



NATIONAL ACADEMIES FORUM

Recherche Bay: a site of great significance



Photo: @Loic Le Guillou, www.loicphoto.com

Lesson for the future: if we value such places, we should be prepared to pay for them

Almost 120 people packed the venue at the National Academies Forum in the CSIRO Marine and Atmospheric Research Laboratory, Hobart to hear about the work of the French expedition of 1791–94, commanded by Bruny d’Entrecasteaux, and of its significance today.

The 17 contributors presented an eclectic span of topics ranging from the expedition’s historical background to the important achievements of the scientists seen in the context of the same disciplines today — and to an examination of why and how the site of the French expedition’s major endeavours on the north-east peninsula of Recherche Bay has been secured for the future.

For many of the participants the forum was preceded by a cruise through the d’Entrecasteaux Channel, a close look at the foreshore of Recherche Bay and return around Bruny Island. The excellent on-board commentary was supplemented with brief remarks by some of the contributors, so that the forum began the next day with a lively appreciation of the topics.

The forum opened with a welcome by a descendant of the Mouhennet people, Debra Hocking, who spoke in their language, some of which has been revived through the vocabulary recorded by Labillardiere on Recherche Peninsula in 1793.

Three papers (Frost, Galipaud and Home) severally provided an introduction to the genesis of the d’Entrecasteaux expedition and the climate of scientific endeavour at the time it set out. It included men — and one woman — imbued with the zest for discovery and the liberating ideas of the brotherhood of mankind; but they were caught up in the rivalry of France, Britain and Spain, each supporting scientific expeditions to secure new territories and trade and to further knowledge of the Earth.

Although it achieved much, circumstances conspired to diminish its impact at the time and it is still less known and appreciated than the contemporary expeditions of Cook, Bligh, Flinders and Baudin. Ironically, the successful campaign to secure Recherche Peninsula for posterity has brought the achievements of the French expedition into public awareness in a way they had never had before.

The large scientific complement of 20 scientists were equipped with the finest instruments available for measuring the magnetic force of the Earth, observing the planets of Jupiter and determining latitude and longitude with sextants and chronometers. Michael Pearson explained how these enabled Beautemps-Beaupre to make charts of punctilious accuracy and beauty of style. The Linnean method for classifying organisms enabled the

biologists to make coherent collections of the fauna and flora, which Labillardiere later published as the first ‘flora of Australia’.

John Mulvaney presented a very lively description of the encounter between about 40 Tasmanians and the French, led by Labillardiere, and Iain Davidson discussed the origin of language in the context of what is known about the Tasmanians from early records and more recent archaeology.

There followed a series of papers on current research in the same disciplines as practiced by the French: how DNA sequence comparisons now divide the genus *Eucalyptus* of Labillardiere’s classification into seven genera; how early French observations of torpor in the echidna have been greatly extended by use of on-board data loggers; and how Rossell’s original observations on magnetism can now be interpreted through understanding of the amazing dynamo at the centre of the Earth.

The final session returned to the context of Recherche Bay and how celebration of its present secure status had come about. Peter Hay and Aynsley Kellow recognised that the main issue in the Recherche Bay dispute was about private ownership and public interest: the right of landowners to use or work the estate and the contrary view of a wider public interest in particular places.

continued on Page 7

New Fellows elected (see Page 2)

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## STOPPRESS ::

### New Fellows

The Academy congratulates the following scientists who were elected to the Fellowship on 22 March. More information on our new Fellows will appear in the next *Newsletter*.

**Professor David Albert Cooper AO**  
Director, National Centre in HIV Epidemiology and Clinical Research

**Professor Ian William Dawes**  
Professor of Genetics, School of Biotechnology and Biomolecular Sciences, University of New South Wales

**Dr John Joseph Finnigan**  
Chief Research Scientist, CSIRO Centre for Complex Systems Science

**Professor Min Gu FTSE**  
Director, Centre for Micro-Photonics, Faculty of Engineering and Industrial Sciences, Swinburne University of Technology, Melbourne

**Professor Richard Paul Harvey**  
Deputy Director, Victor Chang Cardiac Research Institute

**Professor David John Hill**  
ARC Federation Fellow and Professor, Department of Information Engineering, Research School of Information Science and Engineering, Australian National University

**Professor John Joseph Hopwood**  
Head, Lysosomal Diseases Research Unit, Women's and Children's Hospital, Adelaide

**Professor Ian Douglas Hume**  
Emeritus Professor, School of Biological Sciences, University of Sydney

**Professor David Ernest James**  
Director, Diabetes and Obesity Research Program, Garvan Institute of Medical Research

**Professor Peter Andrew Lay**  
Professor of Inorganic Chemistry, School of Chemistry, University of Sydney

**Professor Douglas Robert MacFarlane**  
Professor, School of Chemistry, Monash University

**Dr Rana Ellen Munns**  
Chief Research Scientist, CSIRO Plant Industry

**Professor Stephen James Simpson**  
ARC Federation Fellow, School of Biological Sciences, University of Sydney

**Professor Scott William Sloan FTSE**  
ARC Federation Fellow and Professor of Civil Engineering, Department of Civil, Surveying and Environmental Engineering, University of Newcastle

**Professor Gordon George Wallace FTSE**  
Director, Intelligent Polymer Research Institute, University of Wollongong

**Professor Alan Hepburn Welsh**  
Professor, Centre for Mathematics and its Applications, Australian National University

