

THE ANZAAS MERCURY

ANZAAS: Empowering the Community with Science

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Editor's Edict

Please enjoy this issue, packed with news about S&T issues. In **ANZAAS Debate** we look at the rise of the precautionary imperative in the face of severe technological disasters. We also present news on the great Youth ANZAAS event held earlier this year. Also do not miss the bright breezy ANTENNA.

-Duncan Rouch

Adam's Airing



**Comment From The Chair
By Paul ADAM**

Science Push in Government

Here I look at recent improvement in the support for science by governments. See the last issue of Mercury for my discussion about how the states aid science.

The Premier, Dr. Gallop has taken up the science portfolio, so is now designated Premier of Western Australia and Minister for Science. He has established a Science Council to advise him and established a position of Chief Scientist within the Department of Premier and Cabinet, to which Dr. Bruce Hobbs FAA, formerly Deputy Chief Executive of the CSIRO Division of Minerals and Energy, has been appointed.

The WA Government has funded a number of centres of research excellence in state universities to provide infrastructure support for science and encourage investment in science and technology. I am grateful to Professor McComb for providing an update of the situation in Western Australia.

At the Commonwealth level, The House of Representatives Standing Committee on Science and Innovation, chaired by Gary Nairn MP, has released its report "Riding the Innovation Wave: the case for increasing business investment in R & D". ANZAAS made a submission to the Inquiry and it is pleasing to note that the report makes a number of references to our submission. Unlike a number of recent reports this one is unanimous, and makes 48 recommendations to government.

ANZAAS

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The Committee was clearly convinced of the vital importance of innovation and research to the national well-being and its recommendations are directed to facilitating greater involvement and interaction between public and private sectors.

The Committee identifies a number of cases of bureaucratic inconsistency in regulatory approaches and also suggests a need to clarify definitions of R & D activities so as to maximize accessibility of existing funding support. The collection of statistics on R & D needs to be improved to enable better reporting of activity, although this needs to be done in such a way as not to impose additional burdens on small companies. The Committee strongly endorses the need to enthuse school and university studies with the excitement and importance of scientific and technological innovation - themes with which ANZAAS would fully concur. Some of the suggestions, such as greater flexibility in university superannuation schemes and changes to university governance while eminently sensible, may rapidly move to the too hard basket.

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It is very encouraging that research and development has attracted such strong non-partisan support. However, progress will only be made if the government not only accepts the report but takes positive steps to implement

recommendations. We await with interest the Minister's response.

I would welcome any comments and suggestions for issues that could be addressed -e-mail: chair@anzaas.org.au, Tel: (W) 02 9385 2076, (H) 02 9314 2453, FAX: 02 9385 1635

ANZAAS News

Telling Government How It Is

(1) Inquiry into Higher Education Funding and Regulatory Legislation, by the federal Senate. Here is a summary of the main arguments submitted by ANZAAS to the inquiry.

ANZAAS is firmly of the view that a strong public tertiary education sector is an essential national asset. Funding of universities should be viewed as investment in the future, not as a cost.

Diversity in Science

It is a matter of concern that there has been a decline in interest in science, both in secondary schools and universities, in recent years. This is not a phenomenon unique to Australia but is widespread in the western world. Despite this decline in interest, and, in some sectors of society, increased antipathy to science, our every day lives are more and more influenced by the outcomes of scientific research. The recent report of the House of Representatives Standing Committee on Science and Innovation "Riding the Innovation Wave" has demonstrated the potential for capitalising on new science and has made a number of recommendations for increasing the value to be obtained from innovation.

However, over the medium to long term, opportunities for innovation will decline without new, enthusiastic well educated science graduates. We have, in previous submissions to various recent inquiries, stressed the need to reinvigorate university science and promote diversity between institutions.

The Government has stressed the need for diversity between universities. However, it is not clear that diversity is being considered in relation to national long term needs. Knowledge evolves, discipline boundaries change, new disciplines emerge and areas of interdisciplinary research develop: any university system needs to retain flexibility and the ability to respond to such changes. Our concern is that the current 'market driven' model for rationalization may throw the baby out with the bathwater, and reduce rather than enhance diversity.

