



Boden Research Conference – Beyond the platypus genome

Comparative genomics and the biology of the 'furry bird' of the animal world – the platypus – were the focus of attention at the Boden Conference on 23 to 26 November at Victor Harbor in South Australia. Australia's unique monotremes the platypus and echidna are our most distant relative amongst living mammals. Comparative studies allow unique insights into early mammal evolution.

The conference aimed to capture the momentum gained from the announcement of the completion of the platypus genome sequence. Existing collaborations were consolidated and new ones were fostered by bringing together researchers and students working in comparative genomics and monotreme biology. Sixty researchers, including high profile national and international speakers from England, USA, Germany and New Zealand attended the conference.

The meeting started with talks on the composition of the platypus genome, moving to genetic and biochemical aspects of monotreme immunity, milk and venom. Presentations on population genetics, sex chromosomes and reproductive biology were followed by updates on disease and captive breeding efforts.

Professor Roger Short FAA chaired a panel discussion that sought to compose a new 4-word telegram to alert the world



Photo: Ian Elton, Healesville Sanctuary

A platypus – the 'furry bird' of the animal world

to amazing new discoveries that came from the genome sequence. 'Platypuses are furry birds' was the outcome. Professor Stephen O'Brien (USA) highlighted the unique value of Australian native animals, in particular monotremes, in his inspiring after-dinner lecture.

The meeting closed with a round table discussion about funding opportunities and ways to foster interaction and communication

between the diverse groups of researchers that share enthusiasm for this fascinating group of mammals.

The conference was organised by: Professor Jenny Graves FAA, Australian National University; Professor Frank Grutzner, University of Adelaide; and Dr Russell Jones, University of Newcastle. Further information is available from www.adelaide.edu.au/monotreme-conference/ ■

J G Russell Awards for 2009

The J G Russell Award is aimed at financially helping talented younger researchers in the basic sciences. Awardees are chosen from the recipients of Queen Elizabeth II Fellowships. Four young researchers will receive support in 2009.

Dr Amanda Barnard from the University of Melbourne will develop computational tools to predict the behaviour of nanoparticles. The use of nanodiamonds for the delivery of chemotherapy drugs will then be investigated.

Dr Michael Breadmore, University of Tasmania, will develop an integrated device to analyse drugs and metabolites in fluids.

The device will improve medical treatment and patient quality of life by monitoring therapeutic drugs.

Dr Hugh Harris from the University of Adelaide will investigate the effects of the use of dietary selenium supplementation as a preventative treatment for a range of health conditions.

Dr Angela Moles, University of New South Wales, will study how weeds are adapting to life in Australia by quantifying the rate and direction of evolution in introduced plants. A better understanding of this process will help to develop appropriate control programs to protect our future biodiversity. ■

Recipients of the Awards for Research on Endangered Australian Vertebrate Species announced

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Honours to Fellows

Professor Martin Green was one of the
two finalists of the inaugural Zayed Future
Energy Prize.

Professor Jörg Imberger was named 2008
West Australian Scientist of the Year in the
Premier's Science Awards.

Professor Philip Kuchel was awarded the
2008 Australian and New Zealand Society
for Magnetic Resonance Medal.

Professor Hyam Rubinstein was awarded
the 2008 George Szekeres Medal by the
Australian Mathematical Society.

Professor Brian Schmidt was elected as
a Foreign Member of the Royal Spanish
Academy of Science.

Australia Day honours

Professor Pauline Ladiges was made an
Officer in the General Division (AO). Her
award is a tribute to outstanding service
to the advancement of botanical science
and research, particularly in the field of
taxonomy and plant systematics, and to the
conservation of Australian flora and fauna.

Professor Erich Weigold was made a
Member in the General Division (AM). His
award is a tribute to outstanding service to
physical sciences through research, education
and leadership roles, as an academic and
author, and to the development of scientific
policy in Australia.



Pauline Ladiges

National Health and Medical Research Council grants

2010 Program Grants

Professor Peter Doherty and team, for
vaccine development and evaluation.

Professor Bob Graham and team, to
better understand heart disease and
abnormalities.

Professor Fiona Stanley and team, to
focus on how childhood development
affects health and participation in society.

For a complete list of recipients go to
www.nhmrc.gov.au/media/media/rel09/_files/nhmrc-2010-program-grants-list.pdf

Australia Fellowships

Professor Richard Harvey, for research in
molecular and developmental cardiology.

Professor Terry Speed, for bioinformatics
and computational biology. ■

Important dates

7 April 2009: Public lecture, *Solar thermal concentrators: Capturing the sun for large scale power generation and energy export*. Professor Keith Lovegrove, Solar Thermal Group leader at the Department of Engineering, Australian National University College of Engineering and Computer Science. Shine Dome, Canberra.