### Forthcoming events

**18–20 April:** Boden Conference – Gene Delivery and Control (Australasian Gene Therapy Society), Shine Dome, Canberra.  
[www.agts.org.au](http://www.agts.org.au)

**4 May:** Annual Symposium – Development and Evolution of Higher Cognition in Animals, Shine Dome, Canberra.  
[www.science.org.au/sats2007/symposium.htm](http://www.science.org.au/sats2007/symposium.htm)

**16 May:** The Haddon Forrester King Medal, sponsored by Rio Tinto, will be presented to Emeritus Professor

David Groves at a dinner held at the Weld Club, Perth, on Wednesday 16 May. If you wish to attend please email Faye Nicholas at:  
[faye.nicholas@science.org.au](mailto:faye.nicholas@science.org.au)

**16–17 July:** Elizabeth and Frederick White Research Conference – The Magellanic System, CSIRO Australia National Telescope Facility, Epping, NSW.  
[www.atnf.csiro.au/research/LVmeeting/mag\\_program.html](http://www.atnf.csiro.au/research/LVmeeting/mag_program.html)

**2–5 December:** Fenner Conference – Wildlife Population Dynamics and Management, Shine Dome, Canberra.

### Important dates 2007

Expressions of interest are being sought for the Oliphant Conferences – International Frontiers of Science and Technology. Closing date 18 May. More information:  
[www.oliphant.org.au](http://www.oliphant.org.au)

### 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](mailto:es@science.org.au)

## Back to 'school' for senior educators



Hands on: educators work together to learn the *Primary Connections* tools of facilitation

More than 120 educators from around Australia converged on the Shine Dome from 17–19 January to train in the Academy's award-winning *Primary Connections* program.

Following three days of intensive training, they went home with the skills to train teachers and schools in how to implement the program in their classrooms. They also developed connections within the growing network of *Primary Connections* facilitators, which has swelled to more than 200 people nationwide. Participants at the three-day workshop, *Making Connections*, represented government, Catholic and independent education sectors in all states and territories.

Academy President Professor Kurt Lambeck and Mr Scott Lambert, Director of the Science and Maths Education Section within the Department of Education, Science, and Training (DEST), opened the workshop by discussing the need for Australia to develop a scientifically literate society today and in the future. They also discussed the important role workshop participants play in meeting that need when they take *Primary Connections* to schools around Australia.

The first day was devoted to learning about *Primary Connections*: the goals, philosophy and research underpinning the program. The second and third days were held at the Centre for Teaching and Learning in Stirling, ACT, where participants engaged in hands-on workshops on cooperative learning, assessment, investigating, the 5Es model and science and literacy links. Also, time was devoted to

strategic planning, with participants gathering in state and territory groups to discuss how to implement the program and improve uptake within their educational context.

Feedback from the *Making Connections* workshop was extremely positive. According to one participant: *'The three days were a credit to you all for your incredible dedication and passion in producing, delivering and encouraging others in the vision of a comprehensive, user-friendly science program, for Australia and ultimately for Australian students.'*

DEST has recognised the benefit of introducing *Primary Connections* to all teachers by funding a workshop for 65 pre-service university educators. The workshop, held at the Shine Dome from 12–13 February, communicated the principles that underpin the program, ensuring that universities can incorporate *Primary Connections* into their pre-service courses. All Australian universities who train pre-service teachers in primary science education were represented by at least one participant.

In further support of pre-service teachers, Federal Minister for Education, Science and Training, Julie Bishop, announced a \$1 million scheme of Primary Pre-service Teacher Awards for Excellence in Science Education on 7 February. The \$2,000 awards for 500 trainee teachers ensure that the very best new teachers are trained in *Primary Connections*.

Curriculum unit development is still in full swing. Seven curriculum units are available and more units will be trialled by 100 teachers in over 50

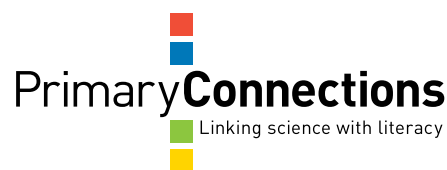
trial schools across Australia this year. The 8,000 units distributed during February–March — bringing the total to more than 22,500 — are testimony to their affordability and increasing popularity.

### More information:

[www.science.or.au/primaryconnections](http://www.science.or.au/primaryconnections)

Professor Kurt Lambeck discussed some of the issues in science education and what's being done to ensure Australia maintains its reputation as a Clever Country in an opinion piece entitled 'Which degree? Fashion design or science?' The full article is at:

[www.science.org.au/policy/lambeck23feb07.htm](http://www.science.org.au/policy/lambeck23feb07.htm)



### DID YOU KNOW?

***Primary Connections* has an online newsletter with the latest news and information about the Professional Learning Program, facilitators, curriculum resources and forthcoming events.**

**You can register online to receive the newsletter and regular updates on the program.**

**Go to:**

[www.science.org.au/primaryconnections/news](http://www.science.org.au/primaryconnections/news)

## National Committees report

### Astronomy

New Committee Chair Professor Matthew Colless convened a meeting at Ian Potter House on 28 November 2006. Agenda items included reports from the Extremely Large Telescope Working Group, the Australian Square Kilometre Array Consortium and the International Astronomical Union General Assembly, which was held in Prague in August 2006. The forthcoming International Year of Astronomy in 2009 and the outcomes of the National Collaborative Research Infrastructure Strategy were also discussed. Dr Brian Boyle was thanked for his significant contribution as Chair of the Committee.