While not every topic of teaching will be linked to research, the concept of teaching only institutions, or even schools within institutions, is not one which we would wish to see developed.

The type of diversity envisaged by the 'Higher Education at the Crossroads' report seems to be a return to the division between Universities and Colleges of Higher Education. We would prefer to see diversity within institutions where some schools would have national or even international standing and others would have supporting roles. In this model, provincial universities could exploit their local advantages to develop centres of excellence.

Accessibility

The effect of differential HECS on patterns of enrolment is difficult to ascertain. Anecdotally, however, there is an impression that science is perceived as a less favourable choice, both because of the size of the debt and perceptions of limited career options. While recognizing that laboratory based subjects involve extra costs we would favour a level playing field in terms of incurred HECS debt. We would also urge that there be greater efforts by government, universities and the professions, to promote the relevance and advantages of scientific careers.

(2) Inquiry into Science and its Commercialisation in New South Wales, by the NSW Government. In its submission ANZAAS NSW concluded that, *"The scientific work of the NSW Government is extensive, diverse and of high quality. It is engaged in regulatory compliance and assessment, in implementing existing government policies, and developing new initiatives. Government should maintain the environment in which science can grow through teaching in primary and secondary schools and in the universities. We are not opposed to public sector research and innovation bringing financial returns to the State Government. However, the following issues would need careful consideration before commercialisation became a major objective of public science. They are: public confidence, the broader public good, competition with the private sector, costs and risks, allocation of intellectual property, and budgetary implications."*

Tasmanian Science Teachers' Awards

For many years, the Tasmanian Division of ANZAAS has been a sponsor of the Tasmanian Science Talent Search (TSTS) which is run annually by the Science Teachers Association of Tasmania, with the EXAMINER NEWSPAPER in Launceston as the major sponsor. Prizes for 2002 were presented at the Country Club Casino, Launceston on Sunday, March 30, 2003. The ANZAAS Awards for, "Teachers who are most encouraging of the basic sciences", were presented by Mr Chris Forbes-Ewan, a northern Tasmanian member of ANZAAS.

Each award includes a framed certificate, plus ANZAAS membership for one year, and a subscription for one year to "Australasian Science". The recipients for 2002 were;

Mrs Ann Burke (Intermediate Level), Marist Regional College, Burnie.

Ms Jennifer Wise (Junior Level), Riverside High School, Launceston.

Geoff Fenton
Chair, Division of Tasmania

Victoria Prize Won by Member David Vaux

We congratulate Victorian member Dr David Vaux for being honoured with the Victorian State Government's Victoria Prize, which highlights leadership, determination and

creativity in science engineering or technology innovation. The prize honours David's work in a series of groundbreaking discoveries about apoptosis, that is, programmed cell death. This has implications in treatment of cancer, heart attacks and autoimmune diseases.

The ANZAAS Debate - Technology Disasters: Have We Learnt the Lessons?

This essay is the third in a 4 part series examining fundamental areas in the community-science interface. Many people are ambivalent about science. There is no doubting that science and technology has fundamentally improved people's lives in quantum degree over the last century. Yet at the same time many applications of science have been problematic if not disastrous. Here Duncan Rouch looks at what we have learned from major disasters caused by technology.

Applications of technology that have caused highly serious problems to humans and the environment on our planet include weapons of mass destruction (nuclear, chemical and biological), chemical plant disasters and human and animal health disasters like the failure to expedite screening of transfusion blood for the AIDS virus in the USA during the mid 1980's, and the Bovine Spongiform Encephalopathy epidemic in the UK. Each succeeding major disaster has reduced community trust in science and technology and as a result tended to bring tighter government regulation of technology.

Bitter Harvest of Bhopal Disaster

The most notable chemical plant disaster in the last 50 years was the devastating release of toxic methyl isocyanate gas from the Union Carbide plant in Bhopal, India, during the night of December 2nd/3rd in 1984. In this case 3,828 people died and a further 2,680 victims suffered permanent partial disability. A further 18,922 people suffered permanent injury without long-term disability.

