

THE ANZAAS MERCURY

ANZAAS: Communicating Science to the Public

Inaugural Issue, December 1998

Contents

- Editor's Edict
- Adam's Airing - Comment From The Chair
- The ANZAAS Debate - Ethics
- ANZAAS News
- News From The Divisions
 - NSW
 - Victoria
- Book Bites

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Editor's Edict

ANZAAS Mercury is the new newsletter for ANZAAS members. We aim to provide news of what is happening inside your ANZAAS, Adam's Airing, News From The Divisions, ANZAAS News, and a starting point for debates on issues that concern us, ANZAAS Debate, as well as book notices in Book Bites. In later issues we will have external news of interest to ANZAAS members. We specially thank Robert Falvey of Loud and Clear Designs for designing the visual style.

This inaugural issue is environmentally flavoured, including Paul Adam's report on the Year of the Ocean Conference and his provocative essay on ethics in environmental science, in ANZAAS Debate. We would like to hear from you, please send any general comments on ANZAAS Mercury to the address in the box below -DR.

Adam's Airing

Comment From The Chair

By Paul ADAM

Members will be aware that this has been a difficult period for the Association. However, the year has also seen a number of successes, which demonstrate the Association remains necessary.

Before the Federal election we were able to hold an election forum, in which political parties detailed their science policies and answered questions. Held at the University of New South Wales, the event allowed a number of groups both to present their views on the policies of the major parties and to identify the major challenges facing Australian scientists. The forum was well covered by the media, making known nationally that ANZAAS was still alive and active. After the election we have a new minister for science, as part of a new expanded portfolio of Industry, Science and Resources, Senator the Honorable Nick Minchin. I have written to Senator Minchin on behalf of ANZAAS to congratulate him on his appointment and wishing him well in the

task of addressing the many important issues before him. The Federal Government has major responsibilities for science, in providing a regime to encourage greater involvement by the private sector in research and development, as a sponsor of research and training through a range of granting schemes, as a major employer of scientists in many agencies, and as a user of the results of scientific research to develop policies and regulations. A continuing high level of government involvement is essential both for the health of science and the development of the nation. Government involvement in science is not restricted to the science portfolio and an important task for government is to ensure better collaboration across the whole of its operations.

The recent election was unusual in that science policies were on display. There is much good news that scientists can tell government, but we also need to make government aware that there are many clouds on the horizon. There are difficulties attracting good students into science, and for graduates career prospects are, at best, uncertain. Important decisions have to be made in the near future about research support and replacing aging major items of equipment. Much potentially high quality research cannot be supported and the very time consuming process of applying for grants has, for many, about as much chance of yielding rewards as entering the lottery.

What can ANZAAS do? ANZAAS can lobby for science, as the ANZAAS membership has vast experience in science across a wide range of disciplines. We have limited resources, however, and so cannot respond to every issue. Nevertheless we do have a role, which compliments that of other groups, in answering requests by government or parliament for submissions on science and science-related issues. In recent years the NSW Division has made submissions to several inquiries. Divisions may continue to make submissions but for federal matters we should speak as a national body. The lead-time for submissions is often short, so I propose that when an opportunity to make a submission arises that calls for input would be made on the Web page and that views expressed would be synthesised into a submission. Notices calling for submissions are frequently hidden away, normally in Saturday editions of the newspapers. If any one notices such a call, for which

the issue is one where ANZAAS should express an opinion, then please draw the matter to the attention of either myself or the Secretary. ANZAAS could make a real contribution to policy making through submissions, which both reflect the views of members and are supported by them.

You and ANZAAS

The Council will be taking steps to modernise the Constitution, to reflect the changed nature of the Association. The future of the Association is very much in the hands of you the membership. What do you want to do for ANZAAS, and what can ANZAAS do for you? I would appreciate receiving your views, either directly to myself or through your Division. ANZAAS Mercury and the ANZAAS Web site (see ANZAAS News) will also provide a forum for exchange of views.