6–8 May 2009: Science at the Shine Dome and Annual General Meeting. *Evolution of the Universe, the planet, life and*

thought: The inspiration of Galileo and Darwin. Shine Dome, Canberra.

2 June 2009: Public lecture on the theme of wind energy. Associate Professor David Wood, Priority Research Centre for Energy, University of Newcastle. Shine Dome, Canberra.

21–24 June 2009: Sir Mark Oliphant Conferences - International Frontiers of Science and Technology, *Nanophotonics down under: Devices and applications*. Melbourne Convention Centre. www.smonp2009.com

Joint AAS–ATSE National Strategic Plan for Earth Observation from Space

The Australian Academy of Science (AAS) and the Australian Academy of Technological Sciences and Engineering (ATSE) have a long-standing commitment to a strong Australian role in space science, including the various aspects of space-based Earth observation. With support from a number of Australian Government departments and agencies with responsibilities for various aspects of Earth observation from space, the two academies recently agreed to undertake a study of Australian needs for Earth observation from space over the next 10 to 15 years, and to prepare a National Strategic Plan for Earth Observation from Space.

In December the two academy presidents approved the terms of reference and the establishment of a steering

committee – made up of senior representatives of the academies and the main supporting organisations – and a broader based working group. Both are chaired by Professor John Zillman FAA, FTSE. At its inaugural meeting in January, the working group accepted the terms of reference for the study and clarified the scope of the plan. Bruce Neal, a former head of the satellite section at the Bureau of Meteorology, has taken on the role of project officer assisting the development of the plan. The plan is expected to be finalised at the end of July 2009. The AAS will provide secretariat support for both the steering committee and the working group. ■



Image: © NASA Earth Observatory

Observation of Earth from space is on the agenda

Bilateral science and technology cooperation between Australia and South Africa

Australia and South Africa signed a bilateral science and technology cooperation agreement in October 2006. It was decided to hold the first meeting of a Joint Science and Technology Coordination Committee (JSTC) to coincide with one of a series of international fora on the establishment of the Square Kilometre Array (SKA) telescope. The purpose of the meeting – held in Cape Town, South Africa, in February – was to build relationships between the two countries by identifying other possible areas of mutual interest.

The Chief Executive, Dr Sue Meek, was invited to be a member of the Australian delegation and, as a prelude to the JSTC meeting, met with the President of the Academy of Science South Africa (ASSAf), Professor Robin Crewe, and visited the ASSAf secretariat in Johannesburg.

The secretariat kindly provided a detailed briefing on the wide range of activities undertaken by ASSAf. In addition to producing a bi-monthly scholarly and a quarterly popular science journal, it prepares reports on a range of significant topics which are written by panels of members with the support of a project officer in the ASSAf secretariat. Reports from two major projects on a detailed assessment of science journals and an examination of nutritional

influences on HIV/Aids and tuberculosis were published last year

ASSAf is one of three African academies that are being funded by the Bill and Melinda Gates Foundation. The funds are provided through the US National Academy of Sciences (NAS) and support project work, staff training in the US and secondments from NAS. Under the Committee on Science for Poverty Alleviation three forum studies on small-scale agriculture, the health of poor communities and the sustainability of

smaller cities are underway.

The JSTC identified a number of possible areas of cooperation that will be further developed, including a workshop/visit program proposed jointly by the ATSE and the AAS on the theme of 'low-carbon energy technologies'. ASSAf would be able to assist in the identification of key people in South Africa's renewable technology fields as a result of recently running an energy forum which had renewable energy as one of the themes. ■



Photo: Patsy Sholtz

Sue Meek (centre, front) with members of the ASSAf secretariat

From strength to strength: Renewable energy lectures

The public lecture series *Australia's renewable energy future* continues to go from strength to strength with audiences regularly close to the capacity of the Shine Dome.

Dr Anthony Budd from Geoscience Australia gave the December lecture on geothermal energy. He discussed the massive geothermal energy resource that exists in Australia and its potential to provide large amounts of low emission, baseload power. He also told the audience that '...it is coming soon. Probably sooner than a lot of people would realise.'

He discussed other uses for geothermal energy such as providing heat for hothouses to grow food in harsh climates (eg bananas in Iceland) as well as providing ground source heat pumps to heat and cool buildings.

Dr Budd emphasised the quick growth of geothermal and its great employment potential: 'It is a very fast growing industry. If we go to the next phase of development, I think we are going to see a lot of green collar jobs being generated by this industry.'

He also highlighted the low emission credentials of geothermal saying that once the infrastructure for a geothermal plant is completed, they do not produce any emissions.

Dr Budd put to rest some misconceptions about the technology including perceptions of the Earth cooling, the atmosphere heating, and fears of radiation exposure.