Investigations showed that safety had been the first to be downgraded at the plant when cost cutting had been introduced several years earlier. At the time of the disaster none of the previously installed safety systems were operational. They had either been switched off to save money or were broken awaiting repair. A US government audit of the plant in 1982 listed over a dozen safety hazards that needed attention, yet no action was taken to improve plant safety. Two weeks after the disaster Union Carbide executives Anderson and Browning testified before two subcommittees of the US Congress's Commerce & Energy Committee. Both emphasized safety and stressed the company's determination, "to make sure that what happened at Bhopal cannot happen again." Nevertheless surely the prudent conclusion is that the disaster should not have happened in the first place.

The company proceeded in 1988 to blame a 'disgruntled employee' for precipitating the release of methyl isocyanate gas. Curiously, however, no charges have been ever laid against any employee of the Bhopal plant for such action.

In 1989 after protracted negotiation and court actions, in first the US and then India, Union Carbide agreed to pay US\$470m in compensation¹. Indian Government inefficiency and corruption meant that little compensation ever reached the real victims. The only notable outcome of compensation is a US\$17m hospital, first agreed to in 1991. The Bhopal Memorial Hospital and Research Centre was finally opened to treat patients in 2001. Warren Anderson, who had been Union Carbide chief at the time of the disaster, was formally charged with culpable homicide and other offences by an Indian court in 1992. The US courts, however, have continued to protect him from being extradited to India to face these charges. Union carbide was taken over in 2001 by Dow Chemicals, which has become the new target for long-suffering Indians trying to gain justice.

While the financial reparation was never going to be enough to cover the mental and physical pain of the stricken people of Bhopal, the developed world learnt to better regulate its chemical industries. In the U.S.A. the federal Community-Right -To-Know Act was passed. It established more stringent local incident-notification procedures, as well as more-detailed facility and company emissions reports².



BSE Catastrophe

In England scientists were held to account for the Bovine Spongiform Encephalopathy (BSE or "Mad Cow Disease") epidemic that began in 1986. Scientific advisors to government appeared to have colluded with government in reducing health safeguards in the waste meat industry that was responsible for the extent of the epidemic, with over 170, 000 cattle being affected.

Even though a later enquiry exonerated all government officers and advisors it was too late to alter the public perception. In a further result of the BSE epidemic over 80 people have died from the human form of the disease, Creutzfeldt-Jakob Disease (CJD)³.

Rise of The Precautionary Principle

Public health scientist Stephen Dealler summarised the lesson from the BSE epidemic for public health scientists, "I ask my scientific colleagues to take into account public health when considering BSE and to remember that absence of evidence is not the same as evidence of absence". The disaster had moved goal posts on the public responsibilities of scientific experts. Previous to the BSE crisis the absence of evidence that a company process might be dangerous was enough to allow weakening of safety standards or to ignore any thought of tightening regulations. After BSE the precautionary principle gained credence. With this principle a company practice can be questioned by preliminary direct scientific data or scientific extrapolation

Criminal or company saviour? Warren Anderson in 2002. (©Daily Mirror/ Shannon Sweeney)

from known dangers, without the need to collect comprehensive health data that might take many years.

In the U.S.A. The idea of precaution underpins some policy, such as the requirement for environmental impact statements before major projects are launched using federal funds. But most existing laws and regulations focus on cleaning up and controlling damage rather than preventing it. Nevertheless current policies such as risk assessment and cost-benefit analysis have given the benefit of the doubt to new products and technologies, which may later prove harmful. And when damage has occurred, victims and their advocates have had the difficult task of proving that a product or activity was responsible⁴.

Thus there has been a drive to more widely incorporate the precautionary principle, as it shifts the burden of proof, insisting that those responsible for an activity must vouch for its harmlessness and be held responsible if damage occurs. Uptake of the principle in the USA, however has been slow in part due to the power of the trade related federal departments, the Trade Representative, Department of Commerce, and also Department of State.

Furthermore the World Trade Organization paradigm restricts environmental considerations in trade negotiations⁵.

