

THE ANZAAS MERCURY

ANZAAS: Empowering the Community with Science

∞ Issue No. 11, September 2001 ∞

Editor's Edict

In this issue we bring you two exciting contributions from our own members, 'Selling Science', by G.C. Simmons and 'Preventing War with Science' by Hugh Crone and Shirley Freeman. Also see 'Robert Hill: One Man and His Regional Forest Agreements' In ANZAAS Debate, and the Mercury Poem.
-Duncan Rouch

Adam's Airing Comment From The Chair By Paul ADAM

Federal Election Campaign: Raising Science Issues

The coming federal election campaign may become one of the few in which education and research are important issues of debate between the parties. The level of funding of research in both public and private sectors, the need for mechanisms to promote the commercial uptake of research, the need to increase community awareness of science and technology and the funding of other resource requirements of public schools have all been identified as important issues. Whether or not there will be constructive debate will depend in part on the politicians but in large measure will be determined by the media. The response of the majority of the media to the launch of the ALP's 'Knowledge Nation', and in particular to the now famous 'spaghetti and meatballs' diagram, was extremely depressing. Most reports held up the policy to ridicule, but criticism was based not on the merits or otherwise of the proposals but the long term nature of the strategy (longer than the electoral cycle) and the perceived complexity of the notorious diagram.

It is not the role of ANZAAS to advocate support for any particular party, nevertheless it is legitimate to comment upon the political process. The issues surrounding research and education are complex, but are vital to the nation's future. As yet no party has a monopoly on solutions, and we need to canvas as wide a range of ideas as possible.

This will not happen if the media decide it is all too complicated and decline to report the substance of the debate. The response to 'Knowledge Nation' tells us more about the media than it does about the public's capacity to appreciate the issues. I have a greater faith in the sophistication of the electorate than the media and, unfortunately, many politicians. The conceptual mapping process leading to the 'spaghetti and meatballs' diagram would be familiar to many people and has been part of educational activities for many years. The public would know that the issues are complex and inter-related and would probably be more suspicious of an approach which oversimplified the issues. However, the very short term perspective of political consideration in Australia is a major impediment to developing continuity of policy in areas such as education and research, as are the overlapping responsibilities of federal and state governments.

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ANZAAS

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The last few months have seen substantial commitments to research by both the Victorian and Queensland governments. These are very welcome initiatives, and while they may be motivated in part by rivalry between states will add considerably to the national research capacity. New South Wales has yet to announce comparable support, but this may change when the State Biotechnology Strategy is released. The relative reluctance of NSW to be involved in research is nothing new - J.J. Fletcher in his memoir of Sir William Macleay (one of the founding fathers of the Linnean Society of NSW) found occasion in 1893 to compare unfavorably the state's support of science with that in Victoria and Queensland. While the recent major commitments from Victoria and Queensland to very specific areas of research are a new phenomenon we should not underestimate the role of all states over many years in research on natural resources and primary industry. Although this research has been highly directed to applied problems much has been of the highest quality and has contributed to our high international scientific reputation. State departments have embraced new advances (particularly in molecular biology) in recent years, and have also developed strong international collaborations. While the focus of public and media attention has recently been on national initiatives it is important to acknowledge the important underpinning of national scientific research which continues to be provided by the states. I suspect that many state parliamentarians are unaware of the amount and quality of research support by appropriations from state budgets and debates on science policy in state parliaments are even rarer than those in Canberra.

Education Standards Under The Microscope

Recently Dr. Vickery and I appeared before the Senate Employment, Workplace Relations, Small Business and Education References Committee Inquiry into the capacity of public universities to meet Australia's higher education needs at its hearing in Sydney (held in the State Library in the McDonald's room - perhaps an appropriate venue given that identifying alternative sources of funding is one of the recurrent themes before the Inquiry). The Inquiry is a major one which has received numerous submissions and held public hearings all around the country. It is to be hoped that the Committee can report before the election is called, otherwise much valuable work will be lost.

The hearings of the Committee have attracted considerable media attention. One of the concerns behind establishment of the Inquiry was that there was an increase in 'soft marking' and that standards were falling. While the pressures which might result in 'soft marking' have been

identified substantiating evidence in public submission is not conclusive. However, the terms of relevance of the Inquiry are very broad and encompass many other aspects of standards.