He acknowledged there were some issues with geothermal energy including expensive start-up costs, access to water, the creation of small earthquakes when injecting water at high pressure into rock, and very low level radiation. He said that siting of geothermal plants was an important factor to address some of these issues, and stressed the very low level of radiation, less than what is on some Australian beaches where certain minerals that concentrate uranium are found. 'It is not a hugely significant risk' he said.

Although initially setting up a geothermal energy plant is expensive, he said that geothermal is in fact one of the cheapest renewable energy options.

As for the viability of the technology in Australia he said 30 years of research and existing projects overseas had shown



Anthony Budd discussing geothermal energy resources in Australia

Photo: Richard Bray

'There really aren't any significant hurdles to implementing this technology. There are some engineering ones. But I have no doubt they are being addressed now... this does work overseas so it will work here.'

Dr Karl Föger reignited the lecture series in 2009 with his February lecture on fuel cells. Dr Föger is one of the founders and the Chief Technology Officer of Ceramic Fuel Cells Limited. He discussed the advantages of fuel cells, namely their high conversion efficiency, low emissions, their load-following capability and their ideal design for dispersed power.

The main focus of his presentation was on the solid oxide fuel cells which his company has designed. He discussed the company's shift of focus from designing big power stations to begin producing small home systems called micro combined heat and power systems (micro-CHP). He outlined the high efficiency that can be gained from such a system, as excess heat from the production of electricity is used to heat the home.

He contrasted this to centralised commercial power stations in Australia where the 'heat is generally thrown away



Dawn breaks over a geothermal drilling rig near Innamincka, South Australia

Photo: Courtesy of Geodynamics Limited



Photo: Richard Bray

Karl Föger highlighted efficient use of fossil fuels in fuel cells

because it can't be used'. Comparing the two he said 'you have something like 80 per cent efficiency [for micro-CHPs] versus something like 30 per cent [in commercial power stations].'

He said while you may use a fossil fuel like natural gas in a fuel cell, it is a 'very, very efficient use of a fossil fuel.' He went on to say 'If you use biogas or biofuels, you are totally renewable.'

Dr Föger highlighted the company's achievement in designing fuel cells with an electrical efficiency of 55 per cent using natural gas in and AC electricity into the

grid, saying 'There is no other technology or generator out there in that size range that can come even close to that level of efficiency; there is nothing over 45 per cent out there... This is a real world record and I'm really proud of this system because we had to fight very, very hard to avoid shortcuts being taken with it.'

He said there is a strong demand in Germany, France, the UK and Japan for micro-CHP systems with boilers and that these countries are better suited to such systems than Australia due to their climates. The system's maximum efficiency comes



Photo: Richard Bray

Speakers answered many questions from interested audience members

from harvesting excess heat to heat the home, whereas countries with warmer climates like Australia need less heating in homes. However, the company is also looking at building a system better suited to Australian conditions, which they plan to have on the market in 2010.

He also discussed the potential to use home micro systems for distributive generation, feeding excess electricity back into the grid. Distributed micro systems can also be used as virtual power stations by operating them as one system by remote control. He said combining 100,000 systems would create 100 megawatts of power.

Due to various policies and incentives, he said 'We really believe – and the view has now been adopted widely – that it could be more valuable to a utility than a householder.'

He says the challenge that remains is cost: 'We have cracked most of the technology targets – technology will always get better – but we have to get the price down.'

A key difference between Australia and Europe is that the land to house price ratio is reversed. The high relative value of homes in Europe means that there is an incentive to improve a property's energy efficiency.

Transcripts of both lectures and other previous lectures in the series can be found at: www.science.org.au/events/publiclectures/re/archive There will be no lecture in May due to *Science at the Shine Dome*, but lectures will resume in June. ■



Photo: Richard Bray

Public lectures are drawing near capacity crowds at the Shine Dome

News from national committees

Astronomy

The National Committee for Astronomy (NCA) met on 16 December at Ian Potter House. The agenda included membership of the International Astronomical Union, the role of the NCA relative to the Astronomical Society of Australia and Astronomy Australia Ltd (AAL), the International Year of Astronomy 2009, the AAL Astronomy Roadmap, membership of the European Southern Observatory, and ARC outcomes and funding.

Brain and mind

The National Committee for Brain and Mind met on Monday 2 February at Ian Potter House. Items of business included discussion on collecting data on the brain imaging research laboratories in Australia, strategies for countering exaggerated and incorrect information in the media, concern over the lack of Field of Research Classification codes for brain and mind (or anything closely related), the low number of brain and mind scientists within the fellowship of the AAS, and international union linkages.



