AUSTRALIAN ACADEMY OF SCIENCE

NEWSLETTER

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Bright sparks ignite Think Tank

Some of Australia's brightest early- to mid-career researchers from a range of science and technology disciplines gathered at the University of Melbourne to brainstorm issues surrounding extreme natural hazards such as tsunamis, cyclones and species extinctions.

Growing community awareness about climate change and a perceived increase in the number and severity of natural disasters prompted the Academy to investigate extreme natural hazards as the topic of its 2007 High Flyers Think Tank. International events such as the tsunami of 2004, hurricane Katrina, the outbreak of SARS, and bushfires in California are examples of recent natural hazards that have impacted on our world. These events have led to an increased focus on sufficient understanding, early warning, and response and recovery in relation to catastrophic natural disasters.

The Think Tank was held on 30 October at the invitation of the chair of the Regional Group of Victorian Fellows, Professor Tony Klein FAA.

Academy President Professor Kurt Lambeck encouraged the 65 researchers to identify gaps in knowledge, explore novel applications of existing science and technology, address resource and infrastructure needs and identify overlaps with other disciplines and communities during the Think Tank.

Mr Michael Tarrant of Emergency Management Australia gave the keynote address outlining the progress of Australian emergency management theory and post-war practice with some examples from Australia and overseas.

He also discussed the development of resilience to natural hazards and the need for: '…development [and] allocation of generalised resources… to flexibly adapt your entity, your organisation, your company, your business, your community...' to decrease the vulnerability and impact of natural hazards on society.

Speaker Mr Trevor Dhu from Geoscience Australia spoke about tsunamis, saying tsunami events will rarely be catastrophic for Australia but this also made it difficult to maintain effective responses. He said: 'There is a lot of work that needs to be done in understanding what a tsunami will do to Australian structures and to Australian infrastructure, as well as the vulnerability of people. And there is an entire other issue around how Australia will deal with warnings of tsunami, given that most warnings will either be nil events or potentially just "Marine: Get off the beach".'

After hearing presentations from the five expert speakers, the 65 Think Tank participants divided into breakout groups to discuss the issues.

Professor Lambeck wrapped up the discussion, strongly endorsing the importance of communication in natural hazard management, not just between scientists from various disciplines but also with social scientists, and particularly between scientists and policy makers. He said: 'Communication with the policy makers has to be substantially driven by the scientists themselves. You cannot leave it to the bureaucrats or for some intermediary body to do it. The scientists themselves have to get involved in that communication process.'

He also emphasised the importance of international collaboration in dealing with natural hazards by saying: '...some of the hazards we have talked about have origins that are not in Australia. They are offshore somewhere. So it is a communication problem, and collaboration with the countries where the source of the problem actually originates is an important one. I think that needs greater attention.'

After the discussion the participants then moved into mixed breakout groups to identify trends in extreme natural hazards related to prevention, preparedness, response and recovery. These were used to create outcomes for future natural hazard management including:

- the need to determine capacity – whether Australia as a nation can pay for the long-term and short-term recovery of a community from a disaster
- more research on how natural systems recover from extreme events
- incorporation of extreme events and natural disasters when considering research priorities
- importance of the long term perspective
- a greater shift from single hazard assessments to multi-hazard approaches with integration of potential climate change impacts
- cooperation between governments, regions and science disciplines to get a broad range of views
- the need to consider the role of diversification as a response, to spread risk and build resilience, both socially and environmentally
- integration of vulnerability assessments and identification of all contributors to vulnerability.

The Think Tank report will be available from: **www.science.org.au/events/thinktank2007**

Photo: NASA Earth Observatory

Cyclone Beryl off the east coast of the USA in 2000

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Telephone: (02) 6201 9400
Fax: (02) 6201 9494

Email: aas@science.org.au

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Professor Neville Fletcher FAA

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Gifts to the Academy

If you would like to make a gift or a bequest to the Academy, please contact the Executive Secretary, Professor Sue Serjeantson, on (02) 6201 9400 or **es@science.org.au**

Honours to Fellows

Corresponding Member **Professor Elizabeth Blackburn** received the 2008 L'OREAL–UNESCO Award for Women in Science 'for the discovery of the nature and maintenance of chromosome ends and their roles in cancer and aging.'

The awards recognise five laureates annually, one from each of the five continents, who have contributed to the advancement of science. The awards aim to recognise the contributions of outstanding women researchers to scientific progress and encourage the participation of women in scientific research. Each laureate receives US $100,000.


Elizabeth Blackburn

Professor John Ralston – whose research has been described as one of the most significant advances in mineral processing in decades – has been named as the first South Australian Scientist of the Year and South Australian of The Year.

The **Australian Academy of Technological Sciences and Engineering** announced 30 new Fellows at their annual general meeting. Included in the list were Academy Fellows:

Professor Colin Masters – for his internationally acclaimed work in neuroscience, his discovery of the key molecular processes responsible for Alzheimer's disease and his successful commercialisation of neuro-active pharmaceuticals.

Professor Anthony Guttmann – for his outstanding research leadership and his significant impact on practical applications for mathematics and on mathematics education.

Professor Noel Hush was presented with the 2007 Welch Award. The award – bringing a half share of a $300,000 prize – recognises his lifetime achievements and his contribution to 'the betterment of humankind'.

