IceSked

Issue 5: December 2005

Newsletter of the Antarctic Research Centre
Victoria University of Wellington

In our last issue of IceSked, *we focussed on people and partnerships. In this issue, we focus on new structural developments. The last six months have seen the redevelopment of our physical facilities, a new initiative in Antarctic teaching, and further scientific and technological developments in the ANDRILL project.*

Opening of the S.T. Lee Library

The Minister of Research Science and Technology, the Hon Steve Maharey, opened the new S.T. Lee Library and the refurbished Antarctic Research Centre on 16 June in a function hosted by Victoria University's Vice-Chancellor, Professor Pat Walsh. The opening was attended by about a hundred colleagues from the university community, the science community and the Antarctic community.

The S.T. Lee Library now has space for our growing collection of reference material, including books and journals. The redevelopment also provided expanded space for our map collection, an area for graduate students and visiting researchers, and a meeting room. Along with reorganisation of other parts of the Cotton Building, it has clustered Antarctic staff and students together, and allowed redevelopment of School of Earth Sciences facilities.

The name of the S.T. Lee Library acknowledges the generous support of Lee Seng Tee of Singapore, a strong supporter of the Antarctic Research Centre through his donations through the Victoria University Foundation. Dr Lee has also established the S.T. Lee Lecture in Antarctic Studies, and the S.T. Lee Arctic-Antarctic Young Researcher Exchange Programme between the ARC and the University of Alaska, Fairbanks.

The opening was followed by the annual S.T. Lee Lecture, which was given by Prof David Sugden of the University of Edinburgh (more details on page 4).

Earth Sciences students at the opening of the S.T. Lee Library (L to R: Matt Hill, Waverley Parsons, Tyson Hawkes, Ruth Wightman, Nadine Wittig)

ARC Meeting room with Antarctic Horizon design by Margaret Elliot

L to R: Vice Chancellor Prof Pat Walsh, ARC Director Prof Peter Barrett, Minister of Research Science and Technology Hon Steve Maharey.

Gavin Dunbar (left) with Lionel Carter (centre) and Dougal Mason at Sponsors Peak

New Research Fellow — Gavin Dunbar

Gavin Dunbar rejoined the ARC in November this year. Although he completed his MSc at Victoria University, and worked as a Post Doctoral Fellow (PDF) here, Gavin was most recently in Canberra, where he was a PDF at the Research School of Earth Sciences at The Australian National University (ANU).

Gavin's research at ANU focussed on reconstructing the late Quaternary climate history of the Western Pacific region from coral and speleothem geochemistry, particularly from data he gathered in Indonesia.

At the Antarctic Research Centre, Gavin will be engaged in Marsden-funded research looking into the stability of the Ross Ice Shelf. This research project, which also involves Lionel Carter, Tim Naish and Peter Barrett, will focus on the past response of the Ross Ice Shelf to climatic change, and how this has influenced ocean circulation in the Southern Ocean, including around New Zealand. Gavin's research will also be using data from ANDRILL sediment cores. Gavin's involvement with ANDRILL goes back to the last work he did at ARC, when he was involved in site surveys for the McMurdo Ice Shelf ANDRILL site in early 2003.

Gavin will also be working with graduate students and contributing the teaching programme in Geology, particularly focussing on paleoenvironmental studies.

ARC Meets QRC

This past southern winter, Warren Dickinson spent three months in Seattle at the Quaternary Research Center (QRC) of University of Washington. Colleague Ron Sletten had a three month research project in Greenland and offered his home and office as a study refuge to Warren. Although most of the staff at QRC were off on summer field work, Warren took advantage of the quiet time to complete three manuscripts. Warren was also able to prepare relict ice samples for chemical analyses in the QRC's new US$1.5M freezer facility. The old freezer had a warm death after running continuously since 1968 when Link Washburn built it as a laboratory to model patterned ground processes.

The QRC is one of the foremost centres of its kind, and although it is much larger than the ARC, the two centres have much in common. Both centres are largely made up of adjunct staff and students with a common interest that allows cooperation across interdisciplinary boundaries. The QRC library is non- circulating but houses the collections of prominent quaternarists, notably Link Washburn, Richard Foster Flint, and Troy Pewe.

Warren and his wife Teri also took time out to explore and visit friends in the Seattle area, which occupies one of the finest drumlin fields in North America. Perhaps their most enjoyable trip was to the Olympic Peninsula, a temperate rain forest similar to New Zealand's west coast, with John Lewis, Warren's inspirational first geology professor.

Andrew Mackintosh also spent a week at the University of Washington with Warren, visiting John Stone and discussing Antarctic cosmogenic dating samples from the Framnes Mountains.