We were invited to appear before the Committee so that Senators could pursue issues raised in the ANZAAS written submission. We were given a very fair hearing, and were able to expand particularly on the need to take a national perspective during 'rationalisation' of structures in particular universities. There is a danger that through constant attrition some disciplines, not regarded as viable at any one university, may be totally lost, but consideration of the case for retaining at least one center for such disciplines, in the national interest, does not appear to occur. Several senators were interested in this point.

One of the difficulties in protecting national interests is that the universities have a degree of autonomy (although issues of governance at institutional level are also under examination) within the context of state legislation. Although the Commonwealth is the major source of public money to universities it has little direct control. Whether the Committee will choose to pursue changes to the relationship between commonwealth and the state remains to be seen.

ANZAAS as a national organization promoting science is well placed to contribute to inquiries such as the current Senate exercise. I hope that we will continue to make submissions whenever it is appropriate to do so. I thank all those who contributed to the recent submission.

Quarantine Services Improved

This year's Federal Budget brought funding to some of the commitments from the Innovation Statement, but the majority of the initiatives are still to be realized. One winner in the budget, however, was the quarantine service. The threats by exotic species to the Australian environment and primary industry (with the particular stimulus of foot and mouth disease) have promoted a considerable increase in all quarantine services. Although greatest public attention is given to disease prevention, quarantine is vital to protect the Australian environment from further invasion by weeds and feral animals. In recent years there have been developed sophisticated techniques of risk assessment for such species, and the increased funding will help ensure that these methods are put into practise.

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

ANZAAS NEWS

Youth ANZAAS 2001

Thanks again to SA for an excellent Youth ANZAAS earlier this year. Here are some comments from two Western Australian Year 11 Students: "From the first morning when we attended lectures at Royal Adelaide Hospital and Dentistry School, to the last day when we visited the Murray Mouth to learn more about salinity problems, I was enthralled. The 'human' side of science is an area I thought I could never be interested in. All that blood? Yet the first talk on genetic engineering was enough to make me think all was not lost", said Elaine Miles, Penhros College.

Trish Partyka from Willeton Senior High School was enthralled by the visit to Edwards Airforce Base, and talked about the scientific aspects, "we were greeted by Ben Luther. Mr Luther is a navigator on the P3 Orion planes that take part in search and support missions around Australia. He spoke to us firstly about the science involved in flying aircraft. He spoke briefly on topics such as wing dynamics and required power verses available power, and in depth on the ways in which to conserve power and the various responsibilities of his squadron."

Youth ANZAAS 2002

Stephanie Looi did not get any helpers for Youth ANZAAS 2002 in Queensland, so the location is yet to be decided.

The ANZAAS Debate - Robert Hill: One Man and His Regional Forest Agreements

*Conservation of native forests is critical to Australia's future. Central to addressing this issue are Regional Forest Agreements between the Federal Government and the States and Territories. Here **Duncan Rouch** profiles the man in the middle, Minister for the Environment and Heritage Robert Hill, and covers key issues surrounding Regional Forests Agreements.*

Who would wear Senator Robert Hill's hat? Who would be the Commonwealth Minister for the Environment (and Heritage), withstanding the onslaughts of six States and two Territories with major responsibility for environmental conservation, the substance of his own portfolio? And what of the Ministerial colleagues required to work together on that subject, vociferously logging-happy Minister for Forestry Wilson Tucky, and me-first Warren Truss as Minister for Agriculture? Not to mention the criticism by other government politicians, capital 'c' conservationists and scientists (ref. *The Mercury* March, Sept 2000). Less able Environment Ministers might snipe at those States and Territories for bad decisions and say they were responsible for any good outcomes, without doing much themselves. While rather wooden and pedestrian in front of television cameras, his practical strength in behind-the-scenes negotiations has brought the Federal Government's reasonably modern approach to conservation and its economic sustainability. That diplomatic skill is supported by the combination of his underlying confidence and low-key style. Hill in his conservation push has himself traveled some distance from his earlier unawareness of water conservation issues, exhibited in his maiden speech on election to the Senate, in 1981¹.