Professor Donald Metcalf has been awarded the American Association for Cancer Research Lifetime Achievement Award for groundbreaking discoveries in cancer research and treatment. His discovery of colony stimulating factors has impacted on the lives of more than six million cancer patients.

Professor Martin Green has won the 2007 SolarWorld Einstein Award for his work on photovoltaics, developing new solar power technologies.

Forthcoming events

11 December: Public lecture by Professor Sir Michael Brady, *Medical and molecular image analysis*. The Shine Dome, Canberra.

21–22 February: Australian Frontiers of Science, 2008. The Shine Dome, Canberra.

9–11 April: Sir Mark Oliphant Conference – *Vaccine and immunotherapy technologies*. The Shine Dome, Canberra.

Important dates in 2008

13–18 January: *Science by Doing* workshop. The Shine Dome, Canberra.

8 February: Closing date for applications for Japan Society for the Promotion of Science Postdoctoral and Invitation fellowships.

28 February: Closing date for National Museum of Australia Student Prize for the History of Australian Science 2008.

International news

InterAcademy Panel

The Academy was pleased to host the InterAcademy Panel on International Issues (IAP) Executive Committee Meeting in Canberra on 25 and 26 September 2007. The meeting was attended by representatives from eleven academies and scientific societies as well as a number of observers and guests, including the International Council for Science (ICSU) and the Federation of Asian Scientific Academies and Societies (FASAS).

Under the direction of the IAP Co-Chairs, Professor Chen Zhu, Minister for Health in China and Professor Howard Alper, Past-President and Foreign Secretary of the Royal Society of Canada, delegates discussed the implementation of the IAP strategic plan, membership issues and reports by a number of sub-committees.

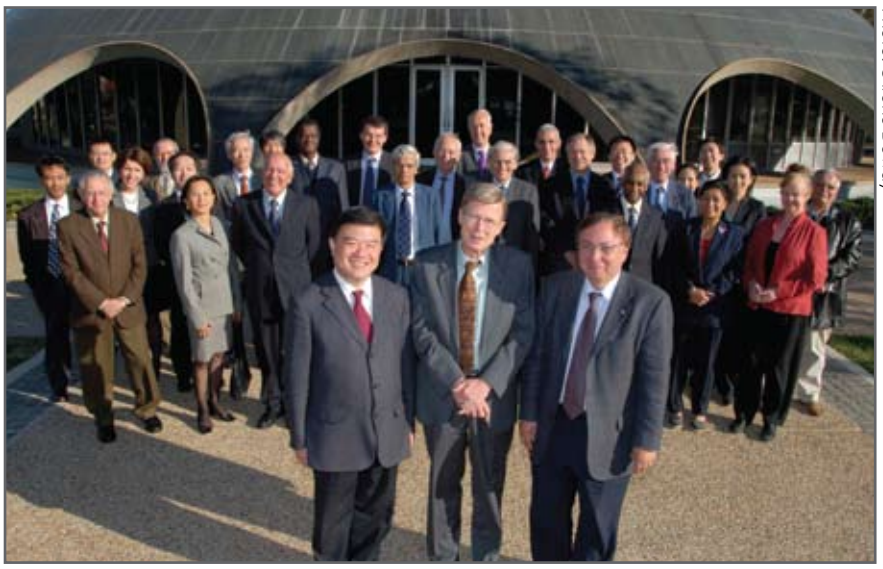


Photo: © Irene Dowdy

L to R: Chen Zhu, Kurt Lambeck and Howard Alper in front of IAP delegates

China

Professor Kurt Lambeck was invited to the Nobel Laureates Beijing Forum 2007, hosted by the Chinese Academy of Sciences (CAS) and the Beijing Municipality on 11 and 12 September 2007. The Forum was established in 2005 to examine issues around a permanent theme of harmony and development of human beings. Each forum has a distinct topic: the 2007 meeting focused on the themes of energy and environment.

The forum invited Nobel Laureates and renowned Chinese scientists, government officials and industry insiders to examine in-depth the issues on scientific and technological development, institutional arrangement and social management around the chosen themes.

Professor Lambeck gave two speeches while attending the Forum in Beijing. The first was on the utilisation and promotion of new energy sources in Australia, and the second was entitled the *Climate-energy nexus: the transition from vicious circle to virtuous circle*.

While in Beijing Professor Lambeck met with the President of CAS, Professor Yongxiang Lu, to discuss issues of mutual interest including the 2008 Australia–China symposium to be held in Australia and hosted by the Academy and the Australian Academy of Technological Sciences and Engineering (ATSE).

International Council for Science

The ICSU Regional Office for Asia and the Pacific (ROAP) was inaugurated in 2006. One of its key challenges is to produce a development plan that will define the scope of its work in the short (three years) and medium-term (six years). The ROAP has identified three priority areas of work: natural and human-induced environmental hazards and disasters; ecosystem approach in water and food systems; and sustainable energy.

As a member of ROAP, Professor Jenny Graves, the Academy's Foreign Secretary, attended a meeting in Chiang Mai, Thailand on 21 and 22 November to discuss the science plans of ROAP. The two-day event included keynote addresses, scientific lectures, plenary sessions, break-out group discussions and a round table discussion.