The days of national congresses, at least in their old form, have gone. While there will be some national activities, most importantly Youth ANZAAS, the main focus will be at the Divisional level. Several Divisions have been very active this year - others less so. I hope that all Divisions will have a program of activities in 1999, and that that ANZAAS Mercury and the Web site will provide regular reports on Divisional events.

Year of The Ocean 1998

Congratulations are due to the Tasmanian Division for their organisation of Youth ANZAAS and the Year of the Ocean meeting. Our commitment to encouraging young people to become involved in science is one of the strengths of ANZAAS. Youth ANZAAS events have been very successful in the past and this years was no exception. It was especially pleasing that three of the participants came from New Zealand, the first formal trans-Tasman link for some years. All of the participants I talked to were very much enjoying the event.

The Year of the Ocean was opened by the Governor of Tasmania, His Excellency Sir Guy Green, and provided the occasion for the presentation of

the 1998 ANZAAS Medal, to Professor S. Warren Carey (see ANZAAS News, p3). At the same event Dr Nan Bray, the Chief of the CSIRO Marine Research Division, gave the 1998 Joyce Allen lecture. The lecture was a masterly overview of the importance of Australia's ocean resources to the economy and of the potential for this to be even greater in the future. Dr Bray also stressed our relatively poor understanding of many aspects of the marine environment and the need to increase our research effort, a plea repeated by many other speakers. The lecture stimulated a lively discussion in which the delegates to Youth ANZAAS were active participants.

As well as opening the conference Sir Guy also hosted a reception for the conference and Youth ANZAAS delegates in the baronial splendours of Government House.

The conference provided a good illustration of the role that ANZAAS can play in promoting understanding of scientific issues. Although there was a strong theme the presentations spanned a wide range of disciplines and also addressed policy and public interest issues. The science was of high quality but accessible to a wide audience. Too often making science available to the public is assumed to mean simplification and generalisation, a process of dumbing down. Speakers at ANZAAS meetings, however, have recognised that the public can understand good science placed in context and presented with clarity. The papers at Hobart were excellent examples of how science can be presented successfully to an audience outside of the speakers' own disciplines. It was gratifying to see the extent of media interest, both state and national, in all the events.

"Australasian Science incorporating Search"

"Search" in its original guise was produced by ANZAAS, but is now a commercial publication, from Control Publications. Although there is now no formal link between ANZAAS and "Australasian Science incorporating Search" I am sure that all members would join me in congratulating Guy Nolch on the quality of the journal. Magazine publication in Australia is a hard business to be in and Guy has shown great courage in pursuing his

commitment to quality science publishing. The need for a public forum to present news and ideas about science, policy and society is ever growing, and "Australasian Science incorporating Search" provides this. I encourage all members to support the publication at every opportunity.

The ANZAAS Debate: Science Ethics and The Environment

ANZAAS Mercury proudly provides a venue for debate of general issues relevant to the aims of the Association. Paul ADAM starts the ball rolling with a discussion about ethics.

The subject of 'ethics' in professions has been increasingly debated during the 1990s, to drive the maintenance of professional standards, that includes condemnation of fraud and plagiarism. In science much of what is referred to as ethics could also be referred to as good practice or standards.

We hope that during their education and training all scientists are made thoroughly aware that fraudulent practices cannot be condoned under any circumstances. Many institutions have mechanisms to detect fraud and peer review also serves as a deterrent. Nonetheless there have been a number of well publicised claims of fraud and other malpractice. What is not clear is whether the few detected cases illustrate the efficacy of the mechanisms to detect and punish misconduct or are merely the tip of the iceberg. My view, is that while the reported cases of fraud and misconduct are very serious matters the incidence is not high. Vigilance is needed but we also need to defend the integrity of the overwhelming number of scientists and to counter any public misapprehension that we are all frauds.

Changing community standards have lead to scrutiny of scientific practices. Currently this is particularly the case with experimentation involving humans and some other animals. Animal ethics committees are now a mandatory part of many institutions and approval from such committees is now essential for a great deal of research. There is, however, an element of double standards in society's approach to this issue: practices which would not require approval, or raise community concern, if carried out under the name of pest

management, might face difficulty gaining approval if they were advanced as part of an experimental protocol.