While the Keating Labor Government launched the Regional Forest Agreement (RFA) plan, Howard's Liberal Government has had to take on the job of making it work. This required putting over 60% of old growth forest in reserve. As Minister on the spot Hill has brought his negotiation skills to bear in aiding the raft of Regional Forest Agreements (RFA), which in the inevitable compromises over the underlying complex issues have garnered criticism from both the logging industry and conservationists. A number of ecologists, such as Brendan Mackey², have been appalled by the lack of objectivity in the bureaucratic compromising processes, yet the imperfect outcomes are clearly better than letting the train of the current status quo destroy the future. The lack of natural forest conservation has been most seen in Western Australia and Queensland, and therefore RFAs are most required for those two states. Interviewed in 'Meet The Press', Channel 10, 7-3-99, Hill was asked how he was to get an RFA signed in the west, given the split in conservative politics over the continued logging of old growth forests: replied Hill, acknowledging the negotiation difficulties. An RFA for WA was announced in May 1999, but making it effective was more difficult than even Hill had imagined. Two months later a major deception was uncovered - when it was found that in the RFA set by the Court Liberal Government a third of so-called forest reserves were not

timber country at all. This defect practically destroyed the RFA's conservation strand. Both the old growth forests and Hill were, however, lucky later with the change of government that put the pro-conservation Geoff Gallop Labor Party in charge of WA. In March this year they added real conservation power to forest management in the west. In back-handed fashion Hill acknowledged the Labor plan: "...the Labor Party...were endorsing the approach we've taken, which is one that emphasises the conservation values, whilst on the other hand recognises also that there is a legitimate forest industry that can be pursued consistent with conservation values" (*Meet The Press*, 6-5-2001).

**"...we're looking for a good conservation outcome, but also resource security so we can ensure people of their jobs, and it's not easy,"
– Robert Hill.**

In contrast, Queensland's Beattie Labor Government is yet to bring widespread rampant tree clearing under any control, that fanned by mistrust of politicians and fears of losing economic security. Hill went public with his frustration on the Nine Network's 'Sunday', 5-8-01: "...some in Queensland are not prepared to learn

from mistakes that have been made elsewhere in Australia and to take the opportunity to provide not only better environmental benefits but in the long term better commercial outcomes as well." This criticism was particularly understandable given the Government's reliance on tree conservation in QLD and other States as part of its special agreement on Kyoto Protocol green-house-gas emissions.

Key to negotiating environmental conservation of forests is the sustainability of jobs, as Hill has argued on numerous occasions. While true conservation and sustainability is yet to bite in most current RFAs, previous conservation measures give an idea on the sustainable economic future of forest areas. In the State Forest conservation areas of New South Wales during the decade to 1998 total employment in the local timber industry fell from around 8,500 to 6,000, largely as a result of technological change and industry productivity increases. This decline was mostly in the area of native forest processing, while employment in softwood plantations gradually increased from around 1,900 to 3,000, due to some expansion of plantation areas. Forecast of further decline in NSW native forest work may be balanced by extra jobs in hardwood and softwood plantations. Moreover, the NSW Government in partnership with the Commonwealth has committed \$120 million over five years to assist the hardwood industry in moving to long-term sustainable and profitable harvesting and production processes³. While timber companies grumble at the threat to jobs in current activities, the decline in overall employment and move to related new industries is nothing special to the timber industry. Similar changes are occurring in many other agricultural industries. So, along with conservation measures, plans to regenerate employment and living opportunities, across regional Australia must be a priority⁴.

Though the existing RFAs are far from perfect they lay a foundation and a vision for environmental conservation and economic sustainability. In this light Hill can be thanked for substantial effort in aiding those practical outcomes from the National Forest Policy of the Keating Labor Government.

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**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.**

Feature Article

Preventing War with Science

By Hugh CRONE, Shirley FREEMAN

Mention the words "science and war" and the immediate association in the minds of many people will be with the increasing technological input into the means of conducting war. The 1991 Gulf War was an effective illustration of how advanced technology can annihilate an opponent. There is, however, another aspect to the conjunction of science and war, which is the use of science to prevent war. The development of international restraints on war has consisted principally of legal concepts supported by scientific input through weapons control treaties. Here we discuss the science-backed treaties, their limitations, and the future role of science in preventing war. The scientific areas involved include physical, biological and social sciences.