Federation of Asian Scientific Academies and Societies

On 28 and 29 November, Professor Kurt Lambeck attended the first SciEd Asia–Pacific 2007 international conference on science education, initiated by FASAS, IAP and the Association of Academies of Sciences in Asia. During the conference held in Bangkok, Professor Lambeck gave a presentation entitled *The role of the Australian Academy of Science in science education in Australian schools*. The conference was held in conjunction with the 2007 FASAS Council meeting. It is expected that the Academy will host the FASAS secretariat commencing in 2009.

Korea

To enhance Australia–Korea links in science and technology, the Australia–Korea Foundation, the Academy, ATSE and the Korea Science and Engineering Foundation (KOSEF) developed an Early Career Scientist Research Program.

Under this program, with funding from the Australia–Korea Foundation and KOSEF, two young Korean scientists – Dr Je-Hoon Lee from Chungbuk University and Dr Jong-Ho Shinn from Seoul National University – conducted research for a period of three months between September and December at Murdoch University and the University of New South Wales (UNSW). They were hosted by Professor Mike Myoung-Ok Lee of the School of Electrical, Energy and Process Engineering at Murdoch University, and Professor Michael Burton of the School of Physics at UNSW.

The 2008 program will see young Australian researchers travel to Korea to undertake research with colleagues at Korean institutions.

President addresses National Press Club

Professor Kurt Lambeck gave the Academy's annual address with the title *Roadmap for a prosperous Australia in a competitive world* to the National Press Club on 26 September. He used the opportunity to launch *Research and innovation in Australia: a policy statement* which was the focus of his address.

He discussed how the ongoing pursuit of knowledge, supported by a robust science policy, is critical for the socioeconomic and environmental well-being of Australian society. He also outlined the need for Australia to maintain a long-term public commitment to the funding of science education at every level and to high quality basic research in universities. Support for Australia's talented early- and mid-career researchers to fuel strategic and applied research was also emphasised in his speech.

The President highlighted the need for strong strategic international alliances, not only with Australia's traditional partners but also with the developing countries. He warned: 'Our competitiveness will be increasingly tested by the new world order, with a consequence that our past cosy science relationships will change unless we are equal and paying partners in future developments.'

He acknowledged that significant increased expenditure in research and development would be needed for Australia to remain globally competitive in this area. He urged whichever party that succeeded at the federal election to take advantage of the current healthy economic conditions and strengthen Australia's science base. He stated: 'Investing in the intellectual and scientific capacity of the country, and building on our enviable reputation in science and technology, will prepare us for the challenges ahead.'

Professor Lambeck summed up saying: 'It is an investment that will repay. As noted recently by the Productivity Commission: "The benefits of public spending on science and innovation way exceed the costs".'

The policy statement restates the Academy's view on the importance of scientific research and its applications, particularly for Australia in an increasingly competitive world. Copies of the document and the speech notes are available from: **www.science.org.au/reports/aas-policy-2007.pdf** and **www.science.org.au/events/npc2007.htm**

Photo: © Sandy Spear, NPC

Kurt Lambeck presents the Academy's roadmap for a prosperous Australia

Rediscovering Recherche Bay

The National Academies Forum (NAF) announces the publication of the book, *Rediscovering Recherche Bay*, arising from the NAF symposium *A celebration of the history, culture, science and technology of Recherche Bay*, held in February this year in Hobart.

It begins with a review of the historical context of the French expedition, followed by assessments of its scientific contributions to cartography, botany and zoology. The French encounter with the Tasmanians is examined and its significance to later studies on archaeology and the origin of language is discussed. These are followed by a review of the subsequent history of Recherche Bay as a centre of whaling and its economic importance.

The remaining chapters deal with contemporary matters. A report on the current archaeological assessment of the stone structure purported to be the French garden is followed by examinations of the concept of place, the basis of public versus private values and the legal aspects of the controversy over Recherche Bay. The final chapter looks to the future; how best to conserve the several values represented at Recherche Bay.

The attractive 160-page paperback features numerous colour figures, including maps, photos and historic prints. Order forms to purchase the book are available from: **www.naf.org.au/recherchebay**

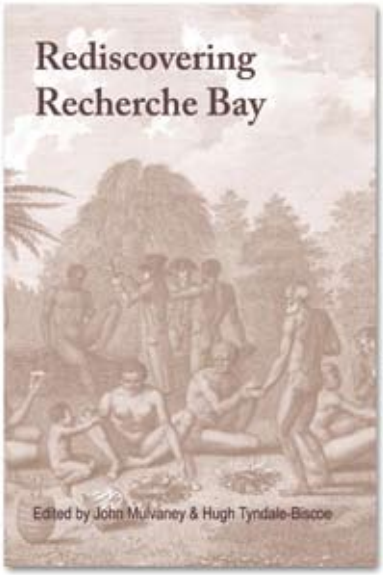


Image: Irina Kotvcheva, NAF

Council retreat

The Academy's Council held a strategic planning retreat from 18 to 20 November, near Moss Vale in New South Wales. The retreat was chaired by Secretary, Physical Sciences, Dr Bob Frater and facilitated by Clem Doherty. Council was joined by immediate past Vice-Presidents Professors Bruce McKellar and John Shine.