A great deal of research is carried out in natural areas, and most scientists would accept as self-evident that they have an obligation not to cause lasting environmental damage. However, as the recent controversy over research on fishing on the Great Barrier Reef demonstrates the public perception of what is acceptable is not necessarily the same as that of scientists. There are also increasing concerns from indigenous people that researchers have not given sufficient recognition to their intellectual property rights. Triggered by the Great Barrier Reef controversy, the Australian Science, Technology and Engineering Council (ASTEC) proposed that the model of animal ethics committees be extended into environmental research (ASTEC 1998, Environmental Research Ethics, National Principles and Guidelines For Protected and Environmentally Sensitive Areas: see <http://astec.gov.au/astec.html>). ASTEC recommends that the guidelines be adopted as a basis for consistent rational legislation and that management agencies establish Environmental Research Ethics Advisory Committees (EREAC).

Clearly there are many issues that may arise from research in natural areas. Should they be left to the good sense of individuals? Should the ASTEC guidelines be incorporated in legislation? Is the proposal for EREACs appropriate or would they just be another bureaucratic impediment to the conduct of research?

Another area of contention is the absence of accreditation and agreed professional standards for most scientific disciplines. I have become aware of this problem through my involvement, as an expert witness, in a number of environmental cases. There is a commonly held public perception that there are formal processes for the accreditation of environmental specialists, and that these processes not only regulate entry to a profession but also lay down professional standards and provide for disciplinary procedures. The models which are presumed to apply to all areas of expertise are those long established in the law, medicine and engineering, for example. On learning that no such procedures exist, the common response is that they should. In

recent years there have been a number of formal calls for the development of accreditation, as for example by the Joint Select Committee of the NSW Parliament Inquiry into the Threatened Species Conservation Act.

Such an approach presents many practical difficulties. The number of practitioners in most specialist disciplines is relatively small, and the societies for most disciplines have limited resources and are not constituted to act as accreditation and disciplinary bodies. Who would establish the accreditation process and set standards? Who would provide the resources to administer such processes? Would accreditation adversely affect the flexibility of degree programs in particular institutions and stultify innovation? Is it desirable to establish numerous bodies, or should there be an overall authority for science? If so, should ANZAAS have a role in the process? Would an accreditation process serve to establish a closed-shop?

Please join the debate, by sending your response to Prof. Graham Johnston:
Email - grahamj@mail.usyd.edu.au; Post- Honorary Editor ANZAAS,
Department of Pharmacology, The University of Sydney, NSW 2006.
Responses will be posted on the ANZAAS web site.

ANZAAS NEWS

'DRIFT THEORY' ADVOCATE AWARDED ANZAAS MEDAL

An Australian geologist who's theories in the 1950's on Continental Drift had a major global impact on geological thinking has won one of Australia's top scientific medals, the 1998 ANZAAS Medal. The Award to Prof Carey was made at 29th of October in Hobart by, the Chairman of ANZAAS, Prof Paul Adam, during the opening session of the ANZAAS Conference, Year of The Ocean.

Prof Sam Carey, foundation Professor of Geology at the University of Tasmania, sparked a new level of debate about the Gondwanaland theories in 19-S4 during a symposium held in Hobart. Prof Adam said that during a distinguished professional career Prof Carey had made many outstanding scientific achievements in research and education. "Your many contributions

towards our understanding of the earth and its structure make you a scientist of international significance and an outstanding contributor to the Development of Australian science. As the foundation Professor of Geology at the University of Tasmania, you taught generations of students, many of whom are now eminent geologists and this medal is a mark of the high esteem with which you are held in the Australian scientific community and in recognition of your lifetime of achievements in geology."