Photo: Jeanette Mill

Members of the National Committee for Astronomy were joined by Ron Ekers for the December meeting

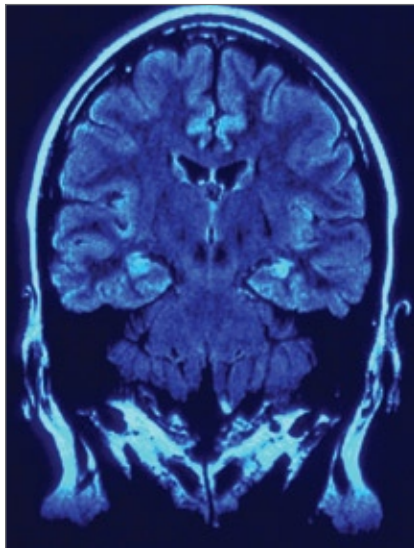


Image: jkt_de_MorquieFile

Interpretation of brain images a matter for concern

Earth sciences

The National Committee for Earth Sciences met on Monday 8 December at Ian Potter House and discussed relative research impact statistics, the 2007–09 International Year of Planet Earth, and the upcoming general assemblies of the International

Union of Geological Sciences in Brisbane in 2012 and the International Union of Geodesy and Geophysics in Melbourne in 2011. Future plans include a review of the National Strategic Plan for the Geosciences, published in 2003.

Professor Andy Gleadow FAA has concluded his term as chair of the Committee. Professor Brian Kennett FAA is the incoming chair.

Earth system science

The main item of business of the National Committee for Earth System Science teleconference on 21 January was the progression of the draft exposure of the Decadal Strategic Plan for Earth System Science 2010–20. Plans are underway for a stakeholder workshop to discuss the exposure draft.

Nutrition

The National Committee for Nutrition met on 1 December during the Nutrition Society of Australia annual conference in Glenelg, South Australia.

Planning is underway for a workshop on salt reduction in the food supply in August 2009. Other plans include a possible

conference with international speakers on climate change and the food supply in 2010. A bid is being prepared for the 2017 International Union of Nutritional Sciences congress to be held in Australia. Progress with the Nutrition Leadership Program was also discussed.

International Council for Science

The International Council for Science (ICSU) has a new executive director, Professor Deliang Chen. Professor Chen is an internationally renowned climate researcher, and replaces Professor Thomas Rosswall who is retiring after seven years at the helm.

Professor Yuan Tseh Lee, a Nobel Prize winning chemist from Taipei, China, has been elected as the future president of ICSU. Professor Catherine Bréchnignac assumed the office of president during the General Assembly in October 2008.

Professor Bruce McKellar FAA has accepted an invitation from the executive board of ICSU to sit on the ICSU Regional Committee for Asia and the Pacific. The term of office is 2009 to 2011. The term of Professor Jenny Graves FAA on the committee expired at the end of 2008. ■

International news

Chinese Academy of Sciences symposium, Beijing

Professor Kurt Lambeck was invited by the Chinese Academy of Sciences to attend the *Academy, Research Institution and National Innovation System* symposium in Beijing from 12 to 14 November. Professor Lambeck gave a presentation, *Role of the Australian Academy of Science in development of a national innovation policy*, in which he spoke of the role that academies can play in developing and implementing a national innovation system. The speech is available from www.science.org.au/events/12-14november08.pdf

Academia Sinica

The Academia Sinica, the national academy of Taiwan, extended an invitation to Professor Lambeck to participate in the *Academy Presidents' Forum* to discuss how national science academies can drive knowledge-based development. The meeting was held in Taipei from 6 to 8 December. At the forum, Professor Lambeck gave a presentation, *How should modern science academies be structured to best drive knowledge-based development?* The speech is available from www.science.org.au/events/6-8december08.pdf

The Taipei Economic and Cultural Office in Australia and the National Science Council of Taiwan also put together a program of visits for Professor Lambeck which included a meeting with the deputy minister of the National Science Council, Dr Wen-Chang Chang, and visits to the National Center for Research on Earthquake Engineering and the Department of Geosciences of the National Taiwan University.

Adam J Berry Memorial Fund 2009

Jacqueline Leung, a PhD student at the Menzies Research Institute of the University of Tasmania, is the 2009 recipient of the Adam J Berry Memorial Award. The award assists an Australian researcher to travel and work in the USA at one of the institutes of the National Institutes of Health each year. The fund is co-managed by the AAS and the Foundation for the US National Institutes of Health.

This funding will assist Jacqueline to travel to the Nervous System



Jacqueline Leung

Development and Plasticity Section of the National Institute of Child Health and Human Development. There, she will learn an advanced in vitro tissue culture system to further her studies into the action of the neuroprotective protein, metallothionein, in a multicellular environment after injuries to the central nervous system. For information regarding the Adam J Berry Fund please contact Nancy Pritchard on 02 6201 9411 or at nancy.pritchard@science.org.au

Bede Morris Fellowship 2009

Professor Arne Dahle of the Department of Materials Engineering at the University of Queensland has been selected as the 2009 recipient of the Bede Morris Fellowship.

The Fellowship is awarded in honour of Professor Bede Morris' contribution to science and French–Australian relations.