### Chemistry

Professor Allan Canty chaired his final Committee meeting on 2 February – Professor Chris Easton will assume the Chair on 1 May. Discussion included future symposium topics and the upcoming General Assembly of the International Union of Pure and Applied Chemistry (IUPAC), including membership of committees. Winner of the Royal Australian Chemical Institute Cornforth Medal Dr Deanna D'Alessandro was nominated for the IUPAC Young Chemist Prize.

### Crystallography

The Committee met on 23 November 2006 at the Asian Crystallographic Association Conference in Tsukuba, Japan. Discussion included the *Australian and New Zealand Synchrotron-based Science Strategic Plan* and concerns over the loss of capability at the Australian Synchrotron caused by funding shortfalls for operating costs.

### Earth System Science

The Committee met at the Shine Dome on 24 November 2006. The Chair reported on the formation of the National Terrestrial Carbon Cycle Task Force. There was also discussion of future workshop topics, such as Vegetation, Vulnerability and Climate Change and the impact



Hayabusa mission: heading for Earth soon

Image: © A. Ikeshtia (MEL) ISAS

of the Research Fields, Courses and Disciplines (RFCD) classification on multi-disciplinary research. The Committee is concerned that Earth system science is not included in the RFCD classification, with which universities are required to align as part of the Research Quality Framework process.

In February, the Chair provided advice in response to the release of the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. From this, Academy President Kurt Lambeck wrote an opinion piece that was published in the *Australian* on 7 February. The full article can be viewed at: [www.science.org.au/policy/lambeck-op.htm](http://www.science.org.au/policy/lambeck-op.htm)

### Mathematical Sciences

The report from the National Strategic Review of Mathematical Sciences Research in Australia was launched at the Academy on 14 December 2006. The report *Mathematics and Statistics: Critical Skills for Australia's Future* is available in hard copy and online at: [www.review.ms.unimelb.edu.au](http://www.review.ms.unimelb.edu.au)

More than 100 people discussed the findings and recommendations of the review at a public forum, 'An investment in Australia's future: why the mathematical sciences matter', which was held at the Shine Dome on 7 February. The opening speakers included Parliamentary Secretary to the Federal Minister for Education, Science and Training Pat Farmer and Shadow Minister for Industry, Innovation, Science and Research Senator Kim Carr. The report and the forum received media coverage and political attention.

The Committee met on the day preceding the forum to discuss the review and a report by Professor Cheryl Praeger on the recent International Mathematical Union (IMU) Executive meeting. Professor Praeger was elected to the IMU Executive at the 2006 General Assembly.

### Mechanical Sciences

The Committee held a meeting at the Shine Dome on 14 December. Discussion focussed on developing a directory of constituents, and calendar of relevant meetings. The delegation for the 2007 General Assembly of

the International Federation for the Promotion of Mechanism and Machine Science was also discussed.

## Physics

The Committee met on 6 December during the Australian Institute of Physics conference in Brisbane. The Committee endorsed the *Australian and New Zealand Synchrotron-based Science Strategic Plan* and discussed the rejuvenation of the National Institute for Theoretical Physics and the Uranium Mining, Processing and Nuclear Energy Review. Information on the review is at:

[www.dpmc.gov.au/umpner/index.cfm](http://www.dpmc.gov.au/umpner/index.cfm)

## Radio Science

The Committee met at Ian Potter House on 30 November 2006. Discussions centred on the next Workshop on Applications of Radio Science — an annual event and major initiative of the Committee — and International Union of Radio Science matters, including Australian representation on commissions. The Committee also held a brainstorming session to discuss its future role. The groundwork to engage the disparate members of the radio science community will be laid over the next year, with a view to constructing a plan for Australian radio science.

## Space Science

The Committee successfully obtained funding for the first Australian Decadal Plan for Space Science through the Linkage Learned Academies Special Projects scheme of the Australian Research Council. The funds will be used to publish the Plan, launch it in Canberra and conduct a first implementation workshop.

## Muses-C Task Force

At the Task Force meeting in Canberra on 22 November 2006 the Chair, Dr Trevor Ireland, reported on the Hayabusa mission (see image Page 4) to the asteroid Itokawa and the attempts to collect a sample. The spacecraft is due to leave Itokawa for Earth in July this year and is scheduled to return to Earth, landing at Woomera, in 2010. The retrieval and handling of the sample after the spacecraft lands were also discussed at the meeting.

# The Haddon Forrester King Medal

The Haddon Forrester King Medal, sponsored by Rio Tinto, will be presented to Emeritus Professor David Groves at a dinner held at the Weld Club, Perth, on Wednesday 16 May.

Professor Groves is a world authority on the origin of mineral deposits, particularly those in Western Australia. His work on the evolution of Archaean granite-greenstone belts led to fundamental advances in understanding their tectonic evolution and metallogeny.

If you wish to attend the dinner, please email Faye Nicholas at: [faye.nicholas@science.org.au](mailto:faye.nicholas@science.org.au)



Professor David Groves

## Plea for help on human rights

A worldwide call for aid in the battle against unjust imprisonment and persecution of scientists and scholars has been issued by the International Human Rights Network of Academies.

The Network wants more scientists and scholars to become correspondents to help defend the rights of colleagues unjustly imprisoned or persecuted for non-violently expressing their opinions and exercising their rights, as promulgated by the Universal Declaration of Human Rights.

The Network of national academies and scholarly societies, created in 1993, works to address serious science and human rights issues of mutual concern. It operates under the auspices of the National Academies of Science in the US and is striving to help scientists and scholars suffering persecution, wherever that occurs.