Like the US government the current Australian government also tends to see the precautionary principle as a barrier to trade. Nevertheless, Australia is signatory to a number of international treaties and national agreements adopting or acknowledging the precautionary principle. These include: the *Convention on Biological Diversity*; *National Strategy for Ecologically Sustainable Development*; *Inter-Governmental Agreement on the Environment*; and *National Strategy for the Conservation of Australia's Biological Diversity*. A number of other national policy documents include the Precautionary Principle as part of the definition of Ecologically Sustainable Development. These policy documents include: the *Commonwealth Coastal Policy*; *National Water Quality Strategy*; *National Forests Policy Statement*; and the *Decade of Landcare Plan*⁶. Moreover, the principle has been incorporated in some legislation, notably federally the *Great Barrier Reef Marine Park Act 1975*, and in Victoria the *Environmental Protection (Liveable Neighbourhoods) Bill 2000*.

The precautionary principle has had greater impact in the European Union and now informs a range of policy areas of the Union, in environmental, human, animal or plant health. The EU states that the precautionary principle should be considered as part of the analysis of the risk of an agricultural or industrial process. The principle should also be used in the management of the risk including the anticipation of environmental dangers⁷.

Critics claim the precautionary principle can be counterproductive, in reducing trade and economic growth^{8,9}. Such resistance, however, derives from the old-economy view that environment is separate from commerce. The precautionary principle informs the integration of all aspects of society for a sustainable future. Of course poor

use of the precautionary principle, like any management tool, can be problematic.

Even in the U.S. some environmental campaigners feel a sense of optimism that the precautionary principle will in the future serve as an overarching principle to guide efforts towards sustainability⁵.

Conclusion

As a multinational company Union Carbide should have applied the same safety standards to its Indian operation that it did to its equivalent US operation in West Virginia. It's failure to do this, along with almost non-existent Indian safety inspection services, created the conditions for the Bhopal disaster in 1984. The rise of international agreements on trade and other issues should help persuade companies to equitably apply safety standards, despite the poor state of safety inspection processes and other occupational health systems in developing countries like India.

The rise of the precautionary principle in informing government policy on technology issues provides a strong imperative for scientific investigation to support such policies. For chemical and other plants safety regulation will become more paramount. For the compounds being produced by plants rather than trying new technology and seeing what environmental and health problems it produces, it will become more important to perform substantial pre-release tests and to monitor affects after wider use has begun. This would particularly apply in cases where substantial hazards could be reasonably predicted. Such testing

processes occur, and have been present for many years, in the pharmaceutical industry.

New accounting systems expected in the near future should also aid precautionary policies. These will account for the true cost of any environmental and health insults produced by commercial technology.

Broad accounting systems of this type are part of the developing triple-bottom-line approach to company responsibility. Triple-bottom-line accounting measures social and environmental, as well as financial, outcomes. Major companies taking up the triple-bottom-line challenge are the oil industry stalwarts Royal Dutch Shell and British Petroleum.

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Signs painted on the disused Union Carbide factory in Bhopal, India show the ongoing angst of the victims of the 1984 chemical disaster. (source: www.bhopal.org)

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News And Analysis

Putting the Drug in Herbal Medicine

By Diana TEMPLE & Graham JOHNSTON

Why do so many Australians prefer to take herbal medicines, instead of, or as well as, those prescribed by their doctor? Why, in this scientific age, are so many people gullible about accepting the often exaggerated claims made for "natural" or alternative medicines? These questions were discussed at a successful public seminar called **Quality Control of Medicines, Lessons from the Pan Pharmaceuticals Recall**. This event was held by ANZAAS NSW at Sydney University on the evening of July 15th. The topic, which was proposed by NSW committee member Graham Johnston, Professor of Pharmacology at Sydney University, has been newsworthy since the large-scale withdrawal of products of the manufacturer Pan Pharmaceuticals.

The recall crisis was precipitated by reports of serious reactions to "Travacalm", a registered over-the-counter product used to combat motion sickness, which contains the well-established active drug hyoscine. The samples tested were reported to show a huge and unacceptable variability in the proportion of hyoscine present. In some samples, it was almost absent, in others grossly high. A subsequent audit by the Therapeutic Goods Administration (the licensing body) found problems with widespread deficiencies and failures in Pan Pharmaceuticals' manufacturing and quality control. The resulting recall of all the firm's products was the largest recall in Australia and worldwide, involving over 1500 herbal, vitamin and over-the-counter products and one prescription medicine.

