

# ANTARCTIC



Bulletin Vol 14. No. 2, JUNE 1996





Cover: Rob Hall atop Vinson Massif looking towards the West Antarctic ice sheet. Photo courtesy of Hall and Ball Collection, Hedgehog House.

**June 1996,**  
**Volume 14, No. 2,**  
**Issue No.157**

ANTARCTIC is published quarterly by the New Zealand Antarctic Society Inc., ISSN 0003-5327, Editor: Greg Williamson

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.

## CONTENTS

	Page #
<b>EDITOR'S NOTE</b> .....	42
<b>INTERNATIONAL</b>	
Rob Hall: Eminent Adventurer.....	42
Russian Expedition.....	44
Cape Roberts Update.....	45
<b>NATIONAL PROGRAMS</b>	
India.....	47
New Zealand.....	50
Australia.....	52
United States of America.....	54
<b>SUB ANTARCTIC</b>	
Tourism Report.....	57
<b>GENERAL</b>	
The Ozone Depletion: A Reply.....	63
Jim Collins Award.....	65
An Antarctic Bibliography.....	66
Footnote to Byrd Salvage Attempt.....	69
<b>TRIBUTES</b>	
Newly Named Features	
Commemorate Society Members.....	70
<b>BOOK REVIEWS</b>	
Books by Phillip Law, David Harrowfield, Gerald Doorly and Shelagh Robinson.....	74

## EDITOR'S NOTE

*Antarctic* would like to express our gratitude for the many messages of support and appreciation received subsequent to recent content and presentation changes. We will endeavour to continue improving the appearance and content of the publication and welcome any feedback.

We would also like to apologise for the poor print quality of the March 1996 issue, particularly its cover. *Antarctic* now has a new printer and we are sure you will have noticed the improvement. Members are advised that they can

return a copy of the March issue to the National Secretary. He has some replacements that may be of slightly better quality.

A further apology is due for the lateness of this issue which was held back to include breaking news on "Antarctica New Zealand", the Crown entity that will manage New Zealand's Antarctic involvement (see page 50).

Greg Williamson  
Editor



## INTERNATIONAL

## ROB HALL: EMINENT ADVENTURER

(14 JANUARY 1961 — 12 MAY 1996)

Antarcticans are no strangers to disaster and death, danger being an inherent part of working on the continent. That does nothing to lessen the shock and pain for his friends and family of losing a man like Rob Hall. It is simply tragic that the man who was to write an account of his latest expedition to the Antarctic for this journal is instead being eulogised.

Although the words and pictures offered here can only give the barest sketch of man whose achievements reached the heights of the peaks he conquered, Rob Hall's contribution to the Antarctic demands recognition.

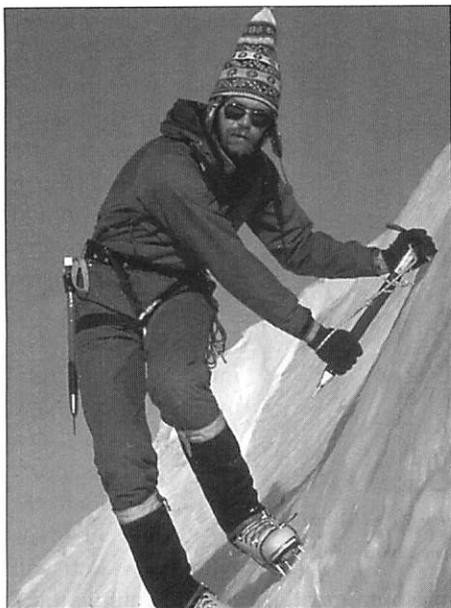
On 12 May 1996 Rob Hall died on Mt Everest having tried to save the life of a struggling member of his expedition party, US postal clerk and climbing fanatic Doug Hansen. The pair were part of an

eight person expedition from New Zealand, the United States, Japan, Nepal and Australia.

Rob Hall's Antarctic involvement goes back to the summer of 1983/84 where he worked for the New Zealand Antarctic Programme as field assistant/instructor with the Survival School, now known as Antarctic Field Training. Lindsay Main was the leader of the unit and Ken West the other assistant.

During the season Rob also assisted the IMESS study on Mt Erebus but was medicated to McMurdo after becoming dehydrated. He recovered rapidly and finished the season at Scott Base.

The following season he was employed as the Leader of Survival Training assisted by Paul O'Doud, Paul Bayne and Peter Sampson. Rob received a citation from the



*At Scott Base, Courtesy of Colin Monteath,  
Hedgehog House.*

US Navy for his efforts in the rescue of a Seabee bulldozer operator caught in a whiteout near Williams Field in October of 1984.

Rob Hall's other Antarctic involvement includes work in the Ellsworth Mountains with New Zealand geologist Paul Fitzgerald, involvement in a US expedition to Vinson Massif and subsequent private expeditions to the Antarctic's highest peaks.

"Rob Hall was a gentle and graceful man who reached out to profoundly touch the lives of many people around the globe. Now at rest on south summit of Mt Everest Rob's presence among us will be sorely missed," says longtime friend, colleague and fellow Antarctic Colin Monteath.

Rob, the youngest of nine children, grew up in Christchurch with his parents

Eddie and Millie Hall. He was educated at Xavier College (now Cathedral College).

He excelled as a designer and manufacturer of quality outdoor equipment working for Alp Sports and Macpac before starting his own company "Outside Equipment". During these years in the late 1970s early 1980s Rob climbed actively in the Southern Alps thriving on a traverse from Arthur's Pass to Mt Cook and making the first winter ascent of Mt Cook's Caroline Face and Black Tower.

Rob took part in two Himalayan expeditions before the age of 20, reaching the summits of Ama Dablam and Numbur. Then followed his Antarctic experience.

Climbing in the mountains of Asia dominated the next decade of Rob's life, involving him in some 20 expeditions. Rob would wish to be remembered as the first New Zealander to climb K2 (after 4 expeditions), Makalu and Lhotse. He also climbed Cho Oyu twice and made attempts on Annapurna, Dhaulagiri and Gasterbrum I and II. In 1989 Rob and Gary Ball received a Nepalese award from the Himalayan Rescue Association for their part in a difficult rescue on the north side of Everest. After climbing Everest for the first time in 1990, Rob and Gary went on to complete the "Seven Summits" (highest peak on each of seven continents) in a remarkable seven month odyssey. For this they each received the New Zealand 1990 Commemoration Medal. Rob organised eight expeditions to Mt Everest, reaching the summit five times. In 1994, Rob was awarded an MBE for services to mountaineering as a professional adventurer and mountaineer.

"Rob, along with Gary Ball, helped to bring mountaineering to the New Zealand people, says Colin Monteath. For a coun-

try that produced Edmund Hillary we knew precious little about mountaineering until Hall and Ball fired the collective imagination with their incredible "Seven Summits".

Vinson Massif in Antarctica was the 7th peak, completed just 10 hours before the deadline. The others were Mt Everest (Asia), Mt McKinley (Nth America), Mt Elbrus (Europe), Mt Kilimanjaro (Africa) Mt Kosciuszko (Australia) and Mt Aconcagua (Sth America).

After Gary Ball's death in 1993 on Nepal's Mt Dhaulagiri, Rob continued their company Adventure Consultants, guiding many people safely to the summits of Everest, Aconcagua, Vinson Massif, Carstensz Pyramid and Cho Oyu.

"Rob was a meticulous organiser of complex international expeditions — a superb motivator and inspiration to



*At the South Pole, Courtesy of the Hall and Ball Collection, Hedgehog House.*

Sherpa, client, fellow guide and the many Kiwis who trekked with him in Nepal. As a leader and diplomat Rob helped influence Nepali and Pakistani government departments to modify climbing regulations and help minimise environmental impact. New Zealand has lost a great ambassador," says Colin Monteath.

"While all of us who knew Rob will

miss him greatly, we will continue to be inspired by the way he lived his life and shared his dreams."

Peter Hillary, another friend and climbing companion, had this to say about Rob Hall in a media article: "Rob Hall was a generous man and fine citizen. Even as an eminent adventurer and mountaineer, he remained approachable and mature. Few walk with the mantle of fame and remain true to themselves."

## RUSSIAN EXPEDITION A SUCCESS

"It was long Feodor's dream to go to the South Pole," says expedition co-ordinator Boris Tchmykov of Feodor Konuhov's combined South Pole and climb of Vinson Massif, "after his solo expedition to the North Pole in 1990 he decided to go to the Antarctic. And he did it."

Konuhov's expedition started on 8 November 1995, leaving Gerhules Ice Bay headed for the South Pole pulling a

135 kg sledge.

Fighting against the rigours of deep frost and strong winds he arrived at the South Pole on 5 January this year. Nine days later he arrived at the peak of the 5128 metre Vinson Massif.

Konuhov lost 12 kgs in the process.

For good measure the expedition then returned to Chile and climbed the South Hemisphere's highest peak, Aconcagua.

Konuhov's next venture will be in the

staff of the English expedition to the North Magnetic Pole, under royal direction.

44 year old Konuhov, married with two children, hails from the Russian Far East — the Primorsky area, Nahodka, Vrangler Bay.

The multi-skilled Konuhov is a Master of Sport, captain of a yacht and a recognised artist.

A member of the Russian artist's union, he is exhibited internationally and has sold works to many private collectors and museums.

He has participated in more than 30 adventure and scientific expeditions — his feats have been recognised by the Order of International Friendship and the United Nations.

In 1991 Konuhov founded the newspaper and almanac *The Russian Traveller*, and set up a School of Journeys' for children in his native Nahodka.

## EXPLORATION BACKGROUND

- 1986: A journey to Baffin Land, Canada.
- 1988: Participated in an international transarctic ski expedition from Russia to the North Terminal to Canada.
- 1989: (Spring) First solo ski expedition to the North Terminal
- 1989: (Summer) Leader of the first joint Soviet-American transcontinental bicycle run from Nahodka to Leningrad
- 1990: (Spring) First in the world to reach the North Terminal on ski alone from Siberia.
- 1990-91: First Russian to sail solo around the world without stopping.
- 1991: (Summer-Autumn) Leader of the automobile run Nahodka to Brest.
- 1992: (Spring) Climbed Everest
- 1992-94: Sailed around the world from West to East
- 1996: (Winter) Reached the South Pole solo on skis, climbed Vinson and then Aconcagua.

## CAPE ROBERTS UPDATE

### AUSTRALIA JOINS PROJECT

An application to the Australian Research Council by Dr Ken Woolfe (James Cook University of North Queensland, Townsville) and Dr Chris Fielding (University of Brisbane) for funding to join the project at the 5% level has been successful. This completes funding commitments for the project and for the two seasons of drilling planned.

The prime interest of the Australian group is in stratigraphic analysis of the strata off Cape Roberts. Dr Woolfe will be the national Science Coordinator, and Jack

Sayers, Antarctic Division, Kingston, Tasmania, the Australian representative on the Operations/Logistics Management Group.

### THE DRILLING SYSTEM

The drilling system being used for Cape Roberts is a Longyear 44 heavy duty rig with Q series drill rod and casing and with core retrieval by wire line. Rigs of this sort are commonly used for geological exploration and civil engineering investigations.

The rig platform and mast weigh 17.5

tonnes have been designed specifically for Antarctic operations by Murray Mitchell of Works Consultancy Services and built by Southern Cross Engineering in Christchurch. The rig floor is 4 m by 6 m and is hydraulically jacked up 3 m off its 9 m long sled to give clearance for setting casing, clamps and for the daily tidal variation of around 1 metre.