The President Kurt Lambeck, in his introductory remarks, outlined his vision of a future Australia:

'I expect Australia to be a prosperous, healthy, highly educated and vibrant society with a diversified economy that is based not just on natural resources but also on its intellectual resources. Australia will have a strongly science and technology based economy that is internationally competitive. It will be a society that does not live by science alone but that will be able to make effective use of science to enhance the quality of life.'

Kurt went on to outline his vision for the Academy:

'The Academy will be a body that represents excellence in science, that nurtures and defends science, and that uses its expertise in science and technology to achieve the above vision: a body that is seen as central to the debate in the development of a national vision for the country.'

Challenged by these aspirations, Council discussed many emerging themes and issues ranging from purposeful engagement with young scientists, international scientific organisations, policy makers, educators and with the community more generally.

Photo: Phil Greenwood

Council members in retreat mode

Photo: Sue Serjeantson

Participants discuss strategic directions

Fellowships and prizes

Postdoctoral and Invitation Fellowships in Japan 2008

The Academy, in association with the Japan Society for the Promotion of Science, invites applications from Australian researchers to undertake Postdoctoral and Invitation Fellowships in Japan. Postdoctoral Fellowships are for a period of 12 to 24 months; short-term Invitation Fellowships are for a period of 14 to 60 days; and the long-term Invitation Fellowships are for 2 to 10 months. Researchers in any field of natural sciences, including technology, engineering and medicine can apply. Applications close Friday 8 February 2008. Postdoctoral Fellowships: **www.science.org.au/internat/jspspd.htm** Invitation Fellowship short term: **www.science.org.au/internat/jspsfst** Invitation Fellowship long term: **www.science.org.au/internat/jspsflt**

Student prize

The National Museum of Australia and the Academy, through its National Committee for History and Philosophy of Science, invite submissions for the National Museum of Australia Student Prize for the History of Australian Science 2008. The prize certificate and $2,500 will be awarded for original unpublished research undertaken whilst enrolled as a student (postgraduate or undergraduate) at any tertiary educational institution. Essays may deal with any aspect of the history of Australian science. The winning entry may be considered for publication in *Historical Records of Australian Science*. The closing date for submissions is 28 February 2008. Please direct inquiries to Rosanne Walker (**rosanne.walker@science.org.au**).

RQF journal ranking exercise

The Academy has submitted to the Department of Education, Science and Training (DEST) ranked journal lists it has coordinated for the Research Quality Framework (RQF) research outlet ranking exercise.

The Academy's 20 national committees have been central to the draft ranking of the journal lists. Each national committee reviewed and ranked those journals for which it has relevant expertise, and in a number of cases discipline-specific experts outside the national committees were consulted.

Journals have been assigned to four prestige bands – A*, A, B or C – depending on their assessed current quality. By direction of DEST, only those journals containing the highest quality papers from the world's leading researchers, the top 5 per cent of journals, have been rated as A*. The next 15 per cent have been ranked A, the following 30 per cent of journals have been ranked B, and the final 50 per cent have been ranked C.

For some journal lists, several national committees submitted draft ranks. Where multiple bands were suggested per journal, the Academy consulted an independent expert to allocate a single rank per journal using the information provided by the national committees. However, as the Academy values the discipline-specific perceptions, the lists submitted to DEST clearly indicate all proposed ranks for a journal list where discipline-specific perspectives have been identified.

Once draft ranks were established, the Academy consulted widely throughout the research sector by making the lists available on its website. A feedback form was provided by which feedback could be submitted to the Academy. Over 300 feedback forms and written letters were received during two weeks of public consultation.

Feedback has been reviewed by an overarching committee appointed by the President of the Academy. The committee, consisting of senior Academy Fellows, has adjudicated on many questions regarding the ranking of particular journals, and the journal lists have been submitted to DEST for a further round of public consultation organised by the department, scheduled to occur in mid-December. Further information is available from: **www.science.org.au/reports/campus-23october07.htm**

Nova: Science in the news

A new topic has been posted on the Academy's educational website, *Nova: Science in the news* (**www.science.org.au/nova**).

Discovering Australia's evolutionary past

With the help of modern technology, scientists are unearthing more about Australia's biogeographical past. Scientists have been able to fill in details of the travel diary of the globe trotting Proteaceae, a family of flowering plants which includes the banksias and waratahs found in Australia, by using a combination of old and new scientific techniques.

Traditionally, relationships between organisms are established by studying the morphology or the physical form and structure of the living organisms. Comparisons are then made between the structures of the living organisms to establish the relationships. Their fossilised relatives can also be included in these analyses to identify the interconnections.

One of the more recently developed techniques used to establish relationships between organisms is molecular phylogenetics. Scientists determine the evolutionary relationships between groups of organisms by studying their DNA sequences.

Scientists have discovered that virtually all of the areas in which members of the Proteaceae family are found today were once part of the southern supercontinent of Gondwana. In many – but not all – cases the distribution of the Proteaceae matches the geological events in the formation of the Gondwanic continents. This suggests that the movements of the continents can be used to explain the evolutionary history of the Proteaceae.

This topic is sponsored by the Australian Academy of Science Flora Fund. The Australian Foundation for Science is also a supporter of *Nova*.