Born in Campbelltown, NSW, in 1911 Prof Carey was educated at Canterbury Boys High School and University of Sydney, gaining his Doctor of Science in 1939, for work on the, tectonic evolution of New Guinea and Melanesia. He worked in the petroleum industry leading up to and during the war, served with the Australian Infantry Forces (Z Special Force) from 1942~44, after which he began a two-year appointment as Chief Government Geologist in Tasmania. Prof Carey's research on geological structure in Tasmania provided the framework and inspiration for more than a quarter of a century of science. His research also included glacial marine segments, a lightly-researched field of study, and subsequent publications were a stimulus for future work by sedimentologists.

Prof Carey was appointed foundation Professor of Geology at the University of Tasmania in 1946, retiring in 1976. He was made an Officer of the Order of Australia in 1977. He was Convenor and Editor of Tasmanian International Symposia on subjects from glacial Regimentation and continental drift to expanding earth, and has produced more than 60 scientific publications and several books. It was from one of these symposia, that Prof Carey produced his first major publication "The Tectonic Approach to Continental Drift".

Prof Adam said that when the idea of continental movement gained orthodoxy with the acceptance of the plate tectonic theory in the 1970s, he moved to a new field of study centred on expansion of the Earth, and his views culminated in the book "The Expanding Earth" in 1976. Prof Carey is currently writing his fourth book.

The XIV Pacific Science Congress

A major event on the scientific calendar for 1999 is the Pacific Science Congress to be held at the University of New South Wales from 4 - 9 July. We hope that a number of ANZAAS events can be held as part of the program. Details of the congress can be found on the Web at <http://www.icmsaust.com.au/PacificScience>, or by writing to the Secretary - General: Emeritus Professor W.J. O'Sullivan, School of Biochemistry & Molecular Genetics University of NSW, Sydney, NSW 2052.

ANZAAS Web site

<http://www.usyd.edu.au/su/pharmacology/anzaas/> - Our web-site shows ANZAAS national and divisional activities (NSW, SA and Vic so far), latest news, media reports about science and technology issues, links to related web-sites, and don't forget to point potential members at the ANZAAS membership form. Among the new links is one to historical records about ANZAAS held at the National Library: the web page giving a taste of the history of ANZAAS [those who forget the past are doomed to repeat it!].

News from The Divisions

Divisional reports were received only from NSW and Victoria.

NSW

By Bob VICKERY

Events Held

Thriving, Surviving or Diving? Science in 1998: a meeting to discuss science policy for the forthcoming election was held on Monday 21 September at University of NSW. The speakers were: (ALP) Mr Martyn Evans MP, Shadow Minister for Science and Information Technology; (Make Australia the Clever

Country Party) Mr Graeme Melville, Science teacher at Oakhill College and Professor Phil Broadbridge Mathematics, University of Wollongong, contesting the Senate in NSW. Senior representatives of major organisations participating included Ms Jan Thomas (The Federation of Australian Scientific & Technological Societies (FASTS)), Dr Carolyn Allport (National Tertiary Education Union), Dr Keiran Scott (Australian Society for Medical Research), and Dr Sue Stockmayer (ANU). The Chair was Associate Professor Paul Adam, Chair, ANZAAS.

[Frequency Reallocations for Television, Radio, and other Uses](#): this meeting was held on 28 October in the School of Physics at Sydney University. It was jointly sponsored by ANZAAS, the Australian Institute of Physics and the Royal Society of NSW. Forty two people gathered to hear four speakers from different backgrounds address the issues.

Mr Ian Shearman, Consulting Engineer, described the overall problems and what approaches are available for their solution.

John Whiteoak, Deputy Director, CSIRO Australia Telescope National Facility, discussed the effects on radio astronomy of radio communications.

Astronomers cannot restrict themselves to narrow predetermined bands because of the Doppler effect. Advances in signal processing enable them to remove man-made interference from their data.

Allan Horsley of the Australian Telecommunications Users Group presented the users' point of view. They are generally happy with the current management of the spectrum. One problem is that utilities, such as electricity distributors and railways, have been priced out of the bands they had relied on for control signals.