How can we reduce the frequency of conflicts? Diplomats have attempted what we now know as conflict resolution for many years. Attempts to formalise such activities started in the 19th century; until then war was seen not only as inevitable but as glorious: "Dulce et decorum est pro patria mori". Early attempts were directed more at reducing the brutality of war than at preventing it. Czar Alexander II tried to limit the means of conducting war so as to reduce unnecessary suffering. The creation of the Red Cross has provided a means to aid the victims of war. Efforts have been made in the various Geneva Protocols to protect civilians, the wounded and prisoners of war. Treaties for controlling the conduct of hostilities are known as "Geneva Law".

Complementary to the Geneva Protocols are treaties for the control or prohibition of specific weapon systems, known as "Hague Law". The international conferences in The Hague in 1899 and 1907 established the principle that "the right of belligerents to adopt means of injuring the enemy is not unlimited", thus introducing treaties to control specific weapon systems. Later treaties have sought to control weapons of mass destruction which encompass nuclear, biological and chemical weapons. The recent treaty to ban the use of antipersonnel land mines has not gained widespread acceptance; the fact that it exists at all is to a degree due to the efforts of the late Princess Diana to publicise the effects of the mines on civilians.

There has been considerable scientific input to the disarmament treaties in order to ensure that states adhering to them gain a feeling of security in return for the abandonment of particular weapons. The negotiation of the Comprehensive Test Ban Treaty depended critically on the work of scientists who were able to demonstrate that a state conducting a nuclear test would be detected. Seismological monitoring can differentiate between nuclear explosions and natural events such as earthquakes, and a test conducted in a

remote place will be picked up as readily as one in a known test site. Similarly compliance with the Chemical Weapons Convention is being monitored by an intrusive regime of inspections of military facilities and some parts of the chemical industry. The inspectors who are monitoring compliance are scientists equipped with state of the art detection devices. In contrast, the Biological and Toxin Weapons Convention, negotiated some twenty years earlier, lacks measures to verify compliance. There are, therefore, intense current negotiations to add a protocol to the Convention that will include scientifically sound verification measures.

The body of International Humanitarian Law that has resulted from these efforts is impressive. There is a large degree of acceptance that law, not war, is the way to go.

The cynic will argue that this body of law is promptly pushed aside when war hysteria grows. Recent episodes of regional conflicts as in Bosnia or many parts of Africa can be cited as examples of where this international control becomes meaningless. Nevertheless, it is necessary to set standards and goals, and to foster the awareness of the world as a global village. As Averell Harriman said, "We can have one world or none!"

The most horrific examples of aggression we have seen in recent times have been the face to face slaughter of defenceless persons by other individuals. Thus in Rwanda people have been chopped to pieces by machetes, in Bosnia and Kosovo they have been shot at close range in cold blood. If we are to prevent such archetypal aggressive behaviour we must first understand it. Science can help provide answers.

Colonel David Grossman of the US Army has studied the reactions of soldiers and law enforcement officers required to kill individuals at close range. He believes that there is a great inherent resistance to do this, to the extent that police officers often will not shoot, even when their life or that of others is threatened. This does not quite square with the popular image of a gun happy USA, but is credible. Grossman believes that there is a universal human reluctance to engage in aggression between persons on a one-to-one basis, so that this aggression only occurs when an over-riding fear removes control of our reactions from the rational forebrain to the primitive midbrain. In this situation the individual has tunnel vision; all information about the outside world is disregarded except that relating to the perceived threat. The individual is also in a state of high agitation, with the heart pounding fast and the breathing being rapid. In this state the person has passed the threshold of violent aggression and will react violently.