During drilling the rig is connected via an enclosed stairway to two sled mounted insulated containers that contain the mud system. Designed and built by Drilling Fluid Equipment NZ Ltd of New Plymouth, it is a small scale version of oil drilling mud systems and consists of a centrifuge to clean the mud for recirculating, four 2000 litre mud tanks, a sea water heating tank and a pumping system.

The drilling system has been developed by Alex Pyne, and Johnny Hampton the project's drilling consultant, who has had a long career in the drilling industry including Drilling Superintendent for the Ministry of Works and Works Consultancy drilling operations in NZ and overseas. The drilling system includes a sea-riser for stabilising the drill string in water up to 500 m deep, designed and built by Ostpoil in New Plymouth, for IGNS, and a submarine video system from Victoria University for monitoring the riser and the sea floor. Dale Preston, an Institute of Geological & Nuclear Sciences (IGNS) driller who advised the project in its early stages, returned in 1995 and was primarily in charge of setting up and commissioning the drill platform prior to its shipment. Dale's overseas commitments have prevented him from going to Antarctica as Drilling Supervisor, and

that position will now be taken by Pat Cooper of Westport, NZ. Pat has had extensive drilling experience with deep hole diamond coring overseas. He has also had three previous seasons in Antarctica, including shift supervisor for the CIROS 1 hole in 1986.

## **CORE PROCESSING**

The Cape Roberts core will be processed and described at three different sites — the Drill Site Laboratory, the Cape Roberts Camp Laboratory and at the Cray Laboratory at McMurdo Station. This is because the core must be measured, split, described and packaged soon after drilling, and because a comprehensive description calls for more study than can be accommodated at a drilling camp.

Initial work at the drill site involves recovery, labelling, splitting and boxing into sampling and archive halves as well as measurements of physical properties and fracture patterns. In addition, down-hole logging tools for rock density, velocity, temperature and other properties will be run in each hole part way through and at the end of the drilling.

The core is then moved to Cape Roberts for detailed core description and preliminary microscopic study by a team of five sedimentologists.

The core will be moved bi-weekly to the Cray Lab, McMurdo Station, where it will be subject to comprehensive paleontological, petrological and palaeomagnetic observations. More details on the core processing and data gathering can be found in the Cape Roberts Project's Technical Note #3.

*From Cape Roberts News.*

# NATIONAL PROGRAMMES



## INDIA

### INDIAN COMMITTED TO SOLID PROGRAMME

The policy of the Department of Ocean Development, the nodal agency responsible for planning and execution of Indian Antarctic expeditions, is to conduct a carefully balanced and optimum programme of front ranking science through which it is possible to maintain an active, authoritative and influential presence of India in Antarctica. The Department constantly evolves scientific programmes mainly in consultation with national laboratories and institutes which responds to the changes and priorities of the nation in particular and the world at large so as to make the effective use of Antarctica as a unique laboratory of science. More than a thousand personnel drawn from about 45 national institutions have contributed to enhancing our knowledge about the icy continent.

While the preparation for the launching of the XVI expedition by the end of 1996 is underway, the Department has created an Expert Group with a mandate to conceptualise, design and realise the long term scientific and logistic forays of the nation in Antarctica beyond the turn of this century. A modern polar research laboratory called the Antarctic Study Centre is presently under construction at Goa. This laboratory when fully operational will serve as a national facility for low temperature research, principally on the study of ice cores retrieved not only from Antarctica but also from the Himalayas.

The current research work being undertaken in Antarctica by Indian scientists is in the following broad fields of polar science:

- a) Earth Sciences & Glaciology;
- b) Human Physiology'
- e) Environmental Sciences and
- f) Communication & Engineering.

The ongoing scientific objectives are as follows:

#### a) Earth Sciences and Glaciology:

- Geological mapping of virgin areas of the Orvin Mountains covering a total area of 9600 sq. Km.
- Geochemical sampling of the crystalline rocks of Schirmacher Oasis to elucidate the evolutionary history of the area in terms of Gondwana reconstruction.
- Insitu and airborne measurements of petrophysical properties of rocks, including radioactivity.
- Monitoring the dynamics of glacial front movement of the Dakshin Gangotri glacier.
- Preparation of a 1:5000 scale topographical map of the Schirmacher Oasis.

#### b) i Atmospheric Sciences:

- Vertical profiling of ozone concentration using laser heterodyne system and measurement of seasonal variation of ozone by mm wave radio spectrometer.
- Studies on day time auroral phenome-

non by an locally designed daytime glow photometer.

— Studies on deep space magnetic currents and the correlation of magnetic storms with human physiology using fluxgate magnetometers.

— Planetary boundary layer studies to understand the dynamics of Antarctic lower atmosphere.

**b)ii - Meteorology:**

— Continuous recording of surface weather parameters and radiation budget measurements.

— Periodic ozone sonde and radiosonde ascends to quantify climatic parameters.

**c) Biological Sciences & Oceanography:**

— Studies on algal colonisation and microfauna in fresh water lakes as a part of biodiversity studies and ecological monitoring.

— Microbic studies for identifying bacteria that can be used for bio-degradation.

— Studies on trophic structure of various Antarctic environments to understand the bioactive potential of each system.

— Survey, exploration and assessment of krill and other living resources of the Antarctic waters.

— Polar horticulture under controlled conditions.

**d) Human Physiology:**

— Studies on the correlation of circadian rhythmicity and metabolic status of personnel through monitoring of body parameters on a year round basis.

— Studies on adaptation techniques of the human body to adverse conditions in Antarctica.

**e) Environmental Sciences:**

— Environmental impact assessment

studies through analysis of diverse samples of land, air and water taken from the station, with the aim generating baseline data required for devising an environment monitoring protocol.

**f) Communication and Engineering:**

— Long distance communication techniques through satellite and HF modes.

— Upgrading of satellite communication by uplinking Maitri through electronic mail.

— Upgrading of data and voice communication through computer interfacing between Maitri and India using low power HF transmitters.

— Establishing an experimental amateur radio station.

— Low temperature structural engineering studies on building materials and other station infrastructure.

The foundation of the Indian Antarctic Programme was laid in a modest way through the launching of its first expedition in December, 1981. The formative years of polar science in India were shaped through the first three expeditions which were primarily aimed to develop different facilities to conduct scientific investigations in the fields of

a) climatology and astrophysics,

b) biological oceanography,

c) geology and geophysics and

d) engineering and communication. The seeds of Indian Polar Science were sown and nurtured from her first permanent station, Dakshin Gangotri (DG) which was built on the ice shelf at Latitude 70 05' S and Longitude 12 00' E during the course of the third expedition the station had an initial wintering team of 12 members.

While the country was consolidating

the achievements of the first two expeditions and planning to launch the third one, thereby confirming its long term interest and a capability to conduct high quality Antarctic science, it was admitted to the Antarctic Treaty System on 19th August, 1983 and was granted Consultative Status on 12th September, 1983. On 1st October, 1984 India was also admitted to the Scientific Committee on Antarctic Research (SCAR) and in 1986 became a member of the Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR).

The most important result of the first Antarctic expedition was the establishment of an unmanned weather station. Records of geomagnetic intensity and magnetic storms were measured using automatic radio noise field strengths. During the second expedition emphasis was placed on land survey. Research was initiated in the field of mineralogy and petrography. For the first time, observations on ozone concentration were made through ozone sonde ascents. A permanent communication system was established during the third expedition, which also saw the start of 'new' programme on biological oceanography.

The Fifth expedition also saw a data collection platform (DCP) being commissioned through which real-time daily weather data from Antarctica could be transmitted to India using India's own satellite INSAT-IB.

Dakshin Gangotri Station fulfilled its desired lifespan and was decommissioned in 1990 being converted into a supply base. The expertise and knowledge gained in low temperature structural engineering from the station was applied during the building of the

wholly indigenous second Indian station, Maitri' during the seventh and eighth expeditions on a rocky exposure in the Central Dronning Maud Land about 80 kms inland at latitude 70 46' S and longitude 11 44' E. Maitri' is a modern comfortable station with living accommodation for 25 persons and good scientific amenities research. It also has facilities for summer camps to accommodate about 35 scientists.

During the Seventh expedition geological mapping was extended beyond the Schirmacher Oasis to new areas west of the Humboldt Region where high grade metasediments akin to the Khodalites of Kerala were found. During the Eighth expedition, mapping was extended to an area further South that cover the Payer and Weyprecht mountains. Subsequently, the three Peterman ranges and Gruber mountains of the Wohlthat mountain ranges have been mapped. An aeromagnetic survey was also made during the Seventh expedition, and insitu petrophysical properties of the litho-units of the Schirmacher Oasis were also catalogued.

In 1991 following the adoption of environmental Protocol to the Antarctic Treaty which banned commercial exploitation of mineral resources for the next 50 years, the focus of Indian activities in Antarctica shifted towards carrying out scientific research aimed at an understanding of the various global phenomenon that has a direct influence on the well-being of mankind. This reserve focus on the following:

- a) Ice-ocean-atmosphere system in Antarctica and global environment.
- b) Studies on Antarctic lithosphere for understanding geological evolution of earth and Gondwana reconstruction.

- c) Antarctic ecosystems and environment physiology.
- d) Solar terrestrial processes.
- e) Creation of Antarctic data base.

Contribution made by Dr. A. Mitra, Senior Scientific Officer (Antarctic Division), Dept. of Ocean Development, Govt. of India.



## NEW ZEALAND

### "ANTARCTICA NEW ZEALAND" UNVEILED

The new Crown agency to manage New Zealand's involvement in Antarctica, Antarctica New Zealand, was unveiled in Christchurch on 1 July by Prime Minister Jim Bolger.

A launch function, which revealed the new name, logo and livery of the entity, was held at the International Antarctic Centre.

Board chairman Sir Robin Irvine said to achieve its objectives *Antarctica New Zealand* needed to have a "brand".

"Whether science, logistics, environment, tourism or education related, people will be able to recognise *Antarctica New Zealand* as the place to come for the right advice and information."

Sir Robin said "*Antarctica New Zealand* is intended as a powerful advocate for Antarctic scientists and science."

To that end the organisation will seek to appoint a science manager to provide professional management of New Zealand's scientific involvement, operating at a different level than the largely amateur Ross Dependency Research Committee," he said.

The entity had identified a number of strategic goals for the next three years:

- have in place and manage a dynamic strategy for all New Zealand activity



in Antarctica and the Southern Ocean;

- ensure that an ongoing science programme of international quality is undertaken in relation to the Antarctic and the Southern Ocean that maximises benefits to New Zealand;
- provide leadership that ensures all New Zealand activities occur within a framework which safeguards the environmental and other essential values of the Antarctic and Southern Ocean;
- provide leadership and coordination within New Zealand of activities for promoting public and scientific awareness of the unique characteristics and importance of the Antarctic and Southern Ocean region;
- provide a framework to facilitate appropriate commercial and tourism opportunities for New Zealander in a way that is consistent with new Zealand's values and obligations in the Antarctic and Southern Ocean;
- ensure that ongoing and integrated logistical services for New Zealand's

activities in the Antarctic and Southern Ocean are available at a minimum cost in accordance with the unique constraints of Antarctica.

Former New Zealand Antarctic Programme Director Gillian Wratt has been appointed Chief Executive of Antarctica New Zealand. All staff of the NZAP have been transferred to the new agency.

Sir Robin Irvine said the Government was still considering a recommendation that the interim board be retained. The Ministry of Foreign Affairs and Trade will continue to have a role in providing policy advice through the chairing of the new Officials Antarctic Committee.