Photo: Sharon Abrahams

One of the family: *Telopea speciosissima* x *mongaensis*

Pilot program on track

The *Science by Doing* pilot project is on track. The titles of the three *Science by Doing* curriculum units currently under development are:

- *Doing science investigations* (for first year of secondary school)
- *Rock, paper, scissors* (for first year of secondary school)
- *Moving together* (for third year of secondary school)

These units will be posted on the *Science by Doing* web site in time for the workshop from 13 to 18 January at the Shine Dome. Sixty-six teachers from around Australia, who will be part of eleven mini professional learning communities, have been invited to attend.

The Director General of Education or their equivalent from each state and territory has been invited to nominate a representative to attend the Reference Group Meeting on 5 December 2007. In most states the nominated representative is also the officer with responsibility for science. They will also be invited to attend the January training program and to support the teachers in their local *Science by Doing* professional learning communities.

ScienceByDoing SecondaryConnections

How to support mallee fowl recruitment in a fragmented landscape

by Jessica van der Waag

PhD student, School of Animal Biology and the Centre of Excellence in Natural Resource Management, University of Western Australia (vanderwaag@westnet.com.au)

Photo: Jessica van der Waag

Eight month old malleefowl in a social group. The male (front) began working a mound at eleven months of age

This study, supported by the Academy's Award for Research on the Conservation of Endangered Australian Vertebrate Species, aims to improve conservation of the mallee fowl, *Leipoa ocellata* (Megapodidae). Like other megapodes, the mallee fowl uses external sources of heat to incubate its eggs. After hatching, the independent chicks emerge from the nest mound and disperse immediately.

Mallee fowl populations across their range face a number of threats, the main one being the loss and fragmentation of habitat. In Western Australia, where this study is based, many populations occur on privately owned, small bushland remnants isolated by agricultural farmland.

It is important to understand the threats particular to young mallee fowl in order to target management activities to support recruitment in a fragmented landscape. Although there have been some studies examining aspects of ecology of mallee fowl chicks, information on the dispersal, survival, behaviour and habitat use of young birds, particularly in highly fragmented landscapes, is scarce.

Radio-tracking chicks and juvenile birds has allowed us to fill many gaps in the life history of this elusive bird. Some findings from this research of particular interest include recording social interaction of juveniles, predators, recruitment age and the movements of chicks and juveniles within and between remnant bushland.

Since chicks hatch asynchronously five to seven days apart and disperse independently from the mound, and aggressive behaviour had been observed among very young chicks, it was thought that mallee fowl chicks are solitary until reaching maturity at three to four years of age.

In this study, juveniles were observed forming dynamic social groups of up to five members. The birds would forage, rest and roost in close proximity. They used visual displays and vocalisations, including alarm calls for predators.

As with previous studies, the mortality rate among chicks was extremely high, at greater than 80 per cent in the first two weeks of life. This was found to decrease significantly to 10 per cent mortality for juveniles after seven weeks of age. As expected, young mallee fowl were predated by cats and foxes, but 50 per cent of predation events were by native predators including goannas, currawongs, butcher birds and raptors.

Existing mounds were recruited by young males on two occasions. The first was when an eleven month old male took over a mound shortly after the previous male was killed. The mound had been prepared for the coming breeding season and closed after rainfall to generate sufficient heat for incubation. The young male was observed working the mound daily from November; an unmarked female bird was also seen. There were eggs in the mound and chicks were successfully hatched. In the following seasons, the male and female have continued to work the mound with further successful hatchings.

In December 2006, a 10 month old male started to work a long-inactive mound, excavating the centre. Excavation continued and in June and July of 2007, the bird collected a litter trail as per a normal breeding cycle, but failed to put it into the mound.

The differences in dispersal patterns between chicks and juveniles are also of interest. Juvenile mallee fowl appear reluctant to leave the remnant bushland for reasons other than foraging, instead alternating between short movements and periods of settlement within the remnant. Young chicks readily cross open areas and move into paddocks, increasing their exposure to aerial predators. These chicks are also more likely to spend nights on the ground, where they are exposed to nocturnal ground predators, rather than roosting in a shrub or mallee tree.

A list of some of the research funded under the Award for Research on the Conservation of Endangered Australian Vertebrate Species is available from: **www.science.org.au/awards/conservation**

Public lectures

Role models in science

Professor Gunnar Öquist, Corresponding Member of the Academy and Permanent Secretary of the Royal Swedish Academy of Sciences, presented a public lecture at the Shine Dome on 7 November titled *Linnaeus as a role model for today's science*. He gave the lecture as part of the 300th anniversary celebrations of the birth of Carl Linnaeus.

Professor Öquist presented prizes to Andrew Koolhof, the winner of the Linnaeus Tercentenary 2007 Secondary Schools Competition, before his lecture. During his lecture he emphasised four characteristics of Linnaeus which are important today: the ability to teach and inspire, the ability to form international networks, good micro and macro observational skills, and the ability to lead others.