What is clear from this is that the mechanisms of self-preservation are one and the same as those of aggression. Self-preservation is central to survival so the removal of threat is a key way of averting aggression while maintaining self preserving capabilities. The threat may be real or perceived. A paranoid person sees threats from everywhere, while a well-balanced person will tend to see only real threats. In early human history threats, such as an attacking animal,

could require instant responses, such as the fight-or-flight response. Decisions under such pressure might have to be made without full information, as on a dark night! It has been said that a purpose of emotions is to allow decisions to be made under such conditions. From this, we can understand better the xenophobic aspect of aggressive behaviour, which is through the over-dependence on emotional responses caused by environmental or mental stress. By projecting our inner fears to other people, they that are different from us, in colour, religion or social habits, can appear to threaten us or our way of life. Thus their appearance can arouse a defensive reaction that can be fanned into an aggressive response. It is easier to assault an individual who is different from us; the Gestapo or NKVD had usually physically degraded a victim first before torturing him. Even those organisations might have found it hard to torture someone dressed exactly as they were, with the same cultural background. This fits in with Grossman's observations that aggression face to face between like individuals is not readily undertaken.

Moreover, even in the relatively stable and affluent societies of the West, it is a cultural norm to demonise certain groups, such as the unemployed, single mothers, and migrants. Demonising talk can be fanned by bad politics to aggressive behaviour when other groups feel stress, such as from suffering job losses or increasing poverty. It is thus easy to imagine that in other countries reduced access to the fundamentals of life, such as food and clean water can help provoke ordinary people to war. This leads directly to the intuitive conclusion of Admiral Chris Barrie, Commander of

the Australian Defence Force, that to avoid war countries need governance that provides stable law and order. This stability can promote ethical non-violent behaviour, as well as a framework for agricultural and economic development (see *The Mercury*, Dec 2000). Here too there is a place for science, in supporting economic advancement through technical R&D (For example see 'Harnessing science to solve global poverty and hunger', the 1998 Crawford Lecture by Peter Doherty, <http://www.landfood.unimelb.edu.au/info/media>.)

Nevertheless reducing aggressive behaviour is more than reducing real or perceived threats through stable governance. Violence is a learned behaviour, for example child abusers and molesters are more likely than non-offenders to have suffered the same behaviour in their own childhood. Learned aggressive behaviour can be overridden by the will to change and help in changing attitudes. Research in the USA has shown that effective reduction of domestic violence can occur under compulsory counselling of the offending party, which is ensured by the force of law. Counselling teaches offenders to understand their behaviour and manage their anger. Such sophisticated and expensive violence control strategies also require stable governance combined with sufficient development and distribution of economic wealth to support them.

We conclude that science has and will continue play an important role in supporting the reduction and prevention of war.

NEWS Analysis

Selling Science - Not!

By G.C. SIMMONS

An article in a recent issue of Australasian Science once more asks why science is not well supported by the general population. Among the reasons for this I would suggest is the FIVE YEARS HENCE (FYH) syndrome. Many science reports these days, whether on cancer research or a new drug discovery, end with the statement that this will result in great benefit in five (or even ten) years time. Contrast this with commercial publicity methods. A car manufacturer or an advertiser of a new cleaning system, doesn't try to sell their products on the basis of advances FYH but stresses current benefits. In other words immediacy is the keyword. A report on a new cancer treatment that ends with the possibility that good results in years ahead, would give little solace to a person with cancer. On the other hand, a report on a current advance would give hope. A positive approach in describing advances in science would be more likely to sell science, especially to persons who have little interest in science.

Two aspects about this recent trend come to mind - I don't recall it being used to any extent some years ago when I worked in a laboratory. So historically - it would be interesting if a science historian tracked down when FYI was first used. Was it brought about by the proliferation of the grants system of funding projects or perhaps the introduction of television? As a further comment on this aspect, it would be illuminating if a computer program was set up to record instances of FYH statements particularly if it contained a provision to print out the original at the end of the period. Such a program would enable the results to be assessed as part of the accountability of science.

In this time of scarcity of funds for research, futuristic advances may be worthy as a means of attracting funds, but this is probable of little significance to the uninterested person outside science who can see no immediate benefit. This lack of immediacy seems to occur irrespective of the field of science and almost assumes a legal value or perhaps it is a device to stop contact so that research can proceed without interruption .no correspondence entered into. Shades of Louis Pasteur!

In all the speculation on the lack of public support for science, the "pie in the sky" attitude as exemplified by FYH is ignored. Whilst scientists may recognize the wisdom of FYH, if the object is to gain the support of non-scientists, then the idea doesn't seem credible.