As the rebuilt freezer at the QRC nears completion, Warren can't wait for opening day.

New Zealand Universities Antarctic Alliance

Another key development in 2005 was the establishment of the New Zealand Universities Antarctic Alliance. The group, which has members from each New Zealand university, will provide a useful forum to discuss issues of common interest in university Antarctic research. The Alliance aims to share information on Antarctic research and teaching, and to develop collaboration. Peter Barrett is the current representative for Victoria University, with Tim Naish acting as his alternate.

ANDRILL Hot Water Drill Testing

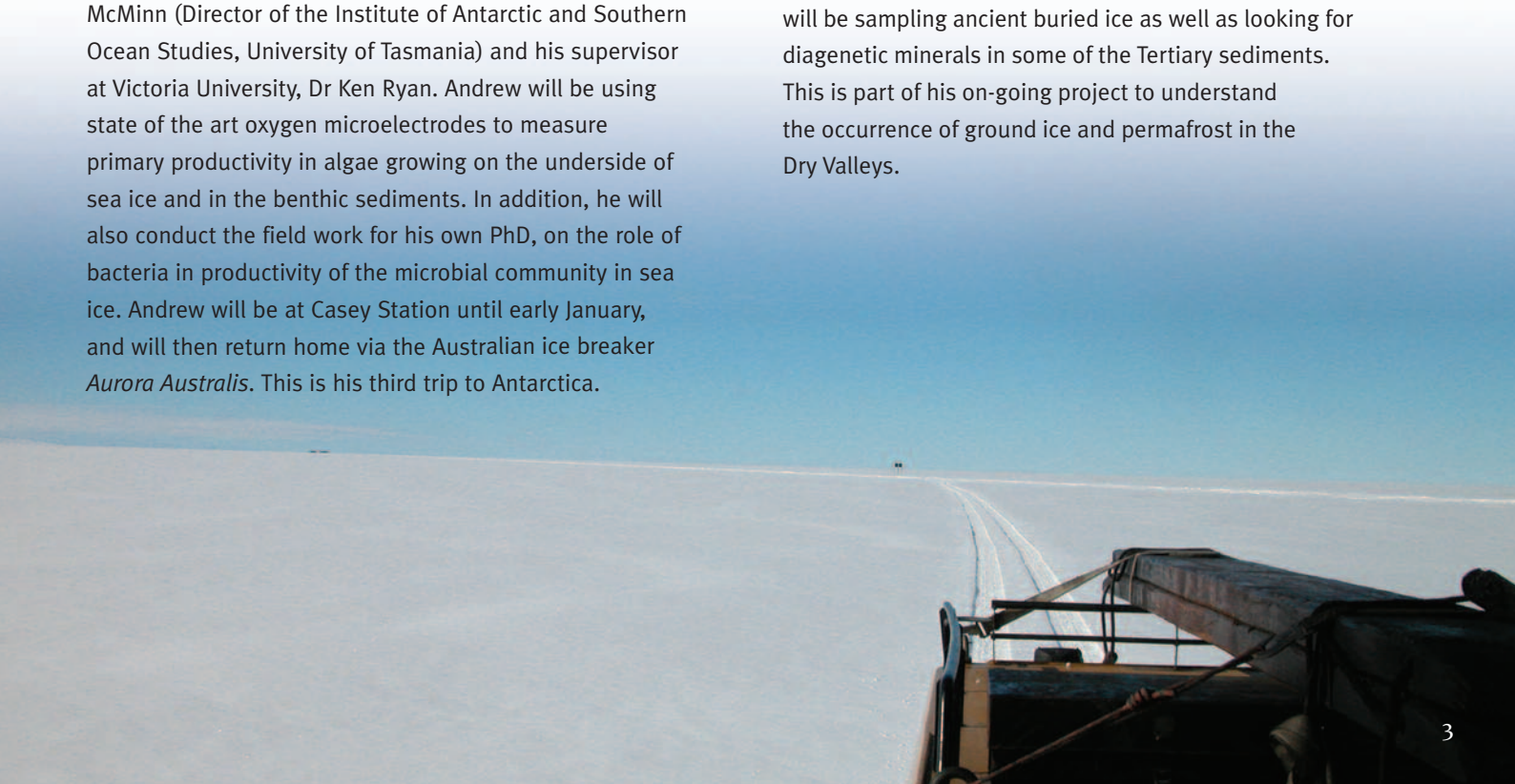
When ANDRILL starts drilling next summer, the rig will be set up on the McMurdo Ice Shelf. In order to reach the sediments that are the target for drilling, the drill string needs to be able to go through 75 metres of ice shelf, about 1000 metres of water and 1000 metres into the sea floor. Alex Pyne has designed a hot water drill that will create a hole in the ice and keep it open while the drilling is happening. This summer Alex Pyne and Tamsin Falconer will be part of a team testing the hot water drill. Using the new hot water drilling equipment, they will make a hole through the ice shelf and test how frequently the hole will need to be reamed out to keep it clear.