Ian Hayne, Australian Communications Authority, summarised the present official frequency allocation position and the various political pressures currently at work. He compared the present policy of creating tradable rights in the spectrum with old administrated system and showed that the new system was more flexible and responsive to customer demands. Only a small fraction of the spectrum has been auctioned.

[Recent Research on Limestone Caves](#): about 25 people gathered in the Australian Museum conference room for this joint meeting with the Royal Society of NSW and ANZAAS on 4 November.

Dr Neville Michie, a freelance scientist, spoke on 'Research on Physical Aspects of Caves'. Complex circulations of air within caves are driven by the gradient of geothermal heat which interacts with the atmosphere through convection, radiation and evaporation and condensation of moisture. Air currents interact with the transport of particles into the interiors of caves. Measuring these effects requires very sophisticated instruments.

Dr Craig Barnes, School of Chemistry, The University of Sydney, spoke about 'Radon in Caves'. Australian caves have low concentrations of radon compared with some caves overseas. However, exposure to the atmosphere of caves should be limited to about 2000 hours per year. The concentrations of radon vary markedly throughout the day and the year.

M/s Jill Rowling, a free-lance cave researcher, spoke of her researches on 'Ribbon Helictites'. These are curious flattened and twisted cave decorations. Common helictites are circular in section and are built of calcite crystals radiating from a central canal. In ribbon helictites the calcite crystals elongate in the same direction as the central canal.

[Tall buildings - why we need them, and why they create problems](#): this meeting was held on Saturday 7 November in the Pharmacology School of Sydney University. It was very successful and attended by 30 people. The speakers and their topics were:

'A historical review of tall buildings in Australia: problems solved and problems remaining' by Henry J. Cowan Professor Emeritus of Architectural Science, University of Sydney. 'The birth of the tall building in Australia' by John Rankine, the engineer of the first building in Australia to exceed the previous height limit of 150 feet, removed in 1954. 'The energy consumption due to the air conditioning of tall buildings, and the 'sick-building' problem' by David Rowe, formerly mechanical engineer in the Department of Public Works, and former Senior Lecturer in the University of Sydney. 'Should we preserve tall buildings as part of our architectural heritage?' by Trevor Howells, Senior Lecturer in Architecture, University of Sydney.

Events Planned

A meeting is planned for March 1999 on 'The use of memory enhancing drugs in school exams'. Further possible meeting topics for 1999 include 'Genetically Engineered Foods', 'An optimal population for Australia', and 'The Internet'.

Other Activities

A Pan-Pacific Science Congress will be held at the University of NSW in early July 1999. It is proposed to run a Youth ANZAAS in conjunction with this event.

ANZAAS NSW is exploring the possibility of having a Science event in the week leading up to the Olympic Games.

We are also cooperating with Young Scientists of Australia to produce a web page of careers advice.

VICTORIA

by Ann WESTMORE

While 1998 was not the busiest in the history of ANZAAS (Vic), it certainly kept committee members occupied. During the first six months the committee explored a variety of activities that might provide the division with a platform to reach its constituency - members of the public, young and old, interested in science and technology issues. Somewhat constrained by the division's slender bank balance, the committee also sought funding from central ANZAAS, the Australian Foundation for Science and a number of companies. The division's secretary, Duncan Rouch, kept the meeting minutes flowing and took on the job of production editor for the national ANZAAS newsletter while treasurer, Joan Clarke, ably kept the books. Committee members, Albert McGill, Julie Mills and Cyril Curtain provided valuable input.

Events Held

Committee member, Eric Webb, was successful in applications for financial support to the Foundation and to the Bureau of Meteorology. The funds were used to run a series of three free public meetings Eric organised for September, October and November at the Kaleide Theatre, RMIT University, Melbourne. The venue was deliberately chosen for its centrality, access to public transport and advanced audiovisual technology. At the three meetings the topics presented were, "Satellite Meteorology" by Mike Wilimott, "Cone shell toxins; molecular prospecting for novel drugs from the sea" by Drs Bruce Livett and John Down, and "Food safety -new concerns for an old problem" by Agnes Tan. Newsletters compiled by Eric and sent to ANZAAS (Vic) members have helped publicise the meetings.