Arne Dahle

Professor Morris FAA was a pioneer of immunology in Australia, establishing the first department of immunology in Australia in 1969 at the John Curtin School of Medical Research at the Australian National University. The Fellowship falls under the accord for scientific cooperation between the AAS and l'Academie des Sciences de l'Institut de France and is supported by the Australian Government Department of Innovation, Industry, Science and Research.

Professor Dahle will be spending four weeks with Professor Michel Suéry at the Grenoble Institute of Technology. The objective of the visit is to improve the understanding of the solidification characteristics of aluminium alloys, for future application in optimising aluminium castings. ■

Grants for international travel

Applications are invited for grants for short-term scientific visits to Europe, North America and Asia in 2010, to foster collaborations between Australian and overseas researchers. For more information go to: www.science.org.au/internat/programs The closing date for applications is 15 May 2009.



Nova: Science in the news

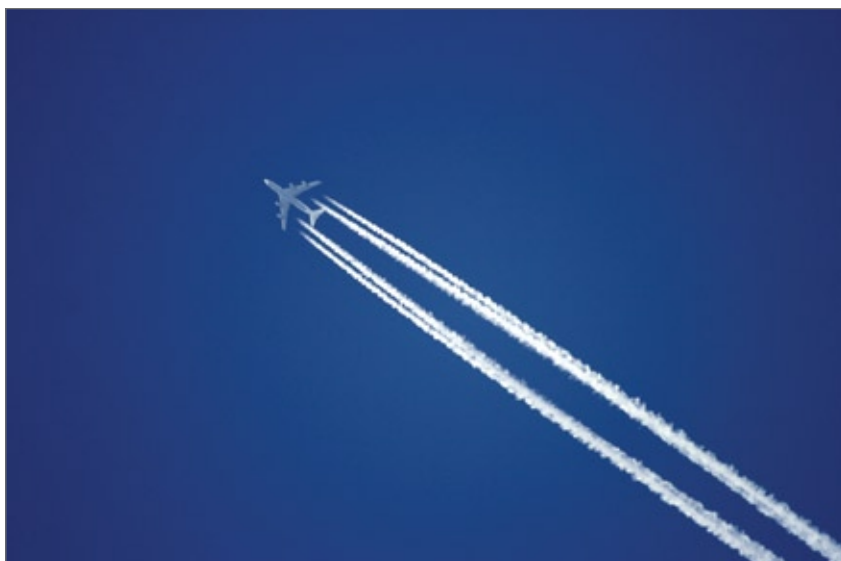


Photo: Stockxpert

An increasing environmental impact is prompting 'greener' ways of flying

Four new topics have recently been posted on the Academy's educational website, *Nova: Science in the news* (www.science.org.au/nova):

Flying beyond our means – air travel and the environment

With aviation's emissions growing faster than any other transport sector our impacts on the environment are heading sky high. But research is underway to reduce the effects of flying.

In February 2008, the eyes of the aviation world were looking up in the sky at a Boeing 747 flying from London to Amsterdam. That's because one of the four engines of the plane was flying on a biofuel blend. Hailed as the world's first commercial flight powered (partly) by biofuel, its ultimate aim was to reduce carbon emissions into the atmosphere.

Environmentalists criticised it as a publicity stunt saying there are only scant savings to be made using biofuels. But what this flight did achieve was to focus attention on the great air race underway around the world to address the environmental effects of flying.

With passenger numbers soaring, the emissions from domestic flights over Australia are growing faster than any other method of transport. And aviation has a range of other effects on the environment. Planes can cause considerable noise pollution, air pollution and unwittingly help

spread disease. Airports impact on land use, planning and local ecosystems.

Concerns such as these have prompted research to find 'greener' ways of flying. But a range of measures will be needed – technological advances such as biofuel blends and more efficient plane design are not enough to stop the rapidly growing impact of aviation on the environment.

Sponsored by Dr Margaret Middleton

Clean speed ahead with catalysts

In the face of declining fossil fuel resources, degradation of the environment and the growing risk of climate change, the world's industries need to become more efficient and less polluting. A new generation of catalysts is coming to the rescue.

A catalyst is credited with changing the course of world history. By using a simple catalyst to greatly improve the efficiency of ammonia production, the Haber-Bosch process made possible a huge increase in agricultural production and thus underpinned the 20th century's massive population boom.

Yet many scientists believe that the full potential of catalysts is still far from realised. The race is on to discover catalysts that will further improve the efficiency of industrial production, clean up polluting processes, and even help provide the fuels of the future.

Sponsored by the bequest of J R Anderson FAA.

Making our mark – ecological footprints

Ecological footprints are being used to measure our impact on Earth and the results aren't good.

We humans have been changing the face of our planet for thousands of years, our numbers have multiplied many times over and the living standards of many have increased beyond recognition. To make all that happen, we have drawn upon the Earth's natural resources.