There have been many success stories, including the release of

Egyptian engineer Ashraf Ibrahim in 2004 (see box story). An issue of current concern is the confirmation of death sentences in Libya for five Bulgarian nurses and a Palestinian doctor accused of deliberately infecting children with HIV.

Correspondents provide support on an individual basis and not under the auspices of their respective academies. Several members of the National Academies Forum (NAF) in Australia are correspondents. NAF will be represented at the biennial Network meeting, to be held in Sri Lanka in May, by Professor Derek Denton. For more information on the Network: [www7.nationalacademies.org/humanrights](http://www7.nationalacademies.org/humanrights)

If you would like to support the Network by becoming a correspondent, please email: [faye.nicholas@science.org.au](mailto:faye.nicholas@science.org.au)

**In 2004, the International Human Rights Network was involved in the release of Egyptian engineer Ashraf Ibrahim.**

**Reliable reports indicate Mr Ibrahim was arrested in April 2003 after he took part in a demonstration against the war in Iraq, during which he videotaped the police beating and arresting peaceful demonstrators.**

**On 7 August 2003, after a lengthy period in solitary confinement without charge or trial, he was charged with alleged activities relating to an illegal organisation**

**and with harming Egypt's reputation by spreading false information regarding the internal affairs of the country. The indictment for the second charge specified that he provided information on alleged human rights violations to international human rights organisations.**

**On 11 March 2004 Mr Ibrahim was acquitted of all charges by the (Emergency) Supreme State Security Court and released from prison. Had he been found guilty, he would have faced a prison sentence of up to 15 years.**

## International activities

### Academy elected to InterAcademy Panel

The Academy was elected to the Executive Committee of the InterAcademy Panel on International Issues (IAP) for 2007–09 at the fifth General Assembly of the IAP, held at the new Alexandria Library, Egypt from 1–5 December.

Representatives from more than 60 IAP member academies, including Academy President Professor Kurt Lambeck, attended the meeting and the associated conference, The Unity of Science.

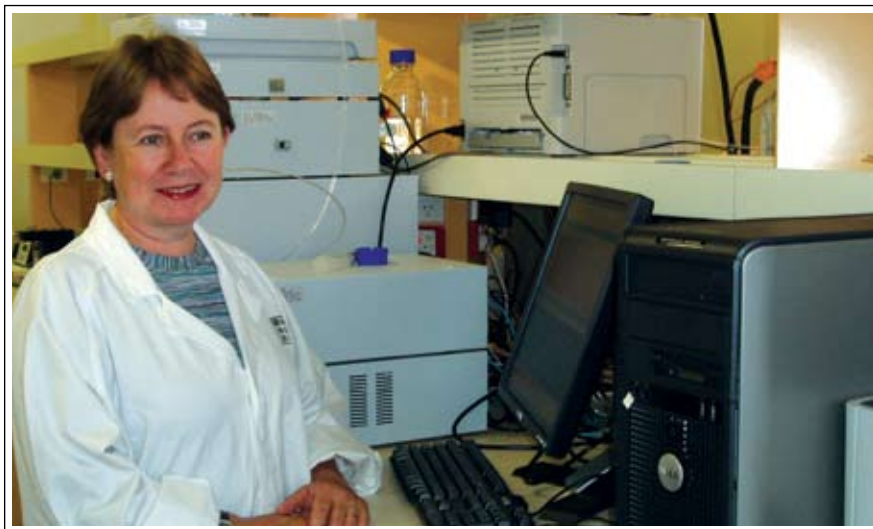
### Bede Morris Fellowship 2007–08

The winner of the Bede Morris Fellowship for 2007–08 is the University of NSW's Associate Professor Wendy Jessup.

A Principal Research Fellow at the Centre for Vascular Research, Professor Jessup will visit the National Institute for Health and Medical Research, Paris to work on the molecular mechanism of cholesterol clearance in the reversal of atherosclerosis. The project will address a highly topical research question on cholesterol metabolism and atherosclerosis, as it will focus on molecular mechanisms of cholesterol efflux from macrophages and foam cells.

The Fellowship honours Professor Bede Morris's contribution to science and French-Australian relations. Professor Morris was a pioneer of immunology in Australia, establishing the first department of immunology in Australia at the John Curtin School of Medical Research at the Australian National University in 1969.

The Fellowship falls under the accord for scientific cooperation between the Academy and l'Academie des Sciences de l'Institut de France and is supported by donations from colleagues and friends of Bede Morris. The French Embassy in Canberra generously provided funds for Professor Jessup's air travel to undertake this important work with her French colleagues. Information about Professor Morris: [www.science.org.au/academy/memoirs/morris.htm](http://www.science.org.au/academy/memoirs/morris.htm)



Winning smile: Bede Morris recipient Professor Wendy Jessup



Firm intention: good news for young scientists in Australia and Korea

### Korea

A letter of intent focussing on early-career researchers and improved information exchange was signed by the Academy, the Australian Academy of Technological Sciences and Engineering, the Australia-Korea Foundation and the Korea Science and Engineering Foundation on 6 December.

The action follows the identification of the need for both countries to raise awareness of the other's exceptional research capabilities and potential.

Young Australian and Korean scientists will benefit from an early-career research program aimed at encouraging them to spend up to three

months collaborating with science and technology colleagues in each other's countries. Funding for this program will be provided by the Australia-Korea Foundation and the Korean Science and Engineering Foundation in recognition of the mutual benefit of scientific and technological interchange.