The transcript is available from: **www.science.org.au/events/7november07**

Photo: Richard Bray

L to R: Gunnar Öquist with the Linnaeus Tercentenary 2007 Secondary Schools competition winner, Andrew Koolhof, and his father Grady

Safeguarding Australia

On 4 September Professor John Mackenzie from Curtin University of Technology, Perth gave the second talk in the *Safeguarding Australia* series of lectures, *Emerging viral diseases: what are the threats and how should we respond?*

A number of viral threats such as SARS, Japanese encephalitis and Dengue have recently been reported throughout the world. Among the factors triggering emerging diseases are deforestation, climate change, and increased international trade and travel. Professor Mackenzie discussed some of the factors leading to the emergence of viral diseases, and proposed a revised surveillance and response system to these threats as an area in which Australia can make a large contribution to a global problem. The transcripts of lectures from the *Safeguarding Australia* series are available from: **www.science.org.au/events/publiclectures/sa/transcripts**

Physics for the Future

Continuing the *Physics for the Future* lecture series, French physicist Professor Alain Aspect presented a lecture at the Shine Dome on 27 November. Professor Aspect is Director of Research at the Centre National de la Recherche Scientifique (CNRS) at the Institut d'Optique in Paris. His talk was titled *From Einstein intuitions to quantum bits: a new quantum age*.

Professor Aspect discussed quantum mechanics, entanglement, Bell's inequalities and the ushering in of a new age using quantum technology. He highlighted the potential of quantum computing and cryptography to deliver what he described as a 'quantum revolution'.

The lecture was well attended with a good student turnout.

The transcript will be available from: **www.science.org.au/events/27november07.htm**

Photo: Richard Bray

Alain Aspect at the Shine Dome

Exhibition at the National Library of Australia

Two of Linnaeus' 'disciples' – Joseph Banks and Daniel Solander – were on board the Endeavour with James Cook when it arrived in Botany Bay in 1770. Some of the earliest documentation of the flora and fauna of Australia is currently on display in the exhibition *The system of nature: Carl Linnaeus (1707–1778)* at the National Library of Australia until Sunday 6 April 2008. More information is available from: **www.nla.gov.au/exhibitions/linnaeus/**

Image: © NLA

GM plants given go ahead

Victoria and New South Wales governments have announced that they will allow farmers to grow genetically modified (GM) canola. Sir Gustav Nossal FAA led the panel appointed to assess lifting the moratorium that has been in place in Victoria. State-based moratoria on selected GM plants have been in place for some years, notwithstanding the stamp of safety approval from the Office of the Gene Technology Regulator.

The Academy supports the responsible and ethical use of gene technologies central to current biological research. Gene technologies are used to facilitate our understanding of the molecular bases of normal development as well as the disease state. In agriculture they are used to produce genetically modified plants, while in medicine they are used to produce new vaccines, drugs, diagnostic reagents and therapies.

The study of different genomes has provided confirmation of the theory of natural selection and evolution, and assisted in the identification of traits important for diseases, agronomy or biotechnology.

In agriculture, the adoption of GM cotton has resulted in reduced pesticide use and the opportunity to use environmentally safer herbicides in place of the less desirable agents previously used in weed management with cotton crops.

Photo: © Stock xpert

Farmers in NSW and Victoria will be able to grow GM canola

Australian scientists have a major role to play in ensuring global food security and the appropriate application of GM technology is an essential ingredient of this program. While gene technology is not a panacea in agriculture, it is an important enabling technology that has already proven its place globally with 102 million hectares of GM crops grown in 2006.

It is now more than thirty years since the introduction of this technology and GM products have been components of several foods and medicines for many years. Their safety has been confirmed by numerous peer-reviewed studies world wide.

The Academy supports the informative labelling of food, in particular where it assists consumers to make deliberate dietary choices. Such labelling however should be scientifically based. It also supports a system that provides the public with the opportunity to access information about any new developments.

Name that plant

Visitors to the Academy in the last couple of months may have found themselves wondering what plans were afoot for the grounds between Ian Potter House and the Shine Dome. Victoria Grounds, daughter of Sir Roy Grounds of Grounds, Romberg and Boyd, designers of the Academy's Dome home, has recently been commissioned to draw landscape concept plans for the area. A request for a complete list of all plants currently on the site raised questions about the identity of a number of trees. The garden designs clearly indicate that the intention was to plant 13 honey locust trees (*Gleditsia triacanthos*), but these can be difficult to distinguish from *Acacia karoo*, a category one weed in the ACT.

Photo: Richard Bray

Friend or foe?

News from national committees

Medicine

The National Committee for Medicine met at the Academy on 13 September. Nicola Roxon MP, the then Shadow Minister for Health, Senator Kim Carr, the then Shadow Minister for Industry, Innovation, Science and Research, and Professors Angela Dulhunty, Graham Farquhar FAA, Jenny Graves FAA and Trevor Lamb FAA joined the committee over lunch. Various policy issues were discussed including funding for medical research.

Data science

A new national committee named Data for Science has been created, taking the total number of national committees to 21. This initiative parallels the Academy's decision to rejoin CODATA, the Committee on Data for Science and Technology.

Antarctic research

On 5 September the National Committee for Antarctic Research met at the University of Melbourne. The International Polar Year and the Australian Antarctic Division strategic planning exercise were both major topics for discussion.

Earth sciences

On Wednesday 25 September the National Committee for Earth Sciences met at Geoscience Australia. Business focussed mainly on the RQF journal assignment exercise with the International Year of Planet Earth also on the agenda.