One way to measure our impact on Earth is to calculate our ecological footprint. When we compare our footprint to what the Earth can provide (its biocapacity) our global footprint is larger. So how have we managed? By allowing carbon dioxide emissions to build up in the atmosphere. That build-up brings the threat of climate change, so our reprieve may be short-lived.

Sponsored by the Australian Government Department of Climate Change (www.climatechange.gov.au)

A sense of things to come – smart sensors and the environment

Monitoring environmental change can be a big job; sometimes too big for humans to handle without a bit of technological assistance. Now that assistance is increasingly available in the form of smart sensors.

Managing the many challenges confronting the Great Barrier Reef requires reliable and timely information on its changing environment. Environmental monitoring may be needed continuously at multiple locations and over long periods. But the reef is a very big place. Deploying an army of scientists is out of the question and remote sensing by satellite often doesn't provide the required level of detail. Instead, networks of sensors of all shapes and sizes are being deployed across the Great Barrier Reef to monitor different processes.

An exciting mix of nano-engineered materials, miniaturised computers and rapid wireless communications is giving rise to a new generation of environmental sensors. These new sensors will be able to process information they collect, adapt to changing conditions and share their information with a network of sensors.



Photo: Stockport

Smart sensors are being used to monitor the Great Barrier Reef

This may be the way of the future for all forms of environmental management. When the task involves understanding environmental changes over large scales, sometimes in areas where humans are few and far between, then smart sensor networks may be the answer.

Sponsored by the ARC Research Network on Intelligent Sensors, Sensor Networks and Information Processing (www.issnip.unimelb.edu.au/)

Information on these topics is available on the Australian Academy of Science's Nova: Science in the news website at www.science.org.au/nova. A glossary, student activities, further reading and annotated links to relevant websites are also available for each topic.

The Australian Foundation for Science is a supporter of Nova. ■

Fellow turns 90

Albert Main

Happy birthday to Albert (Bert) Main (FAA 1969), who turns 90 on 6 March. Professor Main was born in Perth and grew up on a vineyard on the Swan Valley. He served in World War II as a navigator of Lancaster bombers, and spent the last part of the war as a POW in Germany.

On his return to Australia he matriculated and then completed a BSc at the University of Western Australia (UWA) under the Commonwealth Reconstruction Training Scheme. He later completed a PhD at the UWA, which also awarded him an honorary DSc. He remained at the UWA for most of his career, serving as professor of zoology from 1967 until his retirement in 1984.

Professor Main has broad interests in natural history; in fact, another researcher once told him that he had so many ideas that he must have stolen them! His special interest is in the ecology of animals in arid situations. He has also had a longstanding interest in environmental management and conservation and was a foundation member and later chairman of the Western Australian Environmental Authority. He received a number of awards and honours, including being appointed a Commander of the British Empire (CBE) in 1981.

Biographies of Academy Fellows

Biographers (*) have been appointed for the following Fellows:

Paul Wild

*Dr Bob Frater,
Dr Keith Boardman and
Dr Ron Ekers

Professor Ron Brown

*Dr Peter Godfrey and
Professor John Swan

Professor Hans Freeman

*Professor Peter Lay and
Professor Trevor Hambley

Professor Alan Sargeson

*Professor Brice Bosnich

Dr Sefton Hamann

*Professor Tom Spurling and
Professor David Solomon



Paul Wild

Biographers would be grateful to readers who could provide assistance on the basis of their personal knowledge of the individual or their work. ■

Did you know?

Three new *Primary Connections* publications have recently been released:

Stage 1: *Sounds sensational*
(energy and change)

Stage 2: *Light fantastic*
(energy and change)

Stage 3: *Change detectives*
(natural and processed materials)

www.science.org.au/primaryconnections/additional

The Conservation of Endangered Australian Vertebrate Species awards for 2009

This award offers support for research on endangered Australian vertebrate species to understand the causes of their decline and with a view to instituting, or improving, the management of the conditions necessary for the species' recovery. Five researchers will receive research support in 2009 for their research on endangered Australian vertebrate species.

Dr Diana Fisher from the University of Queensland will look at the conservation ecology of the kultarr (*Antechinomys laniger*), an arid zone carnivorous marsupial.

Ms Yiwei Wang, also from the University of Queensland, will evaluate the interactions ...and impact of predators on the highly endangered bridled nailtail wallaby, *Onychogalea fraenata*.

Ms Felicia Pereoglou, Australian National University, is interested in the relationship between fire and the genetics of the eastern chestnut mouse (*Pseudomys gracilicaudatus*), and the conservation of fire-adapted native fauna.

Ms Anja Skroblin and Dr Sarah Legge of the Australian Wildlife Conservancy will investigate the distribution, phylogeography and dispersal behaviour of the vulnerable



Photo: Sydney Wildlife World

The impact of predators on the bridled nailtail wallaby is under investigation

purple-crowned fairy-wren, *Malurus coronatus*.