For its first season *Antarctica New Zealand* is anticipating one of the busiest ever. Cape Roberts preparation and ozone monitoring will begin at Winfly. There will be over 130 science personnel from 27 research projects through Scott Base over the season, with the base close to its maximum accommodation capacity of 73 people for most of November, December and January. *Antarctica New Zealand's* field support resources — helicopters, snow track vehicles, wannigans etc, will also be fully committed with Cape Roberts and other project support.

Last season the programme completed a number of tasks at Scott Base that improve *Antarctica New Zealand's* science support facilities: installation of a new wet lab, removal of B Hut and its replacement by the ex-Vanda lab, and alterations in the Hatherton lab to provide

### WINTER OVER STAFF

The Antarctica New Zealand Winter Over team is:

David Hornstein	— Science Technician
Robyn Holland	— Base Support Officer
Alana Muir	— Domestic Staff
Stewart Hopkins	— Chef
Jim Henderson	— Field Support Officer
Ron Rogers	— Winter Manager, Engineering Services Manager
Steve Palmer	— Base Engineer
Steve Harry	— Base Engineer
Eric Trip	— Telecom Technician
Mike Pahl	— Electrician

more office space for researchers and an area for a new National Institute of Water and Atmospheric Research (NIWA) ozone experiment. In the coming season the ex-Vanda lab will be fitted out as a general purpose lab. At Arrival Heights the old Vanda accommodation building will be used to provide sleeping space outside the research building.

Another major task, when accommodation pressures ease at Scott Base in late January/February, will be the replacement of the present single skinned fuel tanks with double skinned tanks and the instalment of a delivery pipeline linked to the Williams Field line. *Antarctic* would welcome comment on any aspect of *Antarctica New Zealand*, from its new livery to its possible impact on science. Please send any contributions to the Editor at the contact points listed on the contents page.

### \$338,000 FOR ANTARCTIC INSTITUTE

Funding of \$338,000 has been set aside

in the budget for the *Antarctica New Zealand* to buy new helicopter services to boost science research in the Ross Dependency.

The new services will partly be used to replace services previously provided by the United States Navy, which is withdrawing from Antarctic work, Foreign Minister Don McKinnon said.

The Government is also spending \$270,000 on the International Centre for Antarctic Information and Research in

Christchurch.

Mr McKinnon said the funding would allow the institute to become part of a United Nations global resource information database system which provided environmental information about Antarctica to the UN.

The initiatives would "enhance the facilities at the Christchurch Antarctic gateway and raise awareness of New Zealand's new Antarctic structure", Mr McKinnon said in a statement.

---



## AUSTRALIA

### GEOLOGICAL HISTORY OF THE PRINCE CHARLES MOUNTAINS UNDER SCRUTINY

Scientists from the University of Melbourne and the Australian Geological Survey Organisation (AGSO) will undertake geological studies in the Northern Prince Charles Mountains this summer. The field party, comprising Chris Wilson, Chris Carson, Steve Boger (all University of Melbourne), Doug Thost (AGSO) and Matt Godbold (Field Training Officer), will be operating in two groups — one to the west side of Beaver Lake and the other in the Porthos Ranges. The groups will later join up for more intensive work in the area found to be most interesting.

The major research project, the Uplift History of the Prince Charles Mountains and the East Antarctic Shield, seeks to cast light on the geological history of the region and its role in the evolution of the rocks and landforms of East Antarctica. In particular this party will be aiming to find evidence for older geological events that control the present site of the Lambert

glacial drainage system and the uplift of the neighbouring Prince Charles Mountains — the largest, most southerly exposure of basement rock in the East Antarctic Shield. This is directly relevant to any palaeogeographic or palaeoclimatic reconstructions of Gondwana.

The two closely related objectives of this project are

- (1) to establish the location, temporal and kinematic relationship between the major faults and shear zones that transect the northern Prince Charles Mountains and establish their relationship to the origin of the Lambert Graben; and
- (2) to combine this information with the uplift history that has been identified in neighbouring metamorphic basement complexes in Prydz Bay, the Palaeozoic sedimentary basins and to the results obtained from thermal uplift studies.

The Beaver Lake field party will concentrate on several regions where there

are known major faults and shear zones — round Beaver Lake on the McLeod Massif-Fox Ridge and in the Central Nemesis Glacier region. Subsequent laboratory work — careful and detailed petrography and microprobe analysis of minerals — will be critical for establishing the history and relative uplift of different tectonic blocks in the Prince Charles Mountains.

The Porthos Range field party will concentrate on sampling and mapping at two sites — Mt McCarthy and Martin Massif. The project will aim to refine the complex tectonic-metamorphic history of the region. Structural data and samples will be collected for lab-based petrological and geochemical studies in Australia.

*From ANARE News, Spring/Summer  
1995/96*

## NEW BACTERIA COULD HELP HEART DISEASE, ASTHMA SUFFERERS

An Antarctic bacteria discovered by Australian scientists could hold the key to cheap production of Omega-3, a poly-unsaturated fatty acid researchers believe can help sufferers of heart disease and asthma.

Antarctic Cooperative Research Centre (ACRC) microbiologist David Nichols said the bacteria could solve a long-running problem and save the fish farming industry millions of dollars.

The bacteria, isolated three years ago by researchers at the ACRC in Hobart, were discovered in sea ice off Antarctica.

Mr Nichols said a year-long trial had shown the bacteria could produce sufficient quantities of Omega-3 to replace the expensively-produced micro-algae fish farmers breed to feed plankton eaten by their fish.

The plankton, called rotifers, resemble the fishes' natural diet but are low in Omega-3 which fish need.

The micro-algae now bred to provide Omega-3, had to be grown in special tanks with a regulated supply of light and carbon dioxide, an expensive but until now necessary operation, Mr Nichols said.

In contrast, the Antarctic bacteria were grown in a broth to which inexpensive nutrients were added — a less precise and much less expensive process, he said.

The trial had shown that the rotifers ate the bacteria and there was a very good take-up rate of the Omega-3, Mr Nichols said.

"There's a potential cost-saving in production and consumables (for the fish-farming industry)," he said.

"The potential is there for significant savings." Mr Nichols believes the fish-farming industry could save at least a million dollars a year by switching from micro-algae to the new bacteria. The ACRC is interested in finding a partner to conduct a commercial-scale trial.

The Omega-3 produced by the bacteria could also be used for human consumption, said Mr Nichols, a PhD student researching the bacteria.

Researchers internationally are increasingly interested in Omega-3 as recent studies link it to benefits for people with heart disease and childhood asthma.

Mr Nichols said it was possible to

patent bacteria if they were new species.

"There is a strong possibility that this bacteria is a new species or could be clas-

sified as a new species," he said.

Australia is the only country seeking to exploit Antarctic bacteria.

---



## UNITED STATES

### ANTARCTIC ICE DRILLERS REACH RECORD DEPTH AT VOSTOK

Scientists drilling through the East Antarctic ice cap at Vostok Station, in a project supported by the NSF and others, reached a record depth of 3350 metres during this past Antarctic field season and extracted an ice core representing the past 400,000 years of climate history.

Russian, U.S. and French glaciologists at the Russian base are drilling the core to preserve samples of the Earth's atmosphere. The core will present an archive of past climate reaching much farther back in time than any other ice core. Antarctica's ice cap is the deepest and oldest in the world.

Some 30 researchers from the three nations will study Vostok's icy record, which stretches over four entire cycles of glacial advance and retreat. Drilling of this core began in 1990; the researchers

hope to extend the current record back to one million years or so with further drilling.

Studies of Vostok's ice have already shown a close link between climate over the past 200,000 years and changing concentrations of greenhouse gasses in the atmosphere. Ultimately, the research will help uncover how the earth's "climate machine" operated in the past, and improve predictions of future climate.

A subglacial lake called "Lake Vostok" lies under the station, possibly sealed off from the atmosphere for hundreds of thousands of years. Researchers are now discussing the possibility of sampling this lake. Results on the Vostok ice core were presented at the American Geophysical Union's Spring Meeting May 20-24 in Baltimore.

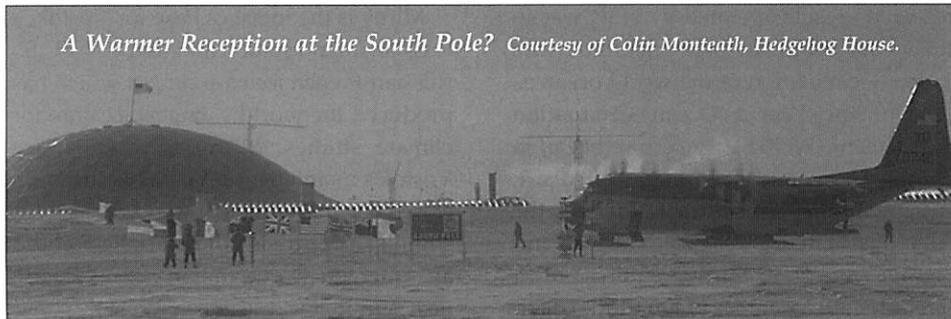
### U.S. ENDS BIG CHILL AT SOUTH POLE

After years of discouraging the visits of explorers, the United States is now showing a little hospitality.

Traditionally, the U.S. National Science Foundation and its support crew have limited assistance to a hot cup of coffee and quick tour of the site. Bad publicity over that grudging attitude prompted a policy review this season.

The Foundation is still worried that its warmer hospitality will encourage more visitors, who sometimes get into trouble and who may interrupt scientific experiments. Yet when three Norwegians skiers arrived at the pole 28 December, they volunteered to work at Scott-Amundsen base and got full meals in exchange. The Norwegians worked in the kitchen and

*A Warmer Reception at the South Pole? Courtesy of Colin Monteatli, Hedgehog House.*



helped with station inventory.

The United States cannot bar people from the South Pole; no one owns Antarctica, and all can come and go as they please. But the bases and stations are the property of the countries that run them, and access to their facilities can be restricted.

The National Science Foundation especially discourages adventurers from entering the "clean air zone" near the pole where atmospheric research is done. Aeroplane and snowmobile exhaust can skew the results of air sampling.

Amundsen-Scott base still officially

refuses to provide weather information or radar reports to incoming tourist flights, which arrive about six times each southern summer. They are not allowed to refuel from U.S. supplies, so the only company running flights to the pole — Adventure Network International — has its own fuel dump near the runway.

Polar tourists pay about \$25,000 for the round-trip flight from Punta Arenas, Chile, to the pole for a two-hour stopover and back. They get a cup of coffee and some cookies, a quick look around the inside of the geodesic dome, and then they're sent on their way.

## NSF SHIP DELIVERS EMERGENCY PROVISIONS TO RUSSIAN ANTARCTIC BASE

National Science Foundation research vessel *Nathaniel B. Palmer*, made an emergency delivery of approximately four tonnes of food to Russia's Mirny station in mid-June. Thirty-eight people are spending the dark Antarctic winter on the Russian base.

"Without NSF's aid, the Russian station's supplies would run out within several days," said the NSF's Erick Chiang. The Russian resupply ship, *Akademik Federov* normally supplies the station, but is behind schedule due to mechanical problems. It is expected to reach another

Russian station, Molodezhnyayav within a week and to arrive at Mirny within several weeks. Currently, the *Akademik Federov* is operating at only about 70 percent of its propulsion capacity.

The U.S. National Science Foundation, which runs the U.S. Antarctic Research Program, has agreed for humanitarian reasons to provide emergency provisions to Mirny.