Mathematics

The National Committee for Mathematical Sciences met on 26 September during the annual Mathematical Society conference at La Trobe University. The agenda included school education and the National Numeracy review, the RQF journal assignment exercise and rebuilding mathematics and statistics.

Space science

The 7th Australian Space Science Conference was presented by the National Committee for Space Science and the National Space Society of Australia, from 24 to 27 September 2007 in Sydney.

Photo: Sharon Abrahams

L to R: Graham Farquhar, Nicola Roxon, Kim Carr and Bob Williamson at Ian Potter House.

Geography

On 18 October the National Committee for Geography convened at Ian Potter House. Mechanisms for promoting the Nobel Prize awarded to the Intergovernmental Panel on Climate Change and the involvement of Australian geographers were considered. Geography in schools, reports from the corresponding societies, and a possible strategic plan or discipline review were also items for consideration.

Sustainable futures – Teaching and learning: A case study approach has been published recently. Edited by Professor Margaret Robertson, member of the National Committee for Geography, the book is an Academy supported initiative of the International Geographical Union.

***Sustainable futures*: a resource for teachers**

Radio science

The National Committee for Radio Science met on 30 October at Ian Potter House and considered ways to honour the late Chris Christiansen FAA for achievements in radio science. International Union of Radio Science matters and organisation of the committee's 7th Workshop on Applications of Radio Science were also discussed. Further details can be found at: **www.ncrs.org.au/wars/wars2008/index.htm**

Physics

The Shine Dome was the venue for a National Committee for Physics meeting on 31 October. A decadal plan for the physics discipline was a major topic for deliberations.

Earth system science

The National Committee for Earth System Science has summarised the final synthesis report of the Fourth Climate Change Assessment Report of the Intergovernmental Panel on Climate Change, released on 18 November. See: **www.science.org.au/natcoms/ncess-ipcc-report**.

The Bureau of Meteorology hosted a meeting of the committee on 12 November, at which a discussion was held with guest speaker Dr Jon Barnett, University of Melbourne, about human dimensions of the dynamic Earth system. One reason for this is to help the committee to decide on the boundaries it wants to place on efforts to coordinate a synthesis of strategic decadal plans for the Earth

system science. In contributing to such a strategic plan, members of the committee are currently collating outcomes of a workshop held in August at the Shine Dome on long term research needs for understanding the functioning of vegetation dynamics as part of the Earth system especially in relation to global climate change.

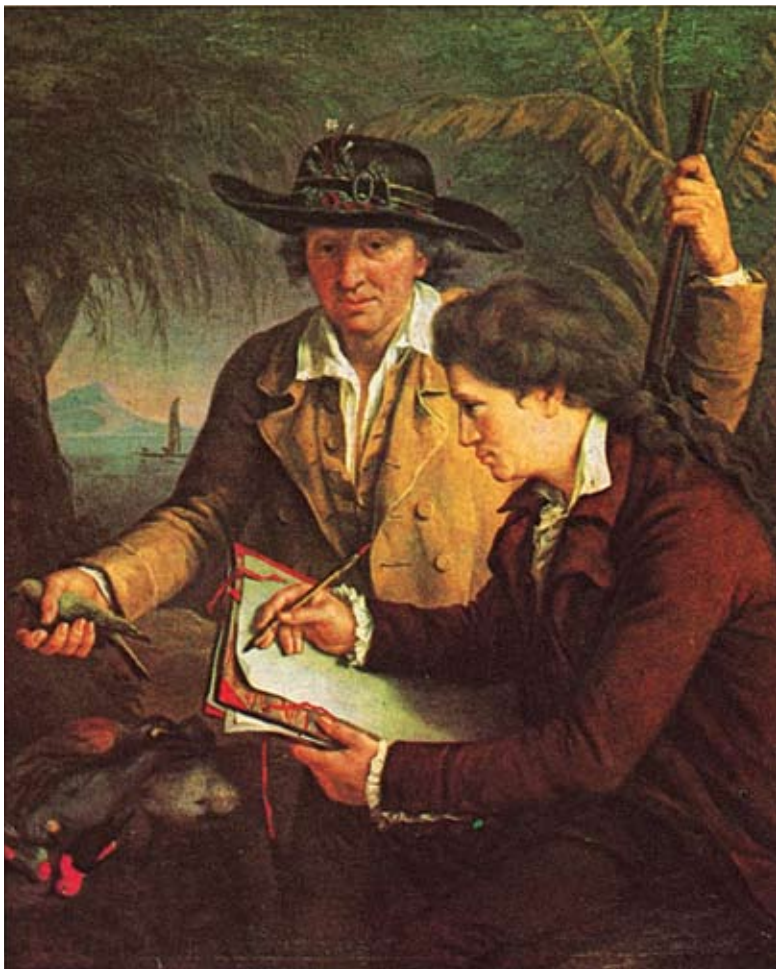
Congratulations

The Academy congratulates the many Australian researchers who contributed to the Intergovernmental Panel on Climate Change (IPCC) which was awarded the Nobel Peace Prize jointly with the former USA Vice-President Al Gore. The IPCC process of assessing the current state of knowledge about climate change is exhaustive and exhausting, and all these people have spent long hours over many years, contributing to improving our understanding of global warming.