Dr Jan Slapeta from the University of Sydney will study a recently discovered parasite threatening the endangered green and golden bell frog, *Litoria aurea*.

The AAS's award for research on the conservation of endangered Australian vertebrate species is generously funded by an anonymous donor. Information about the award is available from www.science.org.au/awards/conservation ■

Boden Research Conference – Plant energy and water productivity

Under the overarching aim of improving plant productivity, a diverse group of scientists met in Canberra from 18 to 20 September 2008 for the Boden Conference on *Plant energy and water productivity* to consider current research and future possibilities. The conference brought together many of the world's leading researchers in the field of photosynthesis and plant energy production. This multi-disciplinary forum looked at how to develop improved plants for agriculture and biofuel production and how to assess and manage plants in natural environments.

The conference was unique in its range of disciplines and breadth of topics whilst still focusing on the three themes: water productivity; plant energy; and plant products and biofuels. Half of the speakers were from overseas and many productive collaborations were formed.

Over 140 attended the conference

with delegates coming from universities, government institutions and business. The conference's focus on plant productivity is a timely and relevant subject with the impacts of global change and world food supplies under threat. The outcome of bringing scientists together to improve plant productivity could lead to benefits for future generations.

In addition to funding from the Academy, financial support was provided by CSIRO, the ARC Centre of Excellence in Plant Energy Biology, the Grains Research and Development Corporation, and the Australian Society of Plant Scientists. The conference was organised by Associate Professor Barry Pogson of the Australian National University and Dr Rudy Dolferus of CSIRO Plant Industry. Proceedings of the conference are available online at www.plantenergy.uwa.edu.au/conferences/ ■

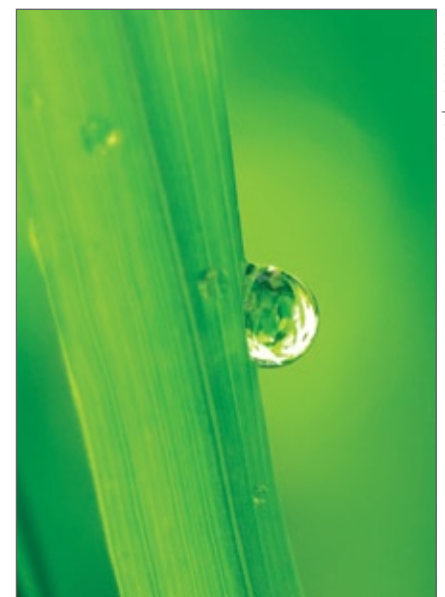


Photo: Stockxpert

Water productivity was one of the themes of the Boden Conference

Sefton Hamann



Sefton Hamann

Sefton Davidson Hamann was born in New Zealand on 8 January 1921 and died in Melbourne on 12 January 2009. He was educated at the Universities of New Zealand (MSc 1946) and Manchester (PhD 1949). During this period he also served in the Navy.

In 1950 he returned to Australia as a research scientist in the CSIRO Division of Industrial Chemistry. He served as chief of the CSIRO Division of Physical Chemistry from 1960–66 and as chief of the CSIRO Division of Applied Chemistry from 1966–74. He then spent several years as chairman of the Applied Chemistry Laboratories Committee. He retired in 1984 but retained his involvement with the Division of Applied Chemistry as an honorary research fellow.

His work involved looking at the effect of high pressure on chemical reactions and physical properties of matter, and the theory of intermolecular forces in fluids. He used novel techniques involving explosives which transformed non-metals to metals, and some properties of liquids were measured under conditions of pressure shock up to 300,000 atmospheres.

During the 1970s he worked on the Plastic Banknote Project. He and Dr David Solomon proposed the use of optically variable devices (OVDs). Dr Hamann worked on OVDs exploiting optical physics, while Dr Solomon worked on chemically based OVDs. A suggestion by Dr Bowen, the ex-chief of CSIRO Radiophysics, that diffraction gratings be used as a security device was taken up by Dr Hamann. He

proposed using modified rulings that yielded a diffraction pattern markedly different from any commercially available gratings. The security afforded by gratings stemmed from their resistance to reproduction by photographic and print methods.

Dr Hamann, a fellow of the Royal Australian Chemical Institute, was awarded its HG Smith Medal in 1967. He was elected to the fellowship of the Australian Academy of Science in 1966 and served on its Council from 1969–72. In 2003 he was awarded a Centenary Medal for services to molecular science. He was a foundation member of the International Association for the Advancement of High Pressure Science and Technology (AIRAPT) and in 2005 was honoured by a special award for services to AIRAPT and to high pressure research.

Dr Hamann's wife, Elizabeth, predeceased him. He is survived by his son Conrad, daughter-in-law Chris, and grandchildren Judith and William.