The program is aimed at students who have completed a Masters degree or who are undertaking their PhD and will alternate every year between both countries. The first group of five young Korean students will travel to Australia to do research with Australian host institutions later this year.

## Learned Academies Programme

Sixty-four leading Australian scientists have been awarded grants to undertake important collaborative research under the Australian Government's *Backing Australia's Ability* program.

The scientists will be working on a diverse range of topics including coral larvae, bankruptcy prediction, insect pest management, fossils in Greenland, genes that influence reading ability, meat yield in beef cattle, *Legionella* control and type 2 diabetes.

The funding is part of the \$4.9 million provided to the Academy over the three years of the International Science Linkages–Science Academies Programme.

The program enables Australian and international researchers to collaborate with each other by funding the recipients' travel to research institutions in China, Japan, Korea, Taiwan, Europe and North America. It draws on the networks and expertise of the Academy and the Australian Academy of Technological Sciences and Engineering to provide targeted support for specific activities.

More information:

[www.science.org.au/internet/index.htm](http://www.science.org.au/internet/index.htm)

## Search for winners . . .

The Department of Education, Science and Training (DEST) is seeking nominations for Australia's most prestigious science and science teaching awards – the 2007 Prime Minister's Prizes for Science.

The awards are made for outstanding contributions to science and science teaching and to those who are active in research or teaching. Nominations close at 5 pm AEST, Friday 27 April 2007.

Information and nomination forms are available at:

[www.dest.gov.au/scienceprize](http://www.dest.gov.au/scienceprize)

Contact: Science Prizes Secretariat, DEST on (02) 6240 5066 or email: [pmprize@dest.gov.au](mailto:pmprize@dest.gov.au)

## Fenner: a new school of thought



Photo: © Irene Dowdy

**New Fenner School: tackling big issues on environment and society**

Frank Fenner has been honoured by the Australian National University with the naming of its new Fenner School of Environment and Society.

Professor Fenner has been a tireless crusader for the environment, founded the Academy's Fenner Conferences on the Environment and was Foundation Director of the ANU's Centre for Resource and Environmental Studies (CRES).

The Fenner School, to be headed by former CRES Director Professor Will Steffen, will combine the resources of CRES and the School of Resources, Environment and Society, bringing together leading researchers and educators to tackle some of the big environmental issues including water, drought and climate change.

More information on the Fenner School: <http://fennerschool.anu.edu.au>

## Recherche Bay

*continued from Page 1*

This concept of place was explored by Joan Domicelj, especially the cultural landscape that links natural features with associative traditional values – the d'Entrecasteaux expedition left a trail of geographic names on the landscape and the names of plants collected at Recherche Bay reflect the time and the collectors.

But Aynsley Kellow reminded the audience that if they valued such places they should be prepared to pay for them. Tom Baxter then enumerated the legal processes that followed the generous act of Dick Smith in underwriting the purchase.

The forum concluded with an outline by the Tasmanian Land Conservancy of the Recherche Bay Management Plan, now available for comment at:

[www.tasland.org.au](http://www.tasland.org.au)

More on the forum program and abstracts at:

[www.naf.org.au](http://www.naf.org.au)

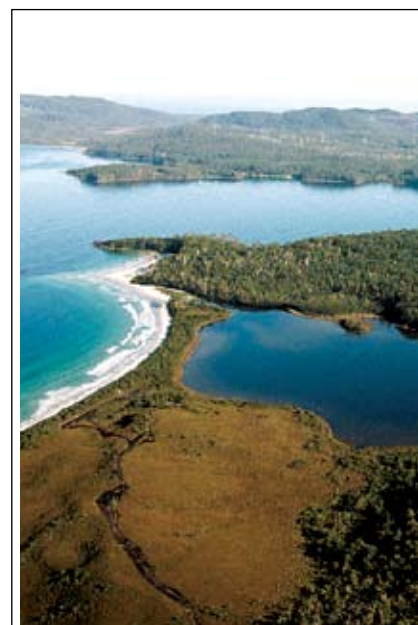


Photo: © Bob Brown

**Cultural landscape: looking at the links**

## Nova: Science in the news

[www.science.org.au/nova](http://www.science.org.au/nova)

There are three new topics on the Academy's educational website, *Nova: Science in the news*.

### Thinking ahead – fusion energy for the 21st century?

Fusion is the oldest — and newest — form of energy but what role will it play in our energy-hungry future?

To limit carbon dioxide emissions and meet the increasing energy requirements of developed and developing countries, a new generation of energy production technologies will be required. Energy produced from nuclear fusion may be one of them.

In fusion reactions, two light atoms are brought together and fused, creating a new element and releasing energy. The most common reaction for fusion reactors uses an equal mix of deuterium and tritium. Although the reactions look simple on paper, the conditions required to initiate fusion reactions are difficult to achieve in practice.

The past 20 years have seen dramatic improvements in fusion reactor design and energy output. So far, researchers at the Joint European Torus, located in Oxfordshire, UK have been able to achieve the 'break-even' point experimentally, where the power input is equal to the power output.

The International Thermonuclear Reactor (ITER) is the next major experimental reactor to be built in France, with the support of Europe, Japan, US, Russia, China and South Korea. The objective of ITER is to demonstrate the scientific and technological feasibility of fusion power.