A large proportion of the Australian population seek the counsel of practitioners working under labels like naturopathy, holistic medicine, natural medicine, reflexology, and iridology. Billions of dollars annually are spent on supposed remedies, some "prescribed" by these practitioners and some bought from health-food stores and also pharmacies. The description "natural remedy" seems to suggest to the purchaser that the substance is safer and better than the registered pharmaceutical products recommended by the doctor or pharmacist. While some of the alternative medicines are helpful, their active principles are often unidentified and vary in different samples, their efficacy is usually unproven, some have unwanted side effects or interact with other medications, and many are of doubtful value.

These were some of the points made by speakers, particularly by Professor John Dwyer of the University of

New South Wales. Professor Dwyer, who chairs a consumer protection committee of the NSW Health Department, was concerned about issues of consumer protection - the lack of evidence of efficacy of the medicines, false advertising claims, exaggeration of benefits, absence of quality control. He described the disastrous outcomes for misguided patients who rely on "natural" remedies and by-pass established treatments, quoting AIDS patients who, in these circumstances, are near death before coming to his clinic.

Under the Code of Good Manufacturing Practice all medicines, listed and registered are required to undergo the most rigorous and costly manufacturing and testing procedures by manufacturers licensed by the government's Therapeutic Goods Administration, and are subject to regular audit by the TGA. It is apparent that these requirements were not fulfilled in the case of Pan Laboratories. This was the message of Mr David Edmonds (Peptech), an experienced quality control and regulatory manager in the pharmaceutical industry. He described the code of good manufacturing practice as it is implemented by his industry and outlined the complex and thorough process of quality control needed to meet Australian standards in registered pharmaceutical products. There are 28,000 pharmaceutical products in Australia, mostly sold over the counter, including vitamins, complementary medicines and prescription-only drugs.

Information on herbal medicines was provided by Professor Basil Roufogalis, Executive Director of the Herbal Medicines Research Centre in Sydney University's Faculty of Pharmacy. He spoke of progress made by his research group in studying the bioavailability of active substances in the body after ingestion, and measuring efficacy, in a number of herbal remedies. Products of ginger, garlic, senna, kava and Echinacea were mentioned. Herbal medicines contain multiple constituents, which have different actions, so that their 'active principle' is the sum of these actions. In most herbal medicines, the chemical identity of the active principle is still unknown. Plant isoflavones, which occur for example in red clover, have oestrogenic action and their use been suggested for menopausal hormone replacement therapy. The "natural" label appeals to consumers, but results are very variable. Professor Roufogalis discussed the extensive, well-designed clinical trials of preparations of St John's Wort, a plant that has been used for 2000 years in the treatment of depression.

The presentations generated much vigorous discussion from the audience of 45. Public interest does outweigh commercial interests in some situations, including the safety of all medicines. Outcomes of the meeting are the obvious requirements for:

- More effective quality control of all pharmaceutical products, which will involve more research.
- More effective information to the general public about alternative medicines. This includes improving public access to quality control data.
- Independent assessment services, to verify the quality control process, where presently most assays are carried out in house.

Youth ANZAAS 2003 a Winner

By The Team, Youth ANZAAS 2003

The Youth ANZAAS congress for 2003 recently took place in Melbourne over the 5 days 7th - 11th July. It saw the coming together of school students every corner of the continent to participate in talks and visits highlighting what Australian science has to offer.

The Youth ANZAAS Congresses are a major part of ANZAAS's work to encourage the curiosity of children (school students) about the natural and man-made world around them. The Congresses continue to be held annually, rotating around the major cities of Australia. This year's Congress in Melbourne took place against a background in which the Victorian Division of ANZAAS is regrouping itself, increasing its membership, and becoming a force again in the general community as a platform for scientific debate.