The *Nathaniel B. Palmer* routinely carries extra provisions because of the uncertainty of conditions in the Antarctic winter. The ship, one of two ice-breaking

research vessels operated by NSF, was in the vicinity of Mirny on a scientific cruise to study circulation of the world ocean as part of the World Ocean Circulation Experiment (WOCE). The cruise began in South Africa and will end in Hobart, Australia; the cruise track follows the edge of Antarctica's sea ice. The humanitarian diversion to Mirny, requires only a minor (about 5 degrees of longitude) deviation from the planned course.

## **AIR GUARD TO ASSUME NAVY SQUADRON'S ANTARCTIC MISSION**

It has been decided that the Navy's Antarctic mission will transfer to the Air National Guard.

The Air Force will gradually increase its role over the next two years until it takes over entirely in the 1999-2000 winter season.

The Deep Freeze operation has 450 staff and seven LC-130 Hercules aircraft, specially fitted with huge skis for ice and snow landings. Until February this year the squadron also operated several Huey helicopters.

The Air National Guard's 109th Aircraft Wing, which will assume responsibility for the Antarctic flights, is based at Stratton Air National Guard Base in Scotia, New York. It has been flying in the Arctic since 1975 and in the Antarctic since 1988.

The Navy unit, VXE-6 is based at Point Mugu, California and forward deploys its staff to New Zealand every October to February.

Virtually all of the missions flown by the unit are for the National Science Foundation, which pays the salary and maintenance costs of the unit.

Mirny is the logistics base for Vostok, a Russian inland station and home of a U.S.-Russian-French ice core project which has produced the world's longest ice core for climate studies. Mirny is essential for Vostok's maintenance. Vostok is currently closed for the winter due to budget constraints. If Mirny is not resupplied, and if an emergency evacuation is necessary, next summer's research at Vostok could be threatened.

The switch to the Air National Guard is forecast to save money by consolidating the programme within one unit and using more part-time personnel, who will make up half the unit.

Estimates of costs saving range from \$5 to \$15 million a year.

In a related story, the newest transport aircraft in the US Air Force's inventory recently visited Operation Deep Freeze on its way to an air show in Australia. It touched down in Christchurch as part of the regular Air Mobility Command channel mission that delivers logistical support to Operation Deep Freeze and the Australian Defence Forces.

The C-17 Globemaster, operated by the Air Force's Air Mobility Command, is the newest innovation in air transport, the second-largest plane in the Air Force.

The C-17 is twice the external size of the C-141 Starlifter (a more regular visitor to Christchurch) but carries twice the payload. The C-17's cargo section is similar to the vast C-5 Galaxy (the Air Force's largest transport), but can land at smaller airfields.

The C-17's four Pratt & Whitney



*The Navy's involvement will be gradually phased out until the 1999/2000 season. Courtesy of Colin Monteath, Hedgehog House.*

PW2040 engines have a thrust of 40,700 lbs (181 kN). The aircraft has a maximum payload of 78,110 kilograms, fuel capacity of 79,923 kilograms, and cruises at Mach 0.77. The aircraft is 52.2 metres wide from winglet tips and has a 50.3 metre wingspan. It is 53 metres long from nose to tail and stand 16.8 metres high.

The Globemaster's 5.5 metre wide, 20.8 metre long cargo compartment allows double-row loading of trucks or cargo pallets. The full-width aft opening permits

rapid delivery of large vehicle. This aircraft can deliver combinations of fuel and cargo weighing more than 210,000 lbs into a 3,000 foot runways.

The crew of four can take advantage of some of the latest in avionics technology to fly this plane, including heads-up displays, two major computers, 55 micro-processors and three data bases that can control the aircraft and execute a variety of functions, including airdrops and landings.



## SUB-ANTARCTIC

### CONSERVATION VS TOURISM: A DELICATE BALANCE

A recently released report by the Department of Conservation conveys the results of a survey of tourists to New Zealand's sub-Antarctic islands. *Antarctic* summarises the main findings:

The survey of shipborne tourist visitors to New Zealand's subantarctic island nature reserves was carried out during the 1992/93 and 1993/94 cruise seasons. It reveals that visitors were from more affluent and older sectors of society, were

often retired or from professional backgrounds, included a high proportion of women compared with participants in other outdoor recreation activities, and had a high degree of conservation group involvement.

Visitor satisfaction was high favourite features of their visits were experiences of natural environments and wildlife, and the enhanced opportunities for conservation learning. Some distinctions

were found between passengers from large and small vessels, suggesting different visitor experience associated with contrasting scale of the tour operations.

While visitors acknowledged their presence could cause impacts, particularly from trampling of soils and vegetation, no problems were apparent at levels of major concern to island managers.

Tourism is continuing to grow and diversify throughout the Antarctic and subantarctic regions, and now brings more people into these areas than does science or any other activity. Interest in the subantarctic islands in particular has grown largely as a consequence of the growth in Antarctic tourism. Visits to subantarctic islands are a useful way of breaking long sea voyages between mainland ports and the Antarctic continent. The islands not only add diversity to Antarctic tours, they also provide special opportunities for people to visit wild, remote places and experienced encounters with wildlife of great importance to science and conservation. Thus, several subantarctic island groups in the Southern Ocean are now attracting tourist visits, most notably South Georgia, the Falkland/Malvinas Islands, Macquarie Island and the New Zealand subantarctic islands.

Managing tourist visits has now become one of the key issues for conservation of New Zealand's subantarctic islands. Tourists have been visiting these islands sporadically and in small numbers since 1968, but in recent years the numbers of tourists and frequency of visits have increased dramatically.

In the seven-year period 1987/8 to 1993/4 a total of 1,831 people visited the

islands aboard 45 ship voyages. The growing trend is further revealed by the fact that in the 1994/5 summer there were 15 voyages to the islands carrying a total of 542 passengers.

Accompanying the steady growth in numbers of tourists and of visits to the islands in recent times has been a greater diversification of tourist activities. Traditionally, tourists visited aboard medium-sized cruise ships, carrying 100-150 passengers, but recent times have witnessed the advent of smaller tour boats, with fewer than 50 passengers, and private yachts. In 1994/5, for example, there were three visits by cruise ships, seven by smaller boats and five by private vessels.

Whereas the larger cruises are generally limited to sight-seeing activities from the water, with brief landings ashore in small inflatable craft, passengers on the smaller tour boats are more likely to be pursuing nature tourism (so-called ecotourism) activities. They therefore tend to make more frequent landings, spend more time ashore and visit the more remote areas in search of rare species of animals and plants, seabird and marine mammal breeding colonies, and other special wildlife sites. Such differences may present different potentials for impact.

There is also a growing demand for ship-based helicopter sight-seeing, scuba diving and other specialist activities such as filming and research. A further trend is a demand to allow visits by large ocean-going cruise liners carrying up to 400 passengers (such visits are prohibited by current policies applying at New Zealand subantarctic islands).

Most tourist voyages to the islands

have been a component of Antarctic tours conducted by foreign tour operators and based from overseas ports.

Recently, however, tours have been organised and operated from mainland New Zealand, and have been specifically targeted at the subantarctic islands.



*Historical sites like this one on Enderby Island are an attraction for visitors to the sub-Antarctic.*

*Courtesy: Colin Monteath, Hedgehog House.*

### **Tourism impacts on subantarctic islands**

While tourist visits to date have been essentially benign in their environmental impact, there is mounting concern that further increases in the volume and diversity of tourist activities could lead to greater demands for the provision of

onshore facilities, and to an increased threat of environmental damage and disturbance to wildlife.

Such concerns are not limited to the subantarctic islands, but are also common throughout the Antarctic realm. In response to these concerns, the Antarctic Treaty parties in 1994 agreed on a comprehensive series of guidelines for visitors to the Antarctic and for those organising and conducting tourist activities, within the context of the Madrid Protocol on Environmental Protection to the Antarctic Treaty.

The international scientific and conservation communities have also given extensive consideration to measures for minimising tourism impacts in the Antarctic and on subantarctic islands. In the case of the subantarctic islands, tourism is acknowledged as a legitimate activity, but conditional upon the observance of legal regulations, and with management oversight necessary to maintain the conservation values of the islands. Included among recommended management measures is the need for socio-cultural and environmental research, to gain a better understanding of tourists, their activities and their impacts. Some preliminary work has begun in monitoring physical impacts of shipborne tourists in the Antarctic Peninsula region and the investigation reported here involves social and impact perception research in the context of management of New Zealand's subantarctic island nature reserves.

### **Management of tourism at New Zealand subantarctic islands**

The five New Zealand subantarctic

island groups are nature reserves, under the Reserves Act 1977, with the objective of management is strict protection of protecting their natural state. Tourism, while regarded as a legitimate use of some islands, is permissible only under conditions consistent with the objective of nature conservation.

The island reserves are each managed according to the provisions of legally binding management plans (soon to be replaced by a single Conservation Management Strategy), which provide:

- restrictions on access, landings and entry points;
- a maximum limit of 600 visitors allowed at any one site in one season;
- access by permit only, including imposition of permit application fees and other costs;
- supervision of entry permits by officially appointed on-board departmental representatives;
- observance of visitor codes of conduct, including limits on the size of parties ashore, provision of guides, and prohibition of wildlife disturbance, souveniring, littering and smoking etc.;
- a ban on overnight stays ashore;
- quarantine provisions to prevent accidental introductions of alien animal and plant pests;
- limits on the provision of on-shore tourist facilities.

These management measures are determined in the light of current patterns and levels of tourist use at the islands. The policies and regulations are, however, under continual review to ensure that they remain relevant and effective. Review of current management practices, including identification of deficiencies and of future needs, requires attention to

the monitoring of tourists and their activities. Previous research on New Zealand subantarctic tourism

The study was conducted as part of a broader visitor monitoring programme for the New Zealand subantarctic islands. It follows a pilot project conducted in the 1990-91 summer season at the islands. That study involved a survey of passengers aboard larger cruise vessels which visited the islands en route between the New Zealand mainland and Antarctica. Its aim was to describe the tourists, their motivations for undertaking the visits, their aspirations and levels of satisfaction, their perception of human impacts and their attitudes toward management regulations.

From an analysis of the results of pre-visit and post-visit questionnaires, it was revealed that tourists visiting the subantarctic islands as part of Antarctic tours are:

- likely to be in the older and more affluent groups of society;
- most commonly American citizens; almost 50% females, which is a higher proportion than in most outdoor pursuits;
- generally very positive about the experiences and satisfactions derived from the island visits.

Above all, tourists emphasised the value they attached to the wilderness experience gained, based particularly upon the remoteness and naturalness of the island environments and wildlife encountered. Conversely, tourists were less satisfied with the brief time made available for landing ashore, and to a lesser extent with the insufficient guiding and information provided.

The tourists clearly recognised that

they were intruding into natural, vulnerable and special wildlife habitats of great importance for conservation. Consequently, they were generally in favour of the management policies being pursued and accepted the need for regulations which restricted their activities. This is an encouraging result for managers of the island reserves, as it suggests there is substantial support from tourists (and tour operators) for maintaining the natural state of the islands and their wildlife populations, and protecting them from human damage or disturbance.

### Conclusions

The study has achieved its objectives of improving knowledge about tourists to New Zealand's subantarctic islands and their attitudes towards management. We now have comprehensive tourist profiles, and information on tourists' demands and satisfactions, perceptions of impact, and attitudes towards management and controls.

Current policies and practices for managing tourist visits appear to be supported by visitors. They accept that their visits have impacts and should be subject to some controls.