The Science Key to Australia Future

Edited version of 'The National Investment in Science, Research and Higher Education,' a passionate address by Peter Wills AC, Chairman of the revamped Australian Research Council (ARC) to the National Press Club, Canberra August 2001.

Science and our Future

We face a new paradigm for advancing industry and community through the increase of knowledge, skills, and creativity. Knowledge is the new commodity in the global market, and at the fundamental level is primarily created by our public higher education sector and research institutions.

Moreover science impacts on many aspects of our lives, from the clothes we wear, to medicines we take, from energy efficiency, to the way we produce food.

Gaining the best from our future depends on the ability of science to offer potential solutions to community issues, and our ability to create a more scientifically-literate society.

While we Australians are good at generating new ideas and internationally competitive research outcomes, the path to commercialization lacks adequate links. Let us begin with the link between fundamental science and practical outcomes. For public investment in research the outcome should be an asset, which aims to offer a return to society. The return can be an economic benefit or be of public good.

We also need to improve the links between scientists of different expertise, to promote multidisciplinary solutions to address complex national problems.

Investing in Research

To incorporate science into R&D business and the new commodity of knowledge we firstly must deal with the specific structural and cultural characteristics of research. Research base should encompass a spectrum of research types that have different outcomes. At one end we have curiosity driven high-risk fundamental research. This gives mostly serendipitous outcomes, but is the source of future invention and innovation. Fundamental research may have long time-lags between investment and outcome, if any tangible outcome occurs at all. At the other end we have shorter-term, lower-risk, goal-directed research, with quite specific outcomes. Goals of this directed research may be of commercial, social or environmental relevance.

Secondly, research should occur over a wide diversity of fields. Quality of research programs is paramount, based on both peer-reviewed competition, and support of the best and brightest researchers. Nevertheless, with limited resources Australia must set priorities for research, which would include solving specific Australian problems and aiding competition in the global markets. We also need to create world-class leaders in research.

Moreover, to ensure efficient government-funding public sector research should demonstrate the value of recent investment in terms of outcomes, that includes the addressing of specific needs, 'a value proposition'. To do this we require the establishment of performance indicators across a range of benchmarks.

Thirdly, despite past excellence in science, we have not adequately protected the intellectual property generated by public sector research, or captured the appropriate commercial returns from our investment in this research. Key issues we need to address include; closing the gap between research and innovative application; protecting intellectual properties of public research institutions in commercially valuable fashion; improving numbers of scientifically knowledgeable senior business managers; improving support for commercial careers for academics; enhancing links between public and private sector research interests.

Fourthly, we require more financial support for research by philanthropic and corporate sponsorship. Research Australia is a new body working towards this goal. This is a non-profit, non-partisan organisation based on the highly successful Research!America.

Fifthly business investment in R&D should increase, from its current low compared to other OECD countries. Without this improvement we are at grave risk of becoming left behind in the global race to form knowledge-based industries.

Sixthly, current student enrollments in the tertiary education sector should satisfy projected job requirements.

This is an issue as we are still struggling to increase enrolments in the basic sciences of physics, chemistry and mathematics. These sciences critically underpin our high-tech research. Furthermore, science career paths must mesh readily with complementary disciplines like law and economics.

From the six major directives above, we can conclude there are four underlying priorities for Australia to address in the next few years to improve the outcome of investment in science. First, we must concentrate on developing our human capital base. This will occur through strong support for skills training for young scientists both in Australia and overseas, and repatriation of our best researchers back from overseas. Second, we must set priorities and balance our research portfolio, to capitalise on our strengths and take up emerging opportunities. Third, in an increasingly global environment for science and commerce we must increase our worldwide presence, and make greater use of international knowledge, infrastructure and investment. Fourth, we must obtain greater commercialisation of public sector research. We must remove impediments to this process and increase partnerships between public and private sectors. Finally, we must benchmark our performance against international indicators and set targets for improvement. This will help justify further increases in investment.