Bacteria in Sea Ice

Andrew Martin from the School of Biological Sciences is currently at the Casey Research Station in East Antarctica. He is there as part of joint research with A.Prof Andrew McMinn (Director of the Institute of Antarctic and Southern Ocean Studies, University of Tasmania) and his supervisor at Victoria University, Dr Ken Ryan. Andrew will be using state of the art oxygen microelectrodes to measure primary productivity in algae growing on the underside of sea ice and in the benthic sediments. In addition, he will also conduct the field work for his own PhD, on the role of bacteria in productivity of the microbial community in sea ice. Andrew will be at Casey Station until early January, and will then return home via the Australian ice breaker *Aurora Australis*. This is his third trip to Antarctica.

Permafrost and granites in the Dry Valleys

Warren Dickinson is working with MSc student Martin Schiller and Honours student Gretchen Williams in the Dry Valleys this season. From mid November to mid December they will be camped at Victoria, Wright, Beacon and Kennar Valleys. Martin will be collecting soil and shallow permafrost to study atmospheric Beryllium with the intention of calibrating a new type of dating system for Dry Valley soils. He will be doing the analyses at GNS and working with Ian Graham, Bob Ditchburn and Albert Zondervan. Gretchen will be sampling granite clasts from till in Beacon Valley and the Metschel Tillite. She will use a new method of fingerprinting granites with heavy isotopes. Although she will complete the analyses in Denmark with Joel Baker, the School of Earth Sciences is in the process of building a new lab also capable of these analyses. Apart from a better understanding of Dry Valley granites, Gretchen hopes to be able to identify the source of granite in tills. Warren will be sampling ancient buried ice as well as looking for diagenetic minerals in some of the Tertiary sediments. This is part of his on-going project to understand the occurrence of ground ice and permafrost in the Dry Valleys.



OTHER ACTIVITIES

S.T. Lee Lecture by David Sugden

Professor David Sugden

This year's S.T. Lee Lecture was presented by Professor David Sugden of the University of Edinburgh. His lecture was entitled *How sensitive is the Antarctic Ice Sheet to climate change? An earth-science perspective.* Prof Sugden drew on his considerable experience in glacial and polar geomorphology, to explain how current research is uncovering evidence of ice sheet sensitivity.

While he was here, Professor Sugden reflected that the importance of predicting climate change has been a stimulating challenge to those studying the Antarctic Ice Sheet. In his lecture, he described two approaches to research on the ice sheet. Firstly, to measure and monitor current changes of the ice sheet both through satellite remote sensing and field programmes of ice coring and survey, and secondly, to study the past behaviour of the ice sheet as an analogy for the future. In his lecture, he demonstrated the importance of integrating these two approaches in order to gain a more thorough understanding of the processes involved. His lecture explored the timescales of the evolution of the Antarctic Ice Sheet, from millions of years (East Antarctica), to tens to hundreds of thousands of years (West Antarctica), and millennia (Antarctic Peninsula ice shelves).

Big anniversary coming up!

December 2007 marks 50 years of Victoria University Antarctic Expeditions (or VUWAE). To celebrate we are planning a VUWAE reunion to be held in conjunction with a three-day science meeting in late June or early July 2007. The science meeting will review the science carried during IGY and its contribution to the understanding of global processes, the major research programmes since that time, and also discuss current research.

Celebrating 50 years of New Zealand's Antarctic programme

A new Antarctic history being compiled by David Harrowfield will be released in 2007 to mark 50 years of New Zealand's continued presence in the Ross Sea region. The book to be published by David Bateman Ltd will have 15 chapters, 200 pages and an extensive pictorial content. Chapters include the Commonwealth Trans-Antarctic Expedition 1955-58 and International Geophysical Year 1957-58; development of the New Zealand Antarctic programme; Scott Base and science; Vanda Station and Dry Valley science; 'deep field' expeditions including those by mountaineers; historic hut conservation; artists, writers and education programmes; the environment; international cooperation; tourism and private expeditions. The book is being compiled with generous in-kind support from Antarctica New Zealand and will build on David's previous books these including Scott Base (1997) and Vanda Station (1999), published by the New Zealand Antarctic Society. David will be pleased to hear from anyone with records or photographs that may be of interest and can be contacted at P.O.Box 36-269, Christchurch or by e-mail: d.harrowfield@xtra.co.nz

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