Current patterns of tour operations and visitor satisfactions show that high quality natural experiences for tourists are being achieved without known significant detrimental impacts to the natural values of the island reserves. Therefore there should be little basis for significant conflict of interest between the objectives of tour operations and those of island managers under current management conditions.

Results to date indicate that given adequate management controls and satisfactory visitor compliance, it is possible to conduct ecotourism visits to some strictly

protected island nature reserves, which can satisfy the requirements of the visitors, tour operators, and island managers.

### Recommendations

These recommendations are directed primarily at island reserve managers, but some are directly relevant to tour operators.

- Continue to approve permits for visits from both large and small vessels in order to maintain a diverse range of visitor opportunities. The current practice of approving permits for visits from both large and small vessels appears to be justified. This is appropriate because there are two distinct groups of visitors being catered for. While visitors from both large and small vessels have much in common in their expectations and satisfactions, there are some differences between them in the specific attractions and experiences they seek, and enjoy. In addition, differences in the scale and capability of the vessels allows diversity in the visitor experiences provided and the sites potentially visited.
- Review the universal ceiling of 600 visitors per site, and consider adjustments which could be made subject to management controls on a site-by-site basis. While the current 600 limit is a useful pragmatic maximum figure, the results reported here suggest that on the basis of social perceptions at least, it may be a conservative figure at some sites. Given the continued imposition of management controls and continued compliance and co-operation by the visitors, it may be possible to increase this limit at certain sites. Reduction of visitor numbers at some sites may also be appropriate. If increased numbers are permitted, careful monitoring would be required to ensure there are

no undesirable physical and biological impacts.

- Consider what options there may be for providing more landing opportunities and increasing the time spent ashore. There is a demand, particularly from small vessel passengers, for more opportunities to land onshore, and for spending more time onshore. This has implications for tour operators in planning their visit schedules, and for island managers in deciding on available landing sites. There is potential for greater proliferation of impacts at a wider range of sites, which requires careful consideration of the supervision and conduct of site visits. Well managed visits may not necessarily represent a major concern.

- Consider options for the route, design and marking of tracks to minimise trampling impacts. The only notable physical impact perceived by visitors was that trampling was damaging to soils and vegetation. Trampling impacts are unavoidable, although these can be minimised and confined by directing visitors along marked tracks or routes. Where these routes traverse untracked terrain, regular realignment of marker poles would effectively disperse the impact, and prevent formation of informal tracks (and associated long term impacts).

- Continue to enforce the 5 metre minimum approach distance from wildlife. While responses from visitors generally support this restriction, suggesting most visitors have some understanding of the need to avoid wildlife disturbance and accept that their visitors should be controlled in this way, a substantial minority did indicate preference for greater close-up viewing of wildlife.

- Consider the ways in which portable

and secure toilet arrangements could be provided ashore during landings. While there is no strong demand for providing built onshore facilities, some concern was expressed about the availability of some toilet arrangements. At selected sites, portable and secure toilet units could be brought ashore on each visit, and then removed when the visitors leave. This may provide the necessary facility to meet visitor demand, and management requirements to prevent site contamination and the development of onshore structures.

- Consider making provision for more interpretation on site visits, and the means by which this can be most effectively achieved. Clearly, island visits provide important opportunities for conservation learning and advocacy, and visitors indicated a considerable demand for improved provision of these opportunities. This suggests attention needs to be paid to providing more interpretative information and improving means for conveying it (e.g. written material, talks, small group sizes, informative guides, and contact with management and research staff). The responses of small vessel passengers suggest that the approaches taken with them are being more successful, and there is merit in considering greater application of these approaches to visitors from large vessels.

- Enhance the interpretation of historical and cultural dimensions of the island reserves. Given that historical and cultural aspects of the islands do not appear to be ranked as highly by visitors as the natural and wildlife features, there may be an opportunity for tour operators and managers to enhance the interpretation of these unique dimensions. This may be a

useful way of enhancing overall visitor experiences.

- Maintain the existing prohibition on overnight stays onshore. While a notable proportion (up to 30%) of visitors considered overnight stays onshore were desirable, the current prohibition does not detract from their overall experiences of the islands. Therefore there is no justification for considering such an option, particularly given that visitors are already well provided with shipboard accommodation and services.

- Consider reorienting visitor survey research towards an ongoing visitor monitoring programme at key sites. While this investigation has fulfilled its objective of refining the preliminary picture of tourists and their visit experiences first described in 1990/91, to be of on going value to management of these islands, it will require further refinement and redesign into a visitor monitoring process concentrated on key sites.

*From a Department of Conservation report  
by C R Cessford and P R Dingwall.*

## GENERAL NEWS

### "IS OZONE DEPLETION REALLY A SCAM"

*In the last issue of "Antarctic" an article based on the views of Peter Toynbee on the ozone depletion issue was printed. It attracted several critical replies. In this article Stephen Wood identifies some fallacies in Mr Toynbee's argument.*

**Fallacy:** The "ozone home" is a natural reduction in ozone levels, localised and transient.

**Fact:** The loss of ozone in the Antarctic each year removes about 60% of the total ozone over the Antarctic continent in September and October, compared with measurements over the twenty years from 1957. Most of the ozone in the lower stratosphere, between 12 and 20 km in altitude, is lost. The ingredients for the ozone hole depletion are polar stratospheric clouds, sunlight and stratospheric chlorine at concentrations much higher than occur naturally. Polar stratospheric clouds require very cold temperatures and are common in the Antarctic winter and springs. Chlorofluorocarbons (CFCs) have provided the chlorine, now about six times natural concentration.

**Fallacy:** If chlorine is causing the Antarctic ozone hole then chlorine from Mt Erebus is responsible. How can it be chlorofluorocarbons (CFCs) when they are mostly emitted in the Northern hemisphere?

**Fact:** The chlorine from Mt Erebus is in the form of hydrogen chloride and emitted in to the troposphere, the lower part of the atmosphere. It has a short lifetime there and little of it finds its way up to the stratosphere. In contrast, CFCs are so stable that they last a long time in the troposphere and some of them eventually make their way to the stratosphere. The high concentrations of human-produced CFCs are uniformly spread over the globe. There is no special higher concentration required over Antarctica to cause the ozone hole when the atmospheric

conditions there in spring are right.

**Fallacy:** There is no proof of the link between CFCs and ozone depletion.

**Fact:** In 1995 the Nobel Prize in Chemistry was awarded to three researchers (Rowland, Melia and Crutzen) for their work in atmospheric chemistry, particularly the mechanisms for decomposition of ozone. Measurements by satellites and aircraft have shown a strong correlation between the concentration of chemically active chlorine and depleted areas of ozone, confirming laboratory and computer modelling studies. Chlorine from CFCs is a major factor in the Antarctic ozone hole as well as ozone depletion on a global scale. The evidence for this has been strong enough to persuade Governments to introduce measures to limit the production of CFCs and other ozone damaging chemicals (Montreal 1987) and then twice agree to strengthen those measures (London 1990, Copenhagen 1992).

**Fallacy:** Loss of ozone over the Antarctic is of little importance.

**Fact:** The severe loss of ozone in the Antarctic is only for a few months each year as levels generally recover in November and December. However, levels in the summer appear to be lowering as well, albeit at a slower rate. The effect of an increase in ultraviolet light that this causes each year on food chains in the southern oceans is not yet well understood. It has signalled that we have caused large changes in the atmosphere with the introduction of new chemicals. The importance of chemistry on the surfaces of PSC particles in the Antarctic has led to a recognition that similar chemical reactions can occur on the surfaces of sulphate aerosol particles to enhance ozone

depletion at mid-latitudes. This depletion on a global scale has been measured. It is of concern because of the biological effects of ultraviolet light from the sun which increase with a decrease in ozone.

Peter Toynbee's writing has reintroduced these fallacies that have appeared in non-scientific publications frequently in the last seven years. His article does not appear to acknowledge any of the intense scientific endeavour that has gone into this topic since the 1980s and the ongoing development of a robust scientific consensus on the physics and chemistry of the ozone hole. An article this short cannot hope to describe the whole issue. CFCs are just one group of chemicals that contribute to enhanced ozone depletion. Gases that release bromine into the stratosphere are also of concern. Many of the gases that are active in ozone chemistry are also important to climate change because of their effect on infrared radiation, but that is a separate issue again.

#### **Further Reading**

Scientific Assessment of Ozone Depletion 1994: World Meteorological Organisation and United Nations Environmental Programme, Geneva 1995.

The Changing Ozone Layer, World Meteorological Organisation, 1995.

Graedel, T. E., and P. J. Crutzen, Atmospheric Climate and Change, Scientific American Library 1995.

Gribben, J., The hole in the sky, Corgi Books 1988.

Rowland, S., Science, 260, 1571-76, 1993, and following articles.

Toon, O. B., and R. P. Turco, Polar stratospheric clouds and ozone depletion. Scientific American, 264,68-74, 1991.

## JIM COLLINS MEMORIAL AWARDS PRESENTED

The New Zealand Air Line Pilots' Association has announced the 1996 recipients of the prestigious Jim Collins Award for Exceptional Contribution to Aviation Safety, including well known Antarctic pilot Jim Wilson.

Trevor Palin, Vice President of the NZALPA officially announced the presentation of the awards to three aviation professionals at the Association's annual conference June.

The Jim Collins Memorial Award for Exceptional Contribution to Aviation Safety is awarded, in commemoration of the crew of Air New Zealand Flight TE901 who lost their lives on Mt. Erebus in Antarctic on 28 November 1979, to the persons who in the opinion of the Awards' Trustees have uniquely advanced the cause of safety in the air or have performed an act of exceptional airmanship associated with New Zealand Civil Aviation.

Managed by three trustees: Maria Collins, the widow of Captain Jim Collins; Captain Shem Dowd, a life member and former NZALPA president, and the current president of NZALPA, Mr Keith Pattie, the award was established in 1991 to improve both public and aviation industry awareness of the need for safety, through recognising the outstanding safety achievements and efforts of people involved in the industry.

"Each of the 1996 recipients of the Jim Collins Memorial Awards for Exceptional Aviation Safety has displayed commitment to the cause of safety through their actions and dedication," said Trevor Palin the Vice President of the New Zealand Air Line Pilots' Association.

"We are pleased to be able to recognise and honour their efforts through this prestigious award."

## ANTARCTIC PILOT RECEIVES AWARD

Helicopter New Zealand's Jim Wilson's career, spanning nearly thirty years, has included a lifetime dedication to improving safety standards. As its Group Chief Pilot he is responsible for all aspects of operations, including the production of all safety manuals and operating standards.

Helicopters NZ Ltd operations stretch from Laos in Asia, through Perth in Western Australia, aerial work and off-shore operations in New Zealand, to Antarctic operations in support of the

Australian, Italian and United States Governments.

Jim first went to the Antarctic in 1979 in support of the German Antarctic Programme. No standards or experience were available to work at this time as commercial operations were in their infancy. Jim successfully set and documented the standards which were to set Helicopters NZ up as an Antarctic operator and which to this day stand the company in the highest possible regard.

Jim has written the Antarctic safety and operations manuals that are used by the teams on the ice and he continues to lead teams on the various contracts. The most recently contract was the 1995/96 Australian Antarctic contract to fly Sikorsky S-76A helicopters by single pilots on long range tasks over 500 nautical mile sectors. Again this was a trail blazing role for Helicopters New

Zealand, operating in vastly different environmental conditions to those of the McMurdo area that the company is used to. The Casey, Davis and Mawson areas of the Australian operations in a flat featureless terrain.