The New ARC

The ARC now operates as of 1 July this year under its own Act of parliament, and has undergone significant structural changes. These new features include the new National Competitive Grants Program, which replaces most previous grant programs, by streamlining grant allocation into two strategic elements; Discovery and linkage. Discovery emphasises quality research, while linkages encourages collaborative research ventures, both nationally and internationally, and between public and private sectors. The new grants program is more outcome orientated and will enhance the creative environment for quality research. There are also new Federation Fellowships, which will raise the profile of our most talented and experienced researchers. Career support for emerging talent will also occur through a fund in which our best young scientists compete against their peers, rather than established researchers. The number of Postdoctoral Fellowships will also be doubled, from 2002. The ARC will in addition continue to be proactive in policy formation and promoting commercialisation of research outcomes.

Near future priorities include, to continue building Australia's research capability, to monitor Australia's commercial return on investment, and to increase coordination of infrastructure development.

In conclusion we are at an exciting point in Australia's history, particularly as we are on the brink of potentially becoming a significant player in the biotechnology era. Perhaps bigger than the information technology revolution, we will see a pace of discovery never witnessed before in human history. If we can galvanise a truly national effort in pursuing a common strategy in science, research and education, we can be not only as good as any other country in the world, but a true leader.

Tasmania

Tasmanian Science Talent Search 2000: The Division continued its sponsorship of this annual event organised by the Science Teachers Association of Tasmania and the Examiner Newspaper. Mr Chris Tassell, Director of the Queen Victoria museum and Art Gallery, and ANZAAS member, kindly represented ANZAAS a presentation of prizes function held at the Country Club, Casino Launceston on 6 May, 2000. The three ANZAAS prizes were awarded to teachers 'who are most encouraging of the basic sciences'; Mrs Ann Burke (Marist Regional College), Ms Denise Devitt (Rose Bay High), Ms Jennifer Brown (Riverside High). The prizes were presented as framed certificates, with one-year subscription to ANZAAS and Australasian Science.

Youth ANZAAS 2001 in Adelaide (see *The Mercury/ANTENNA*, March 2001): The Tasmanian Division selected six students to attend, but in the event one withdrew at short notice (which involved costs to ANZAAS). Reports from the other five Tasmanian students were very positive about the conference itself, the organisers and the concept of Youth ANZAAS. Several suggestions were also made for

future events. The students were; Lyle Crawford (Marist College), Sally Long (Rosny College), Georgina Shore and Daniel Thompson (both from Hellyer College).

Student Competition, National Science Week 2001: This year for the first time the Division awarded two prizes to school students who took part in a Science and Engineering Quiz Competition at the University of Tasmania in connection with National Science Week. Each student received Student membership of ANZAAS for one year, plus a one-year subscription to Australasian Science. The students are: Christopher Stevens (Year 10, New Norfolk High School) and Tracey Ryan Year 10 (Lilydale District High School). The Division thanks Guy Nolch for helping with these awards.

Donation for School Bursary Award Program: The Division again donated \$500 covering years 2000 and 2001 of this scheme, which is run by the Royal Society of Tasmania, to assist Tasmanian Year 12 students to attend international science Olympiads and similar events.

Perrin's Points

News To Members From The General Secretary

SUBSCRIPTIONS - If you have not paid your subscription this year, please do so now. Following a decision by the Australian Taxation Office ANZAAS is required to collect GST from its subscriptions. The Treasurer has recommended that the GST on renewal subscriptions or new subscriptions be absorbed for this coming year and the position reviewed in June 2002. Therefore subscription rates remain as follows:

Ordinary Members:	\$45
Retired/Concession Members:	\$30
Student Members:	\$20

ANZAAS INTERNET DISCUSSION LISTS - Discussion lists are now up and running and Members who have not yet received an introductory message from the ANZAAS discussion list should contact me immediately with details of their e-mail address.

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Mercury Poem:

Metamorphosis

By Duncan Rouch

White blossom falls on this seamless metal sphere of twin wrestlers
Measured ambition promotes that high tension with his past self
Sensitive edges signal profound personal transition
In this metamorphosis easy equality dissolves
Emergent wings of fair authority dry in the crisp air

Jeans and motorcycle boots announce the new Red Brick professor
Pressure from the hierarchy to become 'one among equals'
This scientist experiments cautiously with the old code
Yet in the laboratory confidence his ever guide
In clear eyes the difficulties of DNA hold bold hope

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