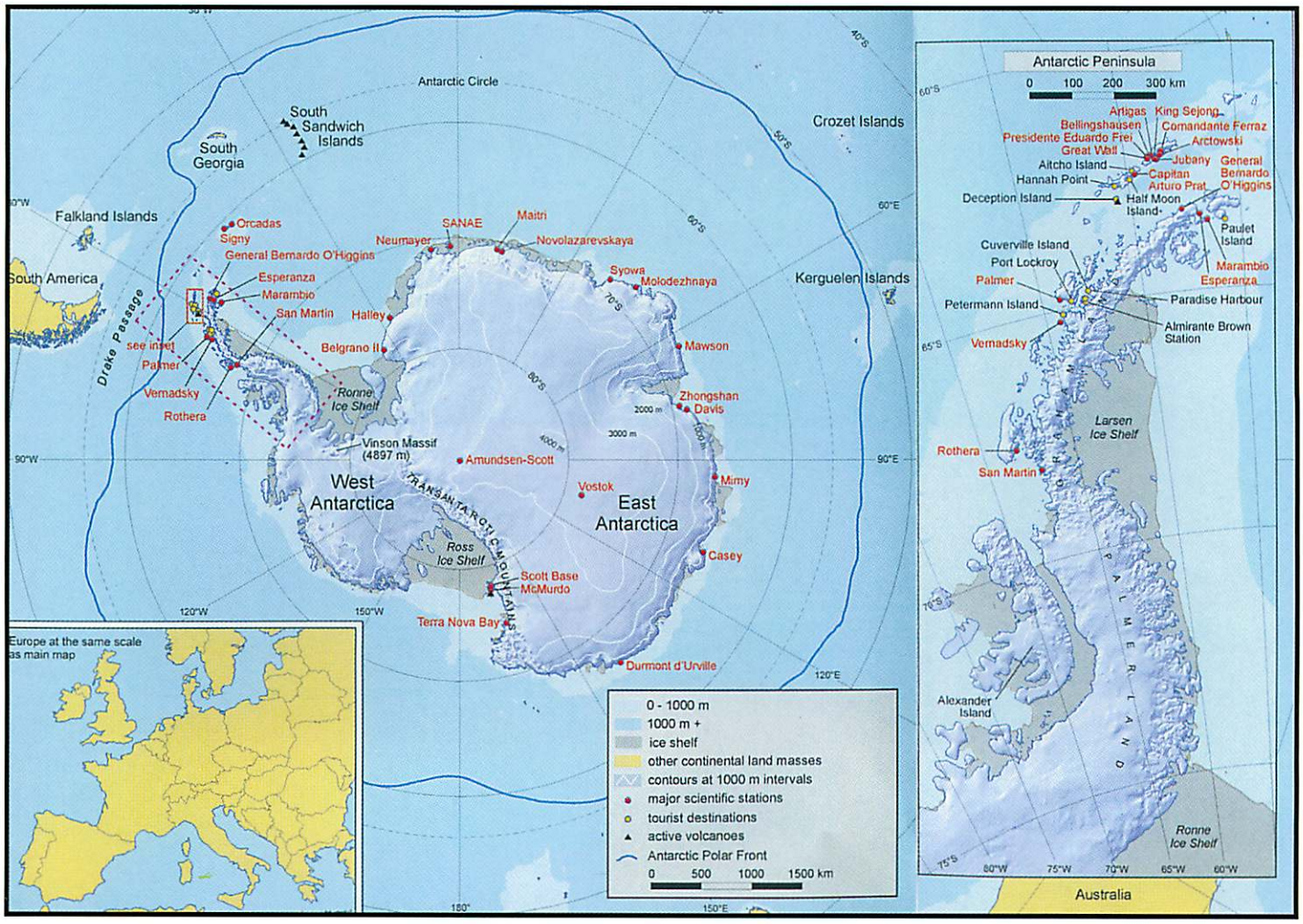
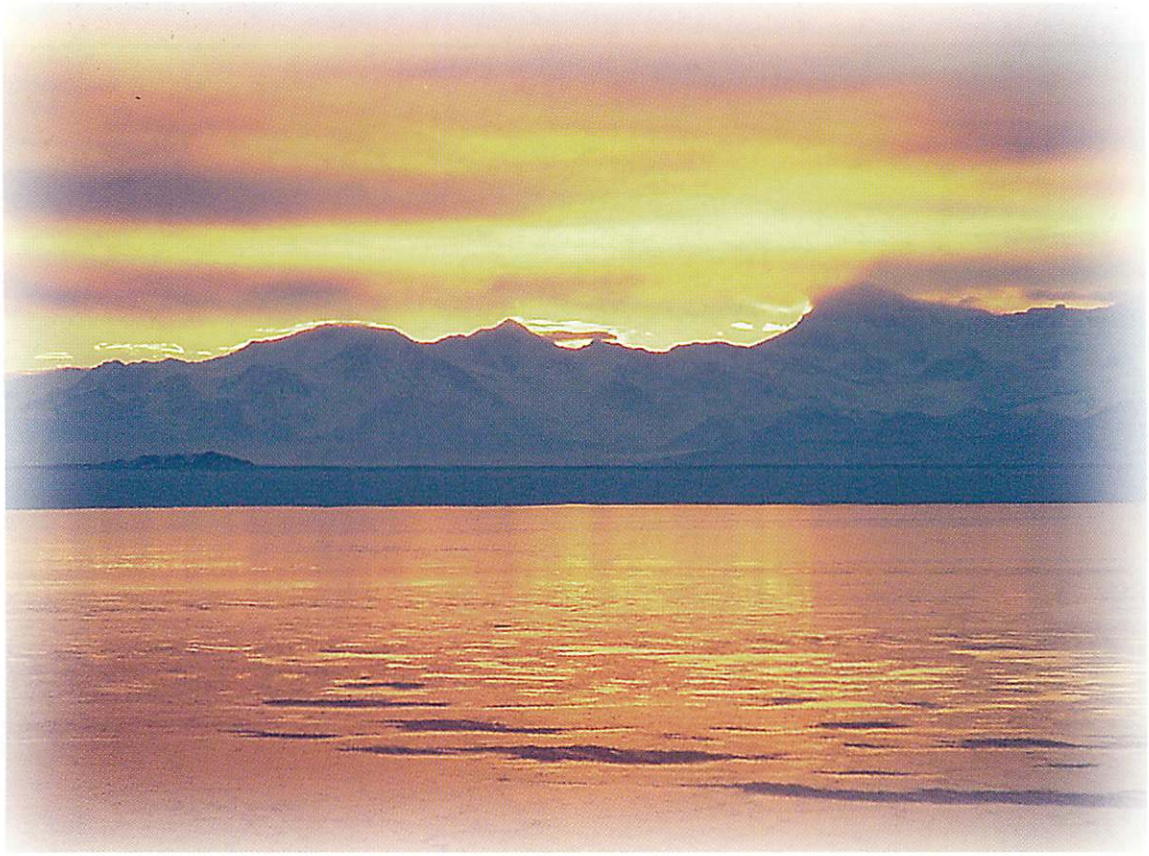


This new map published by the British Antarctic Survey (BAS) in association with the Natural Environment Research Council of the UK, shows the location of bases on the Antarctic continent operated by Antarctic Treaty Nations. The BAS says that Antarctica is the largest and most pristine wilderness on Earth, covering an area of nearly 14 million sq km. The only permanent structures of any size are scientific research stations. There are currently 45 stations, with about 10,000 scientists and support staff in summer, falling to about 1000 in winter. The population density in Antarctica in summer is the lowest on Earth at only 0.0007 people per sq km. Europe by contrast has a population density of 65 people per sq km. The BAS operates three stations in Antarctica, of which the largest - Rothera - currently has a complement of up to 124 people in summer, and 25 in winter. The environmental footprint of these stations is small, says the BAS. At Rothera it is 3 people per sq km.



The last sunset of 2000
McMurdo Sound

Photo Courtesy © Beth Sheid, McMurdo Station

NEW ZEALAND ANTARCTIC SOCIETY