Through Jim's dedication to flight safety the exceptional safety record of Helicopter New Zealand operations in the Antarctic continues.

---

## ANTARCTIC BIBLIOGRAPHY UNDER WAY

Prominent New Zealand poet and Victoria University academic Bill Manhire is well into a bibliographical project to summarise Antarctic literature.

Although a year on research and study leave has slowed the project down, it is still "alive and well" says Manhire.

"I've now tracked down about 450 Antarctic items which could loosely come under the heading of 'imaginative writing' — poetry, short stories, novels, plays and feature films," said Prof Manhire. Authors range from H.P. Lovecraft to Vladimir Nabokov, from Samuel Taylor Coleridge to Graham Billing, and the variety includes lots of science fiction and popular romance (there's even a Mills & Boon) alongside conventional reworkings of the era of heroic exploration.

"One of the satisfactions is just how much of the work is by New Zealand writers," he said.

Mr Manhire hopes to publish the bibliography within the next couple of years, depending on time constraints given his busy teaching and research schedule "I'm also planning an anthology which will put some of the more interesting imaginative writing, short stories for the most part, next to some of the best non-fiction work

— particularly autobiographical writing and journals."

"I have even completed an Antarctic poem of my own during the year; it has just appeared in my new collection, *My Sunshine*. The poem is called 'Hoosh', and as the title implies is meant to be a tasty and one hopes sustaining mixture of all sorts of things. Part of the textual hoosh, in fact, is the Antarctic Visitor Centre at Christchurch airport," said Mr Manhire.

Mr Manhire will be giving some account of my research in a lecture entitled "The Wide White Page: Writers Imagining Antarctica" in Victoria University's Alumni Lecture Series in August this year.

Bill Manhire has kindly given permission for *Antarctic* to print "Hoosh", which appears in his new collection "My Sunshine" (Victoria University Press). The collection has been recently shortlisted in the Montana New Zealand Book Awards.

## HOOSH

I - Highest, driest, coldest, windiest  
continent, doubling its size in winter:  
Emily's gone to Antarctica.  
All that red hair on the ice!

---

Blue eyes, summer deep field  
at Granite Harbour, an orange tent  
between Asgard and Olympus

while I stand in the library, lost between  
Acquisitions and Closed Reserve  
and try to look after her

into the endless November light where  
the mist touches Discovery, touches

Terror, and the glaciers calve and thunder,  
melt-water of whatever was freezing here  
a million years before Christ

or I take the ten-minute trip  
from the middle of town  
to visit Antarctica's secrets

at my own pace. Great God! this  
is an awful place. Ah look  
how they're doing it by the book

reading the labels of tins,  
*Boiled Beef, Le lait condense*  
to pass the time of day:

darts, cards, dominoes, and chess;  
Amundsen plays the *Apache Waltz*  
while Scott stares at the Christmas tree

and Emily's drill goes down

and over the water, fluttering through  
snow, comes the sound of *The Mikado*.

II - Whiteout. A cairn in a sea of sastrugi.  
The blizzard repeats itself  
every twelve minutes

though it is mostly silence  
making your ears ring,  
making you move along whenever

you hear the tin dogs yelping

while Mawson ties the soles  
of his feet back on

and we hop on the Snowmaster,

riding through darkness  
and the wind and song  
to Butter Point, Cape Chocolate,

back to the world of questions  
and the welcome home — the voice,  
the hand-grip. . . it chokes me,

it cannot be uttered.

III - It is only sleep in the cold,  
the son tells his mother.  
It is only the open air.

But we are strolling indoors in a world  
where it's even better than being there.

In a room made entirely of ice  
Oscar Wisting sits at his sewing machine,  
stitching tent after tent,

dreaming of whortleberry jam

and at the end of the day  
every explorer returns to his diary,  
inscribing entry after entry

about the drudgery of courage,  
sawing through ice, the absolute hush  
*I am, I am, I am*

Symington's Soup  
diluting the pemmican,  
seal consomme on Christmas Day

and always the strange desire to play:

the crystal snort of the banjo,  
Griffith Taylor on a bicycle,

Byrd flying over the Pole  
alone, alone, Shackleton  
writing a poem,

Professor Drygalski (1902) taking  
photographs from a tethered bal-  
loon,  
in touch with his ship by telephone.

IV - Fine weather and steady sea,  
and all looks hopeful and happy...'

except for the sun setting twice,  
icebergs that fly,  
the Virgin Mary standing beside  
a dead man on an ice floe,  
eyes with that  
comfortable blue look of hope,  
whatever is real beyond

shovels and picks and rope,  
men pulling their weight,  
type in the tray, everything sinking

away, dogs and men  
and even endurance...  
*Fram, Terra Nova, Pourquoi-Pas;*

ah surely the ship will come to rescue us;  
if only we can learn the names of ships,

somehow survive  
the seventy-five  
varieties of ice, lenticular

skies and katabatic winds,  
all the words  
lost in the archive.

V - Then we dreamed we were in Spain,



*The "hoosh" of the Snowmaster, Courtesy: Colin  
Monteath, Hedgehog House.*

discussing the Irish question,  
our heads hurting again.

For only action is tolerable,  
even turning away  
to harness up the dogs

we do not leave our vehicle,  
we do not move in darkness  
or in mist. *Make lists,*

*make lists,* question but  
do not question the treacherous  
lid of each crevasse

whenever you ride in tourist weather,  
in whiteout and blizzard, whenever  
the clouds ride high

above the fossil record,  
whenever you cruise into the polar  
cavern

descending below the icy ocean

25 million tons of krill

into bad light  
and doubtful light and absent light,  
just sitting tight until at last

the sun rises and we see  
men get their shadows back,  
crawling to the crow's-nest  
to find nothing in sight,  
no savages nor bears,

no one to mention Heaven to,  
only rough notes which tell a tale  
which we read as we eat our hairy stew

*hoosh*

pony mixed with penguin  
mixed with whale, seal  
rissoles and the stewed paws

of huskies, a wonderful  
banquet on deck,  
ice-blink and water-sky,

and we woke from our dream of food  
to find the food  
sliding towards the water,

a pod of nodding orca, the pack  
breaking and breaking  
and taking us with it....

VI - Geology! the helicopter rises,  
the scientists crowd around,  
and Emily's drill goes down

through a thousand years of ice:  
ghost of a dog, ghost of a pony,  
Oates going deeper and deeper

below the surface

still perfectly himself,  
still gone for some time,  
lost in whatever Emily might find

of sediment and algae,  
the movement and retreat  
of seasons, time passing

in samples and traces  
— *beech and conifer* —  
stuff from the core

to take home and question  
and even then perhaps  
not quite be sure...

May the years of her life  
look after her.  
Emily's gone to Antarctica.

---

### FOOTNOTE TO BYRD SALVAGE ATTEMPT

Antarctic received the following note from Professor Hal Vogel, Rowan College of New Jersey, USA in reply to our article (page 39, March 1996) about the salvage attempt on Admiral Byrd's plane.

"I applaud Messrs Rudge and North's aircraft retrieval and preservation project. However as important as was Byrd's first Antarctic expedition (1928-30), and especially so for its flight achievements and use of aerial exploration, I believe we are a bit imprecise in also bestowing upon him and his airplane Virginia the mantle of "first airplane to land in Antarctica." This might be considered a especially egregious

mistake, since that honour actually belongs to an Australasian, Sir Hubert Wilkins.

“Sir Hubert took not one, but two Lockheed Vega’s to Deception Island, actually taking off and landing in one on 16 November 1928. This was well before Byrd’s expedition had left Dunedin for Antarctica.

The Wilkins-Hearst Antarctic Expedition made several more flights before leaving aboard Hektoría. Even though there were additional flights the following season, both expeditions probably were viewed as disappointments by Wilkins and his party that presumably were hoping for longer distance flight.”

## TRIBUTES

### NEWLY NAMED FEATURES COMMEMORATE SOCIETY MEMBERS: VARCOE HEADLAND AND MOUNT ROPER

Two well known and much respected Society members, who died within the last three years, have been commemorated in Antarctica by the naming of geographic features in their honour.

In October 1992, Garth Varcoe of NZAP was tragically killed, with New Zealander Terry Newport and American P.O. Benjamin Micou, in a helicopter crash on Ross Island. In December 1994, Cas Roper, previously of DSIR Geophysics Division, died unexpectedly in Christchurch.

Both men were memorable Antarctic characters, and each had made significant contributions to the New Zealand Antarctic Programme in their own fields.

The New Zealand Geographic Names Board recently approved the naming of Varcoe Headland north of Cape Royds, Ross Island, for Garth Varcoe and Mount Roper in the Royal Society Range for Cas Roper.

### CHARLES ASHLEY (CAS) ROPER 2 April 1929 — 11 December 1994

It wasn’t until his funeral that Cas’s Antarctic friends discovered that he was always “Ashley” to family and friends, and only those with an Antarctic connection ever knew him as ‘Cas’. Story has it that when Ashley began his Antarctic work, his superior liked to refer to his people in Antarctica by their initials. Because ‘CAR’ was already “occupied”, Ashley was given the next letter on in the alphabet, and from then

on, became ‘CAS’.

Born and educated in Christchurch, Cas served nearly 43 years with DSIR, specialising in atmospheric physics. From 1960-1965 he had sole charge of the Geophysical Observatory at Rarotonga, after which he became responsible for scientific staff selection and training at the Geophysical Observatory. He was also Technical Adviser to the Ministry of Transport for

the selection and training of individuals for New Zealand's science programme on Subantarctic Campbell Island.

Cas's Antarctic work began in 1974, after which he made 29 visits to Scott Base on behalf of DSIR, becoming responsible for all earth science and atmospheric physics laboratory programmes at the base. Some of his work took him to Vanda Station in the Dry Valleys, to the US Amundsen-Scott South Pole Station, and to Russia's Vostok Station. In 1980 he was Senior Scientific Officer at Scott base, and was appointed Winter Officer-in-Charge the same year.

In 1986 Cas was awarded the Queen's Polar Medal for his scientific services in Antarctica. Retiring from DSIR in 1989, Cas set up his own radio frequency forecasting service at Christchurch Airport to advise principally on sun-spot activity.

Cas served the Society in many ways. For a time he was the President's representative on the Antarctic Heritage Trust, and in 1990 became Canterbury Branch Chairman. Always keen to help the Society, he was busy planning branch activities to the end.

At his funeral many Antarctic friends learned for the first time that Cas had been a member of the Church of Latter Day Saints, which he actively served as a Patriarch. A summary of his life in the Church referred to his unconventional style of teaching and that he wasn't afraid to "tell it like it was". He helped

many with his leadership and care.

Cas was a remarkably compassionate man, but one who wasn't afraid to speak his mind when he felt a change was

needed. All will remember that richly modulated voice at Tekapo explaining the effect of the Solar Wind on the Earth's magnetic field, and those direct, very humorous comments that always emerged when situations got tense. And no article on Cas could end without reference to his favourite sport, fishing. Antarcticans such as Keith Clegg and David



*The late Cas Roper. Courtesy of David Harrowfield*

Harrowfield will attest to some wonderful moments with Cas, thigh deep in mountain rivers or lakes, fulfilling one of his great loves, dry fly fishing for trout and salmon. The threesome were sometimes referred to as "the Last of the Summer Wine" after the TV show, though who was who is not clear. After his death, his fishing colleagues planted a blue cedar at one of his favourite fishing spots near Lake Lyndon, Porters Pass. Cas was forced to rein in a little towards the end when he found he had a heart condition, and would gaze somewhat wistfully at the taboo liquid and solid refreshments laid out at social events.