The best attended function of the year was the launch in October of 'Why? Scientists Answer Children's Questions' (ABC Books), organised by Ann Westmore with support from the Bureau of Meteorology. Victoria's Minister for Tertiary Education and Training the Hon. Phil Honeywood, launched the book with enthusiasm, congratulating its co-authors, Pat Long and John Phemister, for their achievement. ANZAAS is a long-time supporter of the book's publication and receives royalties from its sales. See Book Bites p6 for book details.

Events Planned

Bienna Chow started work on an exciting seminar series entitled "Putting Science Into Business" planned for 1999. The division is investigating holding an event as part of the 1999 National Science Week - details to be announced, after participating in the 1998 Week.

New Members

Importantly, the division attracted the following new members, Elisa Raulings, Duncan Reid, Kenneth Clarke, Tricia Veale and Rebecca Webb and

organised membership for speakers Mike Willmott, Bruce Livett, John Down and Agnes Tan.

Book Bites

Saving our Heritage. The Role of Science in Managing Australia's Ecosystems.

Edited by C. Copeland and D. Lewis, 1977. ISBN 1 875684 19 0, Halstead Press, Rushcutters Bay.

For more than a century ANZAAS conferences have given rise to important publications. "Saving our Heritage" had its origins in a session foreword. This book is in the best traditions of ANZAAS, communicating excellent science, which is of vital importance to our future. Environmental degradation is no longer accepted as "the price of progress". The public demands that environmental protection be given high priority in the development approval process and there is increasing interest in proposals to ameliorate past damage to the environment.

The Australian environment has many unique features, and the first step to better environmental management must be improved understanding of the environment. We cannot merely adopt management prescriptions from overseas and hope that they will work. The papers in "Saving our Heritage" survey a diversity of ecosystems, identify the management issues, illuminate the way ahead, and make suggestions for rehabilitation. The publication contains much important information but also many thought provoking ideas and suggestions. It should be widely read, but particularly by those charged with the administration of the various grant schemes for environmental restoration.

Phillip Law. The Antarctic Exploration Years 1954-66

By Kathleen Ralston. ISBN 0 644 38318 6. Available at \$39.95 from Government Info Shops.

Phillip Law's career in Antarctic exploration began in 1954, after he set up Australia's first Antarctic station, Mawson. From 1954-66 Law and men of the Australian National Antarctic Research Expeditions returned to Antarctica each summer to explore and photograph more than 4000 nautical miles of its uncharted coastline.

Based on the diaries of Philip Law and other expedition members, this biography describes in fascinating detail the day-to-day events of Antarctic exploration. The frustrations caused by a forbidding climate are forgotten against the excitement of discovery and the many incidents of bravery shown by men dedicated to science. This is not only a story of ultimate adventure in a remote terrain, it is the story of Phillip Law's vision, his outstanding administrative abilities and the great achievements he attained for Australia in Antarctica. In short these are the 'Law Years'. Phillip Law is a supporter of ANZAAS.

Why? Scientists Answer Children's Questions.

Edited by Pat Long and John Phemister, ISBN 0 7333 0366 8. \$16.95, ABC Books.

Who was the first scientist on Earth? What is the sun made of? How do plants make oxygen? How come on the Moon you are as light as a feather? Satisfy your curiosity about the universe as eminent scientists from all over Australia answer these and other questions asked by children. In the introduction Bruce McKellar says in his childhood he read similar books that led him to become a scientist. Of course it is not just budding scientists who should read this book, we should encourage the curiosity of all children in the world around them. So, buy this book for children you know! Do this especially as all royalties from the sale of this book go to ANZAAS. ANZAAS Victoria launched this book.



Pat Long (Co-Editor) and Matthew Kelly (Publisher, ABC Books) at the launch of 'Why? Scientists Answer Children's Questions'.