*Topic sponsored by the Research School of Physical Sciences and Engineering at the Australian National University, the Australian Nuclear Science and Technology Organisation, the School of Mathematical and Physical Sciences at the University of Newcastle and the School of Physics at the University of Sydney.*

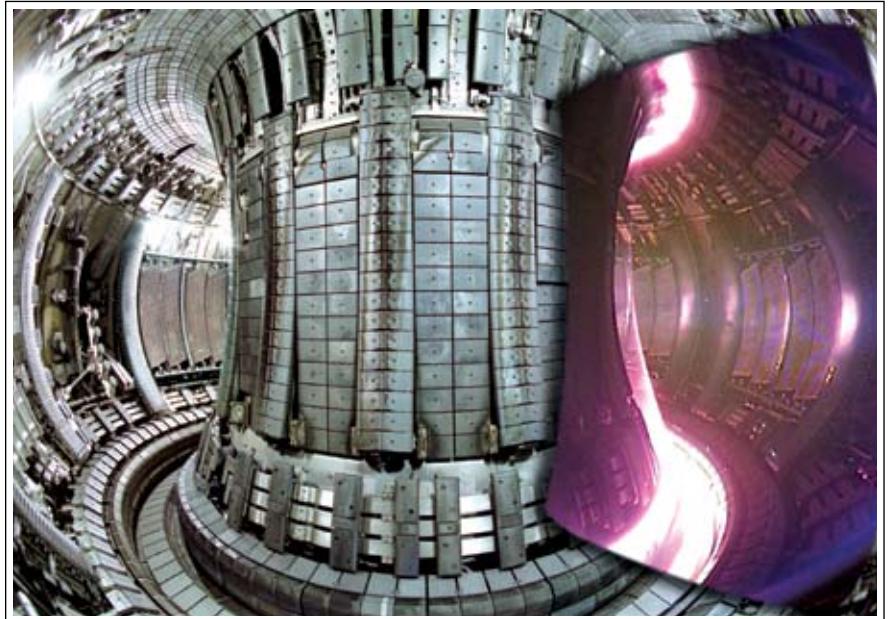


photo: EFDA-JET

Fusion reactors: at break-even point — now for the future



WiFi: spreading like WildFire

### Wireless but not clueless

WiFi and other wireless technologies are already part of our lives and soon they will be almost everywhere.

Perhaps the most visible manifestation of WiFi is the coffee-shop laptop tuned cordlessly into a WLAN and thence into the worldwide web but some phone users might also be doing

it by WiFi.

WiFi is used in many other applications. Some televisions are going WiFi, allowing viewers to wander about their houses with their own portable screens. A more mundane but widespread use of WiFi is in communication between computers and peripheral devices such as printers and projectors.

Predicting the evolution of



## Nova: Science in the news

information technology is not easy but a few things about WiFi seem certain. Speeds will increase, the range of uses to which it is put will broaden and its availability will continue to spread. It also will face more competition.

The array of wireless technologies already in use can be confusing. But the proliferation of the technology does have one advantage: if you don't understand it and want to find out what it all means, you can at least research it – from almost anywhere!

*Topic sponsored by the Australian Research Council Communications Research Network ([www.acorn.net.au](http://www.acorn.net.au)).*

### The water down under

Groundwater is a major resource but has been taken for granted for decades.

It provides more than 20 per cent of the water used in Australia each

year and is set to become even more important due to over allocation of surface water and the recent drought.

There's now an enormous interest in the way our groundwater resources are measured, managed and utilised. In most areas, human use is in excess of the sustainable yield.

In a dry country such as Australia, the challenge is to understand how groundwater systems operate, how big they are and how best to manage them in a sustainable and innovative way. The aim of groundwater management is to ensure that there is water for all who need it, that the resource is not exhausted and that the local environment is protected.

*Topic sponsored by the Australian Research Council Linkage Learned Academies Special Project Grant ([www.arc.gov.au/ncgp/lasp/lasp\\_default](http://www.arc.gov.au/ncgp/lasp/lasp_default)).*

The Australian Foundation for Science is also a supporter of *Nova*.

### DID YOU KNOW?

**Nova users will soon have exclusive access to selected premium articles from *New Scientist*. In an agreement with the magazine, *Nova* can now reproduce articles which are normally only available in print or for paid subscribers.**

## Public Lecture Series 2006–07

# Not all doom and gloom in wake of toxic invader

The Academy's public lecture series 'The origin of species: the Australian connection' continues to grow in popularity, with almost 500 people attending the five lectures to date.

Federation Fellow at the University of Sydney Professor Rick Shine enthralled a full house on 6 March with some sobering facts on the cane toad invasion across tropical Australia.

But his lecture 'Mr Toad comes to Darwin: an evolutionary perspective on the cane toad invasion', was not all doom and gloom as he explored some of the rapid evolutionary responses of Australia's native fauna in the wake of this toxic invader.

Director of the ARC Centre of Excellence for Coral Reef Studies at James Cook University Professor Terry Hughes gave the fourth lecture in the series on 6 February.

In his talk, 'The Great Barrier Reef: designed to survive (built to last?)' Professor Hughes discussed the future of the Reef in the face of rapid climate change and other human impacts.

By diving into the world of corals and their unique adaptations to an ever-changing environment, he provided insights into how the Great



Mr Toad: exploring evolutionary responses

Barrier Reef has survived for aeons and how it might continue for aeons more.

*Transcripts from the lectures and information on forthcoming lectures:*  
[www.science.org.au/events/publiclectures/index.htm](http://www.science.org.au/events/publiclectures/index.htm)

### In demand

By popular demand, the Academy will continue to host monthly lectures as an ongoing event. The next series, 'Safeguarding Australia', will commence in June following the conclusion of 'The origin of species' lecture series on 22 May.