Today Mount Roper faces across McMurdo Sound towards the Base in which Cas spent so many months of his working life leaving numerous transient NZAPs with warm and comfortable memories of him.

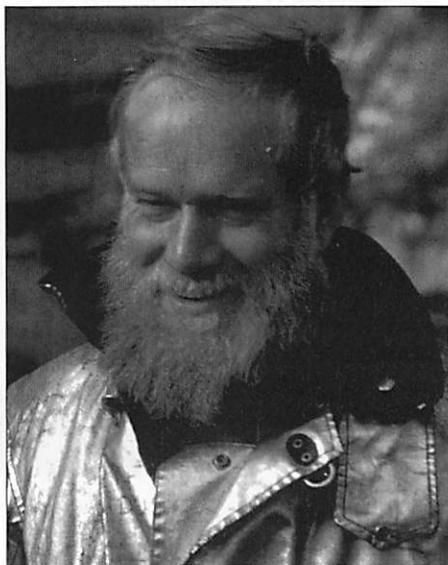
## GARTH EDWIN VARCOE

7 February 1943 — 13 October 1992

Garth epitomised the rugged Antarctic explorer; a man with a gruff exterior, and a tendency to mutter into his vigorous beard, but one who had an unusual sense of humour and a heart of gold. For fifteen years Garth gave unparalleled service to the New Zealand Antarctic Programme, making 37 trips south to the ice. He will be especially remembered for his management of the MSSTS Drilling Project, his supervision of the 12 year reconstruction of Scott Base, and his active support during the construction of the new earth satellite station on Arrival Heights.

Born and educated in Dunedin, Garth joined the Ministry of Works and trained to be an electrician. He broadened his experience to include radio communications, fire fighting, explosive training and lighthouse maintenance, travelling widely in the south of the South Island.

He began working for NZAP in late 1978 as Building and Services Officer, and at the time of his death was Technical Services Officer responsible for New Zealand's Antarctic buildings and services, field radio communications, fire fighting and training, explosives, industrial safety, and cargo trains on the ice. Generally speaking, if it moved on the ice, Garth had something to do with it. He became legendary as Scott Base's Fire Safety Officer, and was the key figure in NZAP's fire sessions during the Tekapo training week. Many first timers will have unpleasant memories of being forced to crawl through a dark, smoke filled house, with Garth's



*The late Garth Varcoe,  
Courtesy: Antarctica New Zealand.*

voice in their ear instructing them how to survive, and more importantly, how to prevent or quickly stop a fire. His rigorous training of the winter base staff resulted in New Zealand's unsurpassed Antarctic safety record. His motto was "Our Aim-no flame"

On the lighter side, members will remember Garth for his comradeship and his unexpected greetings, such as "Christmas is coming" or "I'll have a dollar's worth" or just "hallo Ugly". He was a leading member of the old Husky Hugging Club (to qualify one had to run naked from the base to the dog lines and there hug a dog without getting bitten either by the dog or Jack Frost), and the Royal Vanda Swimming Club (a more watery case of nude exposure).

His poker face made him a great

Antarctic practical joker. There is a story that he managed to persuade a visiting journalist to believe that Scott Base had a vegetable garden. While the journalist rushed to fetch a camera, Garth, with the help of other base staff, raided the fresh veg storeroom, and used crowbars to plant carrots and cauliflowers into the frozen ground. Presumably the journalist was immeasurably impressed and wrote a great article. Rumour also has him starting a *Pinus radiata* plantation near Base.

Apart from his earlier nicknames of "Ugly" and "Garth Cake", many will remember Garth as "The Duck". I'm not entirely sure how this name arose, but it may have had something to do with gazing out of windows during official weekly meetings when NZAP was by the river in town, and Garth had nothing better to report than that there were some ducks on the river. But the name certainly stuck.

Although Garth had very high safety standards, he wasn't immune to the odd mishap. Garth spent a lot of time helping with the cargo trains for various drilling projects travelling across the sea ice.

In 1987 he was in a D5 bulldozer pulling a train of sledges when the machine fell into an ice crack, saved from plunging to the sea bottom only by the dozer blade becoming jammed. Garth was reported to have "flown" out of the door just ahead of the tow bar that was flicked up to crash into the back of the cab, ahead of a wave of very cold water. From that day on the D5 became known as the Ducksub.

Garth received a Citation from the US Navy for his involvement in the rescue

of a US Navy Seabee during an Antarctic storm in 1984, and in 1990 was awarded the Queen's Polar Medal for his services to Antarctica. At the time of his death, Garth had spent in excess of three years south of 60 degrees. In 1988-89 Garth visited Mawson and Davis Stations with ANARE on *Icebird* and added to his long list of friends.

Garth was a keen tramper and a volunteer base radio operator for Canterbury Mountain Safety Service. He was also a member of the High Country fire fighting team, an Honorary Ranger at Mount Aspiring National Park, an Honorary Christchurch City Council River Warden, as well as being deeply involved with his family in the Lyttelton Tug Preservation Society.

I end with a Garth quote referring to Antarctica, which I feel sure Cas would have echoed: "Its still the last frontier. Sure things have changed, but I still think that everything we do down there is a challenge."

*M. A. Bradshaw*

#### **WALTER SULLIVAN** **Science Editor/Explorer**

Walter Sullivan, New York Times Science editor and Antarctic explorer, died at his home in Riverside, Connecticut in late March this year.

Mr Sullivan visited the Antarctic seven times including involvement with Admiral Richard Byrd's expeditions.

A respected journalist and author, he wrote a notable book called "Quest for a Continent" about his exploration experiences in the icy continent.

The Sullivan Range in Antarctica is named after him.

# BOOK REVIEWS

## YOU HAVE TO BE LUCKY — ANTARCTIC AND OTHER ADVENTURES

*by Phillip Law. Published by Kangaroo Press, 1995. ISBN 0 86417 743 7. Pages 200 plus 23 plates. Available from the Sales Officer, ANARE Club PO Box 2534W Melbourne 3001 \$A19.95 plus \$5.00 p/p.*

Dr Phillip Law's name is known to most Australians and also to those in other parts of the world who have any connection with Antarctic exploration and science. Law joined ANARE (Australian National Antarctic Research Expeditions) at their commencement in 1947, was Chief Scientist on the Wyatt Earp expedition and then became founding director of the Australian Antarctic Division. Each season between 1948 and 1966 Law lead relief and exploration voyages to Antarctica. During this period Mawson and Davis stations were established, Wilkes was taken over from the United States Antarctic Programme, operated for nine years and then replaced by Casey Station. The Australian Antarctic Territory (AAT) was explored and mapped.

Law has often stated that his greatest piece of luck was being born precisely when he was. Thus he was in the right place at the right time to head up ANARE — that is he was a university physicist specialising in cosmic radiation research. More to the point he was very experienced in ice and rock techniques, having spent many holidays skiing, bushwalking and mountaineering in the Victorian Alps. Law's lucky chronology then enabled him to achieve a number of notable firsts in the exploration of the AAT — first landings on

previously unseen coasts and islands, first detailed maps, etc.

Law has now produced this book of 26 chapters, each one describing an interesting, often hazardous and sometimes historical episode in his eventful life. They range from youthful adventures in the Australian outback to, in the majority of chapters, experiences in Antarctica.

Law does not hesitate to admit that he has done some foolhardy things in his time. His early skiing experiences took place at a time when there were no facilities or infrastructure in the Australian Alps, and even skis and clothing had to be improvised. In those days a considerable number of people perished from exposure after becoming lost; search and rescue facilities were non-existent.

In Antarctica Law's luck was famous for the things he achieved and for the fact that he and his companions survived them. However as he points out in this book, one can make one's own luck by careful planning, correct equipment and the experience to know when to press on and when to pull back. True up to a point but there are still plenty of decidedly dicey adventures described. Law had four experiences of being a helpless passenger on polar ships when they were broached to or were driven by hurricanes in the Southern Ocean.

Survival was in the hands of the Almighty, there was little the ships' crews could do and nothing the passengers could do to help the ships ride out the storms. The ships concerned were the *Wyatt Earp* (Lincoln Ellsworth's old ship), HMAS *Labuan* (a war time LST — landing ship tank) and two relatively small Danish ice ships chartered by the Australian Government (*Kista Dan* and *Nella Dan*).

Among the first-off events described in the book are landings in the

Larsemann Hills, in Amundsen Bay and in Oates Land (by ship's boat), and in MacRobertson Land — Horseshoe Harbour (by 'plane). Law also took part in the first direct flight from Australia to Antarctica in 1964. Law kept detailed diaries on his Antarctic voyages and these chapters are taken from them. Thus they read with a freshness and an immediacy that more textured memoirs lack. Summing up, a most enjoyable read. Malcolm Kirton (Malcolm is the editor of ANARE news).

## THE ANTARCTIC VOYAGE OF HMAS WYATT EARP

by Phillip Law. Published by Allen and Unwin, 1995. ISBN 1 86373 803 7. Pages XI plus 152. Recommended retail price \$29.95. Available from The Sales Officer, ANARE Club, PO Box 2534W, Melbourne Vic 3001 Price \$A30 plus \$5 p/p.

The author, in typical fashion, gets straight to the point with a concise but informative outline of Antarctic history leading up to Australia's involvement in Antarctic affairs in the post-war years. There follows a description of the frenetic activities, in 1947, organising the first ANARE expeditions to Macquarie and Heard Islands and the preparation of the *Wyatt Earp* for an Antarctic voyage in the summer of 1947/48. The main objective of the voyage was to reach the coast of George V Land and try to find a suitable site for a permanent Australian Antarctic station. The rationale for this was to strengthen Australia's claim to its Antarctic territory. Several scientific programs were planned for the voyage — meteorology, geomagnetics, cosmic ray research and oceanography.

An interesting profile is written about the ship itself. Its construction is shown in detail with the aid of a cut-away dia-

gram and a summary is given of its Antarctic voyages (1933-39) under the command of American explorer Lincoln Ellsworth. The ship was bought soon after by the Australian government, renamed *Wongala* and used as a coastal supply and special purpose vessel during World War II. Law describes many of the new features of the ship, renamed *Wyatt Earp*, after she had a complete refit for Antarctic service, in 1947. A little bit of spice is added here and there with anecdotes of personalities and some amusing events at the time.

The serious business of scientific endeavour is dealt with in what could be called the saga of the Mount Hotham cosmic ray project (testing cosmic ray recording equipment in winter conditions on Mount Hotham, Victoria). One could be forgiven for thinking they were reading extracts from "Home of the Blizzard" — rugged stuff indeed, which

perhaps begs the question why go to Antarctica to endure hardships when they are readily available at one's own back door!

Graphic descriptions of equipment failures and extraordinary personal discomfort experienced on the voyages from Adelaide to Melbourne and then to Hobart leave little to the imagination suffice to say that people prone to acute sea-sickness will change colour just reading the details.

With an aircraft on board, *Wyatt Earp* headed south from Hobart on Boxing Day, 1947 and ran straight into trouble. Seven days later, the ship was ordered back to Melbourne for major repairs, much to the disappointment of passengers and crew. The propeller shaft threatened to self-destruct! Four weeks later, the expedition got under way again with a new passenger, Stuart Campbell, Chief Executive Officer of ANARE, on board.

Inter-personal relations seemed to be at breaking point at times. It's a wonder they were not much worse, given the very wet and cramped conditions everyone had to endure. An acute shortage of fresh water did not help matters and the constant struggle to find a way through the pack ice in a ship that was totally unsuitable for the job must have only added further to the frustrations of the voyage.