Fifty school students (years 9 - 12) took part in this year's event, and delegates came from every State and Territory in Australia. The students were accommodated at Ormond College on the University of Melbourne campus, and for three days visited laboratories and places of scientific interest in and around Melbourne. For many, the experience of Ormond college and Melbourne were interesting enough, however the focus quickly turned to science with a multitude of locations visited.



The program of visits was designed to satisfy four criteria:

- * topical science;
- * choice of topical science for which Victoria has world leading groups;
- * some examples of applied science and technology transfer;
- * new major initiatives (synchrotron and Bio 21) presented as the basis for future science visions (ie facilities which will be operational when these students enter graduate and postgraduate studies).

So the program ensured a respectful diversity of exposure, whilst ensuring a reasonable introduction to each field could be gained.



State Chemistry Laboratory

Day 1:

- Walter and Eliza Hall Institute (A range of medical science projects and an impromptu presentation on Bio 21 by WEHI Deputy Director, Margaret Brumby)
- Melbourne University Physics Department (Quantum computing and high energy physics)
- Peter MacCallum Cancer Centre (General advances in diagnosis and treatment of cancers)



Relaxing at the Western Treatment Plant Information Centre, Werribee.

Day 2:

- CSIRO Atmospheric Research (Evidence for global warming; use of baseline greenhouse gas and pollution measurements at the Cape Grim observation station; ice core records of atmospheric change)
- Monash University (Earth sciences - current Mars probes; Biology - behaviour of ants and leeches; Physics - spectroscopy and the synchrotron)

Day 3:

- Food Science Australia (Food processing - applied science behind the supermarket products; hands-on tasting).
- State Chemistry Laboratory (Soil composition and structure; agrifood and nutrition).
- Melbourne University Gilbert Chandler Laboratory (Microbiology and cheese processing).
- Australian Starter Culture Research Centre (Bacteria cultures versus viruses in cheesemaking).
- Western (sewage) Treatment Plant Werribee (Application of science to waste treatment and recycling of used water) - field trip.
- Planetarium (Special evening showing to end the formalities).

Our thanks goes out to all of these places for all the talks, tours and demonstrations that the many people put on. It was encouraging to know that when people heard what the congress was about, they were generally more than supportive in advancing the cause of science, particularly to the next generation,

This was the first year for some time that all States and Territories had been represented by students at the Congress. That this was achieved was due in large measure to the generosity of our sponsors: the Federal Government (DEST); the Victorian State Government (DE&T, invaluable in-kind assistance); and the CASS Foundation Ltd.

Come weeks end, the students returned home tired but happy with their experience, and with innumerable new friendships established. The general response was wishing they could see more and one hopes that they will do more than that, but be involved in the future to come.

Thanks to all the people that were involved in the organising of this years Youth ANZAAS, Mike Murray (chair), Malcolm Jenkins (Treasurer), Tobias Colson

(Secretary), Paula Taylor, Michaela Patel, Rachel Komen and the Victorian Division chairman Eric Webb.

Youth ANZAAS 2004 will be held in Sydney, and we have high hopes of next year's Youth ANZAAS being even bigger and better.

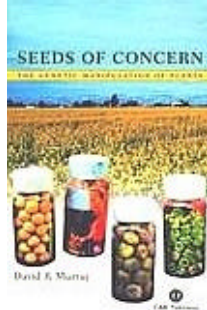
Book Review

SEEDS OF CONCERN. The Genetic manipulation of Plants

By Murray, D.R. (2003). UNSW Press
Sydney & CABI Publishing,
Wallingford. ISBN 0 86840 460 8

'The Economist' (June 28 2003) argued that in relation to applications of new genetic and molecular technologies there is a very substantial difference in public sentiment on either side of the Atlantic.

In America the development and use of genetically modified crops for food production has occurred on a large scale and has not given rise to widespread public opposition. However, in Britain and Europe there is very strong reaction to GM crops and substantial restrictions on their use. On the other hand work on human genetics and development in the United States is embroiled in the continuing debate on the sanctity of life. Curiously this is not an issue which concerns most people in Britain. 'The Economist' sees this as a great commercial opportunity, with Britain able to be in the vanguard of commercialization of clinical spin-offs of human genetic research. The journal does not attempt to analyse the basis for these societal differences, although that would be an interesting exercise. Australia would appear to have adopted a mid-Atlantic position as the debate on embryonic stem cell research shows there is considerable public concern about human genetic and developmental research. Nevertheless the regulatory regime for such research is less onerous than that in the US. As a public we have not demonstrated the Americans' acceptance of genetically modified crops although the constraints



imposed by regulation are much less than those in Europe and civil disobedience such as seen in Europe has not yet occurred here.