Alan Sargeson



Alan Sargeson

Alan McLeod Sargeson was born in Armidale, NSW, on 13 October 1930 and died in Canberra on 29 December 2008. He was educated at the University of Sydney (BSc 1952, DipEd 1955, PhD 1956), which awarded him an honorary DSc in 1990.

He began his academic career as a part-time lecturer at the NSW University of Technology, followed by two years as a lecturer at the University of Adelaide. He moved to the Australian National University (ANU) in 1958 as a visiting fellow in the newly established Biological Inorganic

Chemistry Unit in the John Curtin School of Medical Research. He became a fellow there in 1960 and a senior fellow in the Research School of Chemistry (RSC) in 1967. A year later he became a professorial fellow in the RSC and in 1978 he was promoted to professor of inorganic chemistry, a position he held until his retirement in 1996. He was subsequently appointed a university fellow and emeritus professor of the ANU.

Sargeson's research was in the area of coordination chemistry (the behaviour of metal compounds), particularly the roles of metals in biology. His early work on biomimetic metal complexes shed light on how many of the natural metalloenzymes work as catalysts. His best known work was in cage chemistry, both research into the unexpected chemical reactions of metal ions trapped inside a chemical cage and how to release these ions from the cage. This work has led to several patents in the medical area.

Sargeson was honoured with fellowships, or their equivalent, of a number of societies: Royal Australian Chemical Institute (RACI) (1972), Australian Academy of Science and Royal Danish Academy of Science (1976), Royal Society (1983), and the US National Academy of Sciences (1997). He also received other scientific awards, both in Australia and abroad. The Australian ones included the Inaugural Burrows Award for Inorganic Chemistry, RACI (1975), the HG Smith Medal, RACI (1978), Dwyer Medal, University of NSW (1985), AE Leighton Award, RACI (2000) and the Matthew Flinders Medal, Australian Academy of Science (2002).

Service to science and scholarship included work on many national committees, panels and reviews, for example the Evaluation Committee for Special Research Centres, Department of Employment, Education and Training in 1990. He was also involved in the international sphere, with many years of service to the International Union of Pure and Applied Chemistry, in particular as chairman of the Commission on Nomenclature of Inorganic Chemistry.

He is survived by his wife Marietta, his four children, Kirsten, Frank, William and Bente and six grandchildren. ■

Primary Connections

Therese Rein visits Academy

In February, Ms Therese Rein visited the AAS to meet with the President and secretariat representatives for a briefing on the AAS education programs. The briefing included presentations on *Primary Connections*, *Science by Doing*, *Nova: Science in the news* and *Interviews with Australian scientists*.

During the visit Ms Rein commented on the importance of effective science (and mathematics) teaching and learning for all Australian students and complimented the AAS on its endeavours in this area. The benefits of the funding partnerships between the AAS and the Australian Government were also acknowledged.

Ms Rein's visit concluded with a short tour of the Shine Dome where she signed the visitor's book.

World Indigenous Peoples' Conference – Education

Over 3,000 delegates, representing hundreds of indigenous nations, travelled from 23 countries to attend the World Indigenous Peoples' Conference in Melbourne from 7 to 11 December. The theme of the conference was *Indigenous education in the 21st century: Respecting tradition, shaping the future*. More than 400 concurrent conference sessions and keynote presentations were available for delegates to choose from.

Ms Robyn Bull, *Primary Connections* Indigenous Perspectives Coordinator, presented a workshop at the conference in collaboration with colleagues Ms Tracey Cullen and Ms Linda Townend from the Western Australian Department of Education and Training. Both Tracey and Linda are also trained *Primary Connections* professional learning facilitators. The presentation highlighted the partnerships between indigenous and non-indigenous educators that contributed to successful learning outcomes for indigenous (and non-indigenous) students during the pilot of the *Primary Connections* indigenous perspectives framework. The published research report on the pilot, *Small Study – Big Success Story* was featured during the presentation (www.science.org.au/primaryconnections/IndigenousPerspectivesReport.pdf)



Kurt Lambeck with Therese Rein after a briefing on Academy education programs

Photo: Richard Bray



The research report on *Primary Connections* indigenous perspectives was featured at the World Indigenous Peoples' Conference

InterAcademy Panel workshop

Ms Shelley Peers, Manager, Education and Public Awareness and Managing Director of the *Primary Connections* project was invited to attend the InterAcademy Panel (IAP) workshop *Best practices in advisory roles and fellowship appointments* to make a presentation on *Primary Connections*. The workshop was held in Trieste, Italy, on 12 and 13 February at the venue of the IAP offices. There was considerable

interest in the *Primary Connections* project, in particular, the planned workshop in Singapore in 2010 made possible through seed funding from the IAP. One of the recommendations from the event was that, given its value to society and ensuring well-trained future scientists, all academies consider including science education as part of their outreach activities. There was particular concern that this focus commence from primary school education. ■