## OBITUARIES

### John Anderson

John Robert Anderson was born in Sydney on 5 March 1928 and died in Melbourne on 26 February 2007. He was educated at Sydney Technical College, where he completed a Chemistry Diploma with Honours in 1949, winning the Bronze Medal as the best student. The following year he converted this into a BSc (with first class honours) as one of the first graduates from the NSW University of Technology. In 1954 he was awarded a PhD degree from the University of Cambridge and a Ramsay Memorial Fellowship for Great Britain.

However, both work and family considerations compelled him to return to Australia and in 1955 he became Lecturer in Chemistry at the NSW University of Technology, moving to the University of Melbourne as a Senior Lecturer in 1957, with promotion to Reader in 1963. From 1964–69 he was Professor of Chemistry at Flinders University, spending his last two years there as Chairman of the School of Physical Sciences. In a change from academia he returned to Melbourne in 1970 as Chief of the CSIRO Division of Tribophysics (later Materials Science), staying there until 1986, with the period 1979–80 as Acting Director of the CSIRO Institute of Physical Sciences. In 1987 he took up the position of Professor of Chemistry at Monash University, where he was made an Honorary Fellow of Chemistry on his retirement in 1993.

Professor Anderson's major research interest was surface chemistry, particularly the adsorption and reaction of gases at the surfaces of metals. He showed that catalysis is not restricted to the surface and is akin to metal tarnishing. Particular studies revealed the fundamental role of carbon-metal bonds in the important catalytic reactions of the petrochemical industry. His work demonstrated the complete inadequacy of the then current D-band theory and emphasised the importance of surface impurities. Through the use of ultra-thin films he showed the changes wrought in the catalyst and the gaseous adsorbent.

Honours included Fellowship of the Royal Australian Chemical Institute, for which he was also the Hartung Youth Lecturer in 1971. He was elected to the Fellowship of the Academy in 1972.

John married Betty Spinley in 1956. They had two sons, Matthew and Charles, who survive him.

### Max Kelly

Gregory Maxwell ('Max') Kelly was born on 5 June 1930 in Sydney, where he died on 26 January 2007. He was educated at the Universities of Sydney (BSc 1951 with first-class honours and the University Medal for Mathematics) and Cambridge (BA with first-class honours 1953, PhD 1957).

Max spent most of his career at the University of Sydney, where he rose from Lecturer to Reader between 1957 and 1966. He then moved to the University of NSW as Professor of Pure Mathematics (1967–72), returning to Sydney in 1973 as Professor of Pure Mathematics. He retired in 1994 but continued to participate in the Department as Professorial Fellow and Professor Emeritus until his death.

Max was a leader in the development of category theory, a field of pure mathematics that pervades almost all fundamental structures of mathematics. In 1971 he formed the Australian Category Theory Seminar Series run between Macquarie University and the Universities of Sydney and NSW. The Macquarie based Centre for Australian Category Theory is now considered one of the world's leading research centres on category theory. Max was well known internationally, being instrumental in attracting expertise in the area to Australia. He will also be remembered for his great influence on a young generation of Australian mathematicians.

Professor Kelly was elected a Fellow of the Australian Academy of Science in 1972.

For the past few years Max was left with little central vision as a result of macular degeneration. In spite of this he continued to do research using an eight-fold magnification monitor, which allowed him to see only a few square centimetres of a page at a time. Until last year he held an ARC Discovery Grant, in 2005 he published four papers and in his last days he was working on a joint paper that will appear later this year.

Max leaves his wife Imogen, children Dominic, Martin, Catherine and Simon and 10 grandchildren.

### Anton Hales

Anton Linder Hales was born in Mossel Bay, Cape Province, South Africa, on 1 March 1911 and died in Queanbeyan on 11 December 2006. He was educated at the University of Cape Town, where he was awarded an MSc in Applied Mathematics — at the age of 19 — and a PhD, and at St John's College, Cambridge, where he was awarded a BA in 1930 and an MA in 1952.

Before going to Cambridge he spent a year at the University of the Witwatersrand in Johannesburg as a Junior Lecturer in applied mathematics. He returned there in 1933 and over the next several years advanced to the rank of Senior Lecturer. During this time he saw war service as a Captain in the North African Campaign. In 1946 he moved to the Bernard Price Institute of Geophysical Research as a Senior Research Officer, before becoming Professor of Applied Mathematics and Head of the Department of Mathematics at the University of Cape Town (1949–54). Following that he spent eight years as Director of the Bernard Price Institute and Carnegie-Price Professor of Geophysics. He then moved to the University of Texas at Dallas as Director of the Geosciences Division, where he remained until 1973, spending 1970–71 as Acting Vice President for Academic Affairs. In 1973 he moved continents for a second time when he took up the position of Foundation Director of the Research School of Earth Sciences at the Australian National University. On his retirement from the ANU in 1978 he returned to the University of Texas at Dallas as Professor, Programs in Geoscience, from where he retired to Australia in 1982.

Anton's research involved the application of body-wave travel-time studies to determine the structure of the Earth's crust and mantle. These studies, carried out both on land and sea, represent a major contribution to knowledge of the Earth's interior. He was one of the first to study the detailed structure of the low-velocity zone in the upper mantle to interpret the unusual seismic properties of this region in terms of partial melting and to appreciate the key significance of the low-velocity zone in tectonic processes. He was a pioneer in the

study of convection processes in the Earth's mantle, now believed to be the ultimate cause of continental drift.