David Murray's 'Seeds of Concern' is an important contribution to raising the level of debate about GM crops in Australia. The author is a distinguished plant physiologist with extensive experience in seed and crop biology.

In a very concise account he provides an introduction to plant cell biology and to the techniques of genetic manipulation of plants. Murray identifies and discusses the potential for GM crops which could yield benefit to end users. However, he points out that the current generation of GMOs offer little benefit to consumers with any advantages accruing primarily to agribusiness. This will undoubtedly be contested by proponents of GM technology but Murray's arguments are well marshalled and cannot be easily dismissed. He also makes some telling comments about the lack of biological knowledge displayed by some advocates of GM.

In my view much of the debate in Europe is not fundamentally about the consequences of GM; rather it reflects concerns about the social, economic and ecological consequences of the growth of an oligopoly agribusiness. This is not discussed by Murray, but may well be a factor in some of the concern in Australia.

The book should be widely read. Genetic technology cannot be uninvented - knowledge exists and will continue to be used. The task is to make possible use of this technology, and Murray provides suggestions for what could be done and what changes in regulatory regimes would be desirable.

Paul Adam

Perrin's Points



NOTICES TO MEMBERS FROM
THE HON. SECRETARY

SUBSCRIPTIONS If you have not re-subscribed for this year please do it now. Following a decision at the AGM, the GST on renewal subscriptions or new subscriptions will be again be absorbed for this coming year and the position reviewed in June 2004.

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Renewals of all categories of subscription are due on **1st July** for the **2003/2004** financial year.

Members are reminded that ANZAAS provides for subscription renewal by credit card, **[not AMEX or Diners!]** although this facility does NOT provide for telephone renewals as we would be required to place \$5000 on deposit at the bank to underwrite non-signature transactions.

abc

Media Report

By Victor BIEN

Science Coverage in the Daily Telegraph



Up to now what I have in mind when I talk about "the media" has been the "high brow" quality press, the ABC or SBS. This time I focus on the populist Sydney Daily Telegraph.

Science by its nature looks at the world in deeper ways than meet the eye. I would further say that being interested in science automatically

makes one an actively engaged citizen and therefore "political" (not necessarily in a party political sense). For the vast majority of hedonistic, self centred and self seeking ("non-political") people science matters are generally "too intellectual" compared to sport, social gossip, and classic "newsworthy" events which involve one or more of, conflict between authority and people, conflict between people, conflict between humans and natural events and sex (and all aspects of life related to that). Commercial TV and the Tele panders to the baser tastes of the majority public (no point in being politically correct to avoid saying this).

Thus it is not surprising that the DT does not or does not appear to have regular science columnists like the Sydney

Morning Herald (I don't know about the Australian because I refuse to read it due to the presence of particularly pernicious journalists under Murdoch's tutelage).

So this quarter I have been on the lookout for any science coverage in the DT. I don't read it consistently - only when I'm at the barber or McDonalds and the like! Well I spotted only one article entitled, Bible challenged: critics eat away at ecological theory by Simon Benson Environment Editor, 9th July. Some actual science is conveyed but only within the framework of conflict between people, in this case between Dr Tim Flannery and Dr Steve Wroe who have opposing views about carnivorous marsupials relating to early Australian ecology. That it was couched in terms of conflict of people was not

necessarily a bad thing because it shows how human an activity science is - that things we now read in "authoritative" science text books were once hot topics subject to dispute!

The only other (not insignificant) coverage of science I saw was a colour liftout about How the earth works. It ran as a 9 sections series over several days. It was promoted as a colour freebie. It's

good to see that the editors saw some commercial merit in promoting some science in a populist "rag sheet"!



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