Despite much dedicated effort, the scientific program was severely compromised by equipment failures, catastrophes of one kind or another and apparently, a general lack of co-operation between the scientific staff and the rest of the ship's company.

An attempted landing on the inhospitable

coast of the Balleny Islands is very well documented as is the account of a second and final, but unsuccessful attempt to reach the Antarctic coast somewhere near the Ninnis Glacier. One is led to wonder why a more concerted effort was not made to use the aircraft earlier on the voyage.

The return of the expedition to Melbourne, by way of Macquarie Island, heralded the end of *Wyatt Earp's* Antarctic career. She was subsequently used as a coastal trading vessel for some years before being wrecked in a storm just south of Fraser Island in 1959.

This is not the end of the story. Law goes on to present a detailed account of his battle with Stuart Campbell concerning Law's appointment as Assistant Officer-in-Charge (Scientific) in the newly created Antarctic Division. While it is difficult to see what relevance this has to the Antarctic voyage of the *Wyatt Earp*, it does provide an opportunity to observe departmental politics in action at executive level.

The text of this book is supported with maps, photographs and copies of press clippings as well as a useful glossary of ice terms in the back. A list of expeditioners and crew and a Beaufort Scale of wind strengths are also included.

Unfortunately, there are a few errors, some serious. The first map, at the front of the book, shows the Antarctic Circle at Latitude 80°S and the Crozet Islands where Amsterdam Island should be. On page 114, "LST 3510" should read "LST 3501" and on page 117, the picture caption names LST 3501 the Labuan. It was not named Labuan until late in 1948. Better editing would have picked up

these errors and a number of typographical mistakes too numerous to mention here.

In spite of its shortcomings, this book

is well worth reading, not only as an historical document; the author writes in a literary style that makes reading a pleasant experience. *D.A. Brown.*

## "THE TIP OF THE ICEBERG"

*David Harrowfield, 1995.*

*\$25 from the Polar Bookshop. Reviewed by Drew Brown*

David Harrowfield is becoming one of New Zealand's best known recorders of Antarctic lore. His widely read "Sledging Into History" brought him to the public eye and his more erudite publications and articles have been well received by those peers working in associated fields of Antarctic research.

In this, his latest book, Harrowfield (aka "The Duke") has created a unique document that, as far as I am aware, has never been put together before by an author detailing the lives and activities of those working and living in Antarctica or any like environs.

The book stands alone, not because it is a compilation of "bar-room anecdotes", as Professor Taylor would have it. Instead, Harrowfield has faithfully documented the natural functioning consequences of one of the most important qualities that any "Antarctic" can possess. That being a sense of humour. "The Duke", no mean humorist himself, has recorded these highlights in a somewhat staccato style and at times I found myself wandering through the book bemused by a kaleidoscope of time warps. However, reading through the book as a whole was rather like being back "on the Ice" and listening to the echoes of those whose unusual energy and life have given that special New

Zealand flavour to a most unusual part of the world.

In a way the book is part social commentary, part nostalgia and part document. If you had ever wanted or needed to know who belonged to those nicknames, and what those extraordinary acronyms stood, for then this is the manual for you. If you needed to hear the full story of a partially told tale, then you can be expected to be updated. If you want to revisit old friends or make the acquaintance of some legends, then this is an invitation. And if you want to plagiarise for a Ph.D in psychology or a stand-up comedy session, then this will be a rich source.

Beneath all of these reasons lies the real charm of this book; it is great fun. The book may well be a unique historical record but it does not pretend to be anything but what it is. "The Tip of the Iceberg" is a well meant gift from one traveller to another, and a fond gesture of thanks to all of those who have enhanced the lucky days of our lives.

*Drew Brown (Bsc in Geology) has undertaken 5 trips to the Antarctic (3 with NZAP and 2 with Ganorex). He acted as an Alpine Guide during late 1970s and early 1980s, Acting Field Operations Officer 1984. Now teaching Outdoor Education and Science at Geraldine High School.*

## THE VOYAGES OF THE MORNING

By Gerald S. Doorly.

First published 1916 by Smith & Elder. Facsimile reprint by Bluntisham Books, 1995. 224p/p

This account of the two voyages to the Antarctic by the relief ship *Morning*, by its third mate Gerald Doorly, highlights the shortcomings that often plague official histories.

In Scott's "Voyage of the Discovery" we learn very little of the ships dispatched to get the expedition out of trouble.

The *Morning* was used for both relief voyages 1902-03, and being too small at 290 tonnes, and totally underpowered for the task set before her, was often in trouble and close to destruction.

Her discovery of the island now known as Scott Island, but which its discoverers wanted named Markham, nearly sent the ship to the locker of Davy Jones when she was stranded on its shores.

The skill of the *Morning's* master, William Colbeck shines through the pen of his greatest follower in this account.

I have long contended that maritime and Antarctic history can not be separated, with the latter being another version of the former in an anorak.

Therefore, this account of events not recorded elsewhere are as a seaman would view them, often with humour, often with disdain, yet always having the ring of truth extant.

With his literary yards squared and a favourable wind in the right quarter, Doorly shows real talent in recording the many facets of the voyages, the ship and the men who man her.

His association with Teddy Evans, a former shipmate from the training ship

*Worcester* and now second mate of the *Morning*, was so close that they became known as the "Evanly Twins".

The everyday events which escaped the stern pen of official recorders make great reading; how Evans met his future wife when the *Morning's* crew played hockey with a woman's team in Christchurch; how Scotty Paton's daughter was christened Beaufort, and how Evans dealt with a drunken member of the crew of the *Terra Nova*, anecdotal accounts abound through the entire book.

There is so much to recommend this book to readers, be they maritime or Antarctic enthusiasts, and no general reader could fail not to be carried along with the breezy style.

Truth, often peering out from behind official accounts, makes the exercise educational and entertaining.

The Antarctic was discovered by seamen, explored by seamen and sadly, in some cases, exploited by seamen. It is, as a consequence, part of our maritime history.

In reading "The Voyage of the *Morning*" we will benefit in our understanding of this indisputable fact.

I have no hesitation in recommending this valuable account of an early Antarctic episode to all who still value adventure and daring swashbuckling true tales.

Baden Norris, Antarctic Curator,  
Canterbury Museum.  
Merchant Seaman, 1942-49

## HUSKIES IN HARNESS

*Edited by Shelagh Robinson.  
Kangaroo Press, 1995. 144p/p*

As a last-frontier land of adventure for human beings, Antarctica is decidedly the poorer without huskies. If you have had anything to do with the dogs and sledging, you will know that huskies were more than dogs. They were fellow expeditioners, characters hard bitten and soft-centred and all the traits between. They were your mates.

We mourned the decision in the mid-1980s to phase out the Scott Base huskies, calling it a cost-cutting exercise that had blow-all to do with the seal cull to feed them (what was wrong with sending mutton from New Zealand on the annual resupply by sea, as they did at the start?). And in Australia there were similar recriminations as the political axe came down on husky operations at Mawson Station.

Through Shelagh Robinson's book, however, the husky era at Mawson lives on. A former editor of the ANARE Club journal *Aurora*, she must have had the resolve, perseverance and tact of a lead husky to bring it all together — contributions from more than 40 people who worked with or knew the dogs.

And what yarns they are, most of them — shot through with the excitement, grit and drama of sledging with dogs. The book was worth the effort of compilation if only to let Tom Maggs' writing have the light of day. Maggs, a radio operator (Mawson 1977, 1980) and officer-in-charge (Casey, 1988), presents a sensitive expeditioner's experience of huskies in three powerful pages titled "A Love Affair in Antarctica". The style is stirring, moving. He describes a cho-



*New Zealand Scott Base Husky Team under the Barne Glacier.*

*Courtesy: Colin Monteath, Hedgehog House.*



*Husky Waking After Storm,*  
 Courtesy: Colin Monteath, Hedgehog House.

rus of husky howls — “a massed exalted howling, a spine chilling song of the soul, when every dog raises its head, lays back its ears and sings its heart to the aurora, or the moon, and its dog spirit.”

In a format close to A4 and with black-and-white photographs leavening the text, the book explores every aspect of husky management and husky behaviour as well as journeys galore, including some journeys whose raconteurs say can never be made again

because it takes dogs to accomplish them, and the dogs are no more.

Syd Kirkby, officer-in-charge at Mawson in 1980, who also did survey work there in 1956 and 1960, contributed three pieces to the book, and in one he pays the dogs his ultimate tribute:

“They were most amiable and devoted, they were companionable, uncritical and amusing when often, God knows, these qualities were such a tonic and restorative. They were

tough and resolutely courageous and never hesitated to lean into the traces and give their best when called on. They were up there with the very best types of expeditioners.”

The book closes with a roll of honour, naming all 267 huskies to serve in Australian Antarctic Territory. The last four arrived in Hobart from Mawson on 20 December 1993.

*Reviewed by Neville Peat, a Dunedin-based writer/photographer, whose 20 books include Snow Dogs (Whitcoulls, 1977).*

---

**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 vitally interested in some phase of Antarctic exploration, history, development or research.

**The annual subscription entitles members to:** Antarctic 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 the subantarctic. It has a world-wide circulation.

Members also receive a regular newsletter called *Polar Whispers* and an annual *Polar Log*, which records the decisions made by the Society's Council at its AGM. Regular meetings are held by the Auckland, Wellington, Canterbury and Otago branches.

Subscriptions are:

NZ \$40 in New Zealand

*Airmail Postage*

NZ \$46 Australia and South Pacific

NZ \$49 North America and East Asia

NZ \$51 Europe, including Great Britain

NZ \$55 Everywhere else

*Economy Postage (slower delivery)*

NZ \$43 Australia and South Pacific

NZ \$45 North America and East Asia

NZ \$46 Europe including Great Britain

NZ \$46 Everywhere else

You are invited to join — please write to:

National Secretary,

P O Box 404,

Christchurch 8000,

NEW ZEALAND.

All New Zealand administrative inquiries should go to the National Secretary. All overseas branch inquiries should go to the Overseas Branch Secretary. Inquiries regarding back issues can be made to the Back Issues Officer, P O Box 404, Christchurch 8000, New Zealand.

Members should direct other inquiries to their local branch.

Secretary,  
Auckland Branch,  
New Zealand Antarctic Society Inc.,  
P O Box 8062  
AUCKLAND 1035

Secretary,  
Wellington Branch,  
New Zealand Antarctic Society Inc.,  
P O Box 2110,  
WELLINGTON 6000

Secretary,  
Canterbury Branch  
New Zealand Antarctic Society Inc.,  
P O Box 404  
CHRISTCHURCH 8000

Secretary  
Otago Branch  
New Zealand Antarctic Society Inc.,  
P O Box 7983  
DUNEDIN 9030

Overseas Branch Secretary  
New Zealand Antarctic Society Inc.,  
P O Box 404  
Christchurch 8000  
NEW ZEALAND

#### **Advertising rates**

Full colour (outside back cover only)	\$400
Whole page (b & w only)	\$200
Half page (b & w only)	\$100
Quarter page (b & w only)	\$35

Rates for regular placement are negotiable.

#### **Enquiries to the:**

National Treasurer

New Zealand Antarctic Society Inc.,

P O Box 404

Christchurch 8000

New Zealand

Fliers and other advertising material can be inserted at a cost of \$150 per issue plus any additional postage incurred through such insertions. Inquiries should be made to the Treasurer. Phone and fax numbers for the bulletin appear in the front of each issue.

**Deadlines** for advertising and copy are the 20th of each month proceeding

---