Did You Know?

NOVA SCIENCE IN THE NEWS

The Academy's online educational resource *Nova: Science in the news* is 10 years old.



JR and G Forster at Tahiti painting a bird. Oil painting by John Francis Rigaud, London 1780

The German reception of Cook's voyages

by Dr Fredericka van der Lubbe

Lecturer in European Studies at the University of Sydney, and teacher of German Studies at the Universities of New South Wales and Sydney.

Two manuscript collections held in the Basser Library, MS 084 and MS 051, were consulted for research purposes with the financial assistance of the Moran Award for History of Science Research.

MS 084 contains manuscripts and articles by Michael Hoare, who wrote extensively on the Forsters (father Johann and son Georg), who were government scientist and illustrator respectively in the pay of the King of England aboard Cook's second voyage to the Pacific. MS 051 comprises materials relating directly to the Forsters.

The scope of my research is the German reception of Cook's voyages. Some of the material will be published as a 6,000 word book chapter with Andrea Bandhauer and Maria Veber, *Intercultural migrations Germany–Australia* (Sydney University Press). The central theme is the contribution of the Forsters to the German translations of literature on Cook's voyages and will include material from the unpublished masters thesis of Michael Hoare, a draft typescript manuscript of which is kept at MS 051/1/8 (*The contribution of JR and G Forster to the literature of Cook's second voyage 1772–1775*, December 1966).

Another typescript article (possibly a conference paper), *The Forsters' science*, is located at MS 051/1/8 along with Hoare's draft masters thesis. This was interesting because it also summarises the enmity of Anderson and Wales against the Forsters, a factor which Hoare contends affected the progress of their research in England after the second voyage. I believe it also affected the progress of the translations into French and German.

I am also planning a monograph with two texts in translation, my translation of Lichtenberg's *Life of Cook* (1780) and Georg Forster's *Fragments about Captain Cook's last voyage and his end* (1781). This calls for an essay which will contextualise the two translations in their German setting. The numerous articles collected in the Basser Library on the Forsters, which I was not aware of before encountering them collected here, were informative. In particular, Hugh West's *Göttingen and Weimar* provides some crucial background to the intellectual spheres in Germany in which Georg Forster moved.

I would like to extend my thanks to Mrs Moran for funding this award.

Primary Connections in Kashmir

Dr Hugh Tyndale-Biscoe FAA tells of a recent visit to a school in the Kashmir Valley in India where he introduced *Primary Connections*.

Schools in Kashmir

Young people in Kashmir, as in the rest of India, are very keen to be fluent in English and to understand science and technology. The leading private schools in the Kashmir Valley cater for this need. Today there are two high schools and two middle schools catering for over 6000 students from kindergarten to Year 12. The largest is the Tyndale-Biscoe and Mallinson Educational Society with which I have a close connection because my grandfather began the schools for boys, and his colleague Muriel Mallinson ran the girls' school.

Hugh Tyndale-Biscoe (third from R) and teachers

Implementation strategy

The Principal and senior staff agreed to introduce *Primary Connections* to a small group of primary school teachers as a trial. I met the selected teachers and described the 5Es teaching and learning model, inquiry and investigative approach, cooperative learning and linking science with literacy. We also discussed the evaluation report which allowed the Kashmir teachers to discover they have a similar background in teaching experience to their Australian counterparts. Each teacher took a different curriculum unit to examine and report back on.

Initial impressions

Teachers in Kashmir will have two main constraints in implementing *Primary Connections*; they must follow a strict, prescribed curriculum, and they have large classes of up to 50 students. However the comments on the books were largely positive:

- 'It is a practical way of learning things. Students as well as teachers can learn things by doing it. It brings out self confidence and scientific skills thinking.'
- 'It puts a deep impression on their minds rather than just listening to the teacher and cramming things. Children learn, explore things and they have the curiosity to learn more by doing things themselves. This book will be very helpful for creating a healthy classroom atmosphere.'

Trialling

By the end of my visit all the teachers were enthusiastic and said they were definitely going to use material from the curriculum units. Unfortunately due to the constraints of syllabus requirements and a shortage of time there has been limited implementation in classrooms to date.

Shine Dome open day a success

Around 250 people visited the Shine Dome during the October open day to explore its architecture and learn more about the Academy's history. Tours of the building led by architects Pip Giovonelli and Graham Tickner were very popular and were particularly enjoyed by visitors. A film of the Dome's construction playing in the Wark Theatre was also popular with patrons. A number of dignitaries from embassies and high commissions who visited were accompanied on their tour by Professors Kurt Lambeck, Jenny Graves and Mike Dopita.

Items on display included the original designs for the Academy from which the Dome was chosen, as well as memorabilia including the original Wedgwood china and rare scientific artefacts. The library was also open to tour groups for a unique glimpse of its magnificent collection.

Surveys from the day showed very positive feedback including calls for more open days in the future. Open days will now be an annual event and a committee has been set up to work on and evolve them. Many suggestions from visitors and staff have already been submitted to the committee for the 2008 open day.

The open day was well supported by many Academy staff who made the day such a success.

Photo: Richard Bray

A visitor on open day signs the guest book