Professor Hales was elected a Fellow of the Australian Academy of Science in 1976. He was also honoured by his election as Fellow of the Royal Society of South Africa, the Royal Astronomical Society, and the American Geophysical Union. The University of Texas at Dallas established an endowed graduate fellowship in geophysics in his name, while the ANU has given his name to a seminar room as well as to the AL Hales annual honours year scholarship.

In 1936 Hales married Marjorie Carter (d. 1957), and they had two sons, James and Peter. In 1962 he married Denise Adcock, with whom he had two further sons, Mark (d. 2004) and Colin. He leaves Denise, three sons and seven grandchildren.



Anton Hales: moving continents in more ways than one

### Biographers

Memoirs of deceased Fellows are published in *Historical Records of Australian Science* and are also available on the Academy's website: [www.science.org.au/academy/memoirs](http://www.science.org.au/academy/memoirs)

## PUBLIC LECTURE

# Putting our science to work

A small but enthusiastic Shine Dome audience warmed to a lecture recently on the commercialisation of science, delivered by DuPont Executive Vice-President and Chief Innovation Officer Dr Tom Connelly Jr.

In his talk, 'Putting our science to work: insights into the commercialisation of science', Dr Connelly discussed some of the lessons learned by DuPont while working with universities to develop technology then push it into the marketplace.

He said: 'From an industry standpoint, we need to do this as truly collaborative research and not some sort of outsourcing mechanism. We

have to recognise that the university's primary role is around education and research and there are students involved in these things.

'So when we start programs and we stop programs, we have to be respectful of the fact that we have students who are working on degrees — and not leave students high and dry in the middle of their projects.'

He also highlighted the need to choose the most appropriate research partners and to build lasting relationships, saying: 'Building relationships at multiple levels with the institutes — at the individual researcher level, at the leadership level

as well — is very important.

'And continuity is important . . . the best things come out of a prolonged relationship.'

**Full transcript:**

[www.science.org.au/events/13march07.htm](http://www.science.org.au/events/13march07.htm)

### Newsletter online

To receive email notification when new issues of the *Newsletter* become available online, register at: [www.science.org.au/infolist.htm](http://www.science.org.au/infolist.htm)

## It's indeed an honour . . .

**Professor Murray Esler** AM, Baker Heart Research Institute, has been appointed a Member of the Order of Australia for service to medical science through research in the area of human cardiovascular neuroscience and to the development of health policy and treatment therapies.

**Professor Ian Frazer** has been awarded the Merck Sharp and Dohme Florey Medal from the Australian Institute of Policy and Science. The biennial accolade was created in 1998, the centenary of Sir Howard Florey's birth, to celebrate world standing achievements in biomedical science and human health by Australian researchers.

**Dr Bruce Hobbs** has been elected to the Fellowship of the Australian Academy of Technological Sciences and Engineering.

**Professor Barry Marshall** AC, University of Western Australia, has been appointed a Companion of the Order of Australia for service to medicine and to medical research, particularly through the discovery of



Professor Murray Esler

the bacterium *Helicobacter pylori* and its role in gastritis and peptic ulcer disease.

**Professor Evan Simpson**, Prince Henry's Institute for Medical Research, has received the 2006 Komen Foundation Brinker Award for scientific distinction in breast cancer research.

**Professor Sally Smith**, University of Adelaide, has received the 2006



Professor Sally Smith

JA Taylor OBE Gold Medal in Soil Science Research and its Communication from the Australian Society for Soil Science.

**Professor Robin Warren** AC has been appointed a Companion of the Order of Australia for service to medicine and to medical research, particularly through the discovery of the bacterium *Helicobacter pylori* and its role in gastritis and peptic ulcer disease.

## Latest JG Russell Award winners

Research projects on snake venom, fossilised microbes and subduction earthquakes have been granted JG Russell Awards for 2007.

The recipients are:

**Dr Bryan Fry**, University of Melbourne, for his project 'Evolutionary venomics: venom system diversification in the animal kingdom'

**Dr Craig Marshall**, University of Sydney, for 'Links between modern and fossil microbes and the evolution of life in Earth's extreme early environments'

**Dr Wouter Schellart**, Australian National University, for 'Relationship between subduction zone geometry, trench kinematics and great subduction earthquakes'.

The JG Russell Awards arose from Miss Russell's concern that basic science was not being well supported: '...the

Government only seems to support research that is very applied, where there is likely to be a quick return but support for basic research in fields such as physics is very limited'.

The awards were first offered in 1996, honouring outstanding young researchers and encouraging them to stay in Australia. The awards — 50 of which have now been granted — provide for the additional costs involved in experimental research such as equipment, maintenance and travel.

The recipients are chosen from among the physical and biological (non-medical) Queen Elizabeth II Fellows — an Australian Research Council scheme that awards salary support to high-achieving early-career researchers.

Miss Russell takes great interest in the research outcomes from the work that she supports through the Academy.

## All the best, Arthur

Best wishes to Arthur Thompson, who celebrated his 90th birthday on 4 January.

Arthur was born and educated in Adelaide and later worked as a Chief Research Scientist at the CSIRO National Standards Laboratory, where he made major contributions in the field of precise electrical measurements.

His work on standards of capacitance led to the discovery of a new theorem in electrostatics, which formed the basis for the design and construction of the Lampard-Thompson capacitor — a standard of capacitance that can be calculated with great precision.

He was elected to the Fellowship of the Academy in 1972 and received many awards including the Instrument Society of America's Albert F Speng Medal with Professor Doug Lampard FAA in 1965 and the IEEE Morris E Leeds Award in 1977.