



# The Royal Society of New South Wales Bulletin and Proceedings 309

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October 2007

## Future Events 2007

Lectures in Sydney are held in Lecture Room 1, Darlington Centre, University of Sydney at 7 pm on the first Wednesday of the month with drinks available from 6 pm.

### Tuesday 30th October, 6.00 pm

Slade Lecture Theatre, School of Physics, University of Sydney

**Value Added:** *A History of Uranium Enrichment in Australia*

#### Dr Anna Binnie

Visiting Research Fellow History and Philosophy Department, UNSW  
Australian Institute of Physics, NSW Branch, October Public Talk

### Wednesday 7th November

**The future of Australian Astronomy**  
*New earths, dark energy and giant telescopes*

#### Professor Matthew Colless

Director, Anglo-Australian Observatory

### Thursday 15th November

**Nanotechnology or terribly tiny things**

*What does the future hold for these tiny structures in health, science and electronics?*

#### Professor Jak Kelly

### Southern Highlands Branch Lecture

### Wednesday 5th December

**The Clarke Memorial Lecture**  
**Dr David Branagan and Professor Roy MacLeod**

*We will definitely have the relevant details for the next issue. Meanwhile, please pencil this into your calendar together with...*

### Christmas Celebration

*Share seasonal cheer with members of the Royal Society of NSW at St Pauls College following the Clarke Memorial Lecture.*

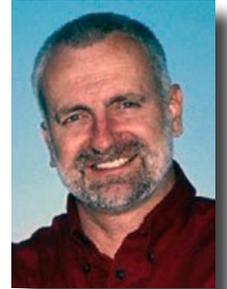
## Matthew Colless

Lecture 7th November 2007

### The future of Australian Astronomy

#### *New earths, dark energy and giant telescopes*

I will give a broad review of some of the most exciting research being carried out in Australian astronomy today, including the discovery of planets around other stars and probes into the fundamental physics of dark matter and dark energy. I will also provide a tour of the horizon for future directions in research, focussing on the powerful new international facilities in which Australian astronomers plan to participate, including the Square Kilometre Array, the Giant Magellan Telescope and telescopes in Antarctica.



Professor Matthew Colless

**Professor Matthew Colless** is Director of the Anglo-Australian Observatory, which operates the largest optical telescope in Australia and is a research facility funded by the UK and Australian Governments. It operates the 3.9m Anglo-Australian Telescope and the 1.2m UK Schmidt telescope sited at Siding Springs Observatory.

Matthew Colless received his undergraduate degree from the University of Sydney and his PhD from Cambridge. He held positions in the UK and USA before joining the Australian National University in 1993. From 1997 to 2001 Matthew Colless was co-leader with Dr John Peacock of the University of Edinburgh, of the largest project ever carried out with the Anglo-Australian Telescope, the 2dF Galaxy Redshift Survey international collaboration, involving more than 30 scientists from 11 institutions, and has been described as "undoubtedly Australia's largest contribution to astronomical research ever".

Prof Colless is one of the most highly cited Australian scientists with more than 110 papers on astronomy to his credit.

## Keith Williams' lecture

3rd October 2007

#### *The life sciences revolution – how engineering, cell biology and IT intersect*

Professor Keith Williams gave a lively and entertaining overview of contributions that modern science is making to health. He particularly focussed on developments pioneered in Australia, and emphasized that Australian scientists have a strong record of innovation, and the potential to make an impact on the world stage. Much of his talk was devoted to innovations in biomedical devices. He made special reference to two of these, the bionic ear, developed by Graeme Clark, and the continuous positive airways pressure device, for the treatment of sleep disorders, developed by Colin Sullivan. Both these devices are the basis of very successful Australian companies. Keith described a variety of other mechanical devices, including bionic limbs and mechanical hearts. *(Continued p.2)*

### Patrons

**His Excellency, Major General Michael Jeffery AC CVO MC (ret'd),  
Governor General of the Commonwealth of Australia**

**Her Excellency, Professor Marie Bashir AC CVO Governor of NSW**

Keith Williams Lecture continued from p.1

Keith also described ways in which developments in cell biology were being applied to medical problems. He described the novel system of spray-on skin cells for the treatment of burns, developed by Fiona Wood in Western Australia. He presented an overview of the use of stem cells in therapy, and focussed on a strategy to repair damaged heart tissue by treatment with stem cells. Finally he moved to innovation in information technology. He introduced the audience to his own recent work on the development of electronic systems to record a person's medical history. The lecture was presented in a spirited style and was supported by a fascinating selection of images.

**Bill Sewell**

### Royal Society of NSW

## Southern Highlands Branch

**October 2007**

A very successful meeting of the Branch was held on Thursday 18 October at which Dr Ken McCracken spoke about his half-century of involvement with space exploration. Over 65 members and friends attended the meeting, which I was invited to chair, with 20 enjoying a splendid dinner at the Fitzroy Inn, Mittagong, afterwards. I look forward to further invitations to participate in activities of this very active Branch.

**John Hardie**

### For those who might have missed the news

A leading Australian and international academic, Dr Michael Spence (BA '85 LLB '87) of the University of Oxford, has been appointed as the next Vice-Chancellor and Principal of the University of Sydney.

### Members

You are invited to contribute articles and notices to the Bulletin. Do you have comments to make? Are there events coming up that we should all know about? Please send in your contributions by the end of the first week of the month to the Society's office (contact details p4).

## Past President Professor Jak Kelly

Jak Kelly was born in Orange NSW where his ancestors were amongst the first settlers on a farm west of the town. As an undergraduate at the University of Sydney he was the foundation president of the SU Spelaeological Society. He was also involved in the first Interservice Music Festival, as a member of the SU Musical Society. When he was a director of the CSIRO Ski Club he helped design and build one of the first ski lodges at Perisher Valley. After some five years in the UK at Reading University and in the metallurgy division of the Atomic Energy Research Establishment at Harwell, when the first UK nuclear power reactors were being designed and built, he, with his wife Irene and family returned to join the academic staff at UNSW. He was subsequently Chairman of the Faculty of Science and Head of Physics. After official retirement he became Visiting Professor of Physics at UNSW and Honorary Professor of Physics at the University of Sydney.

He spent some years as editor of *The Physicist* and served on international editorial boards and science committees. His publications and books include materials science, ion implantation, thermoluminescence dating, radiation damage, sputtering, low energy nuclear reactions and the invention of the world's most efficient solar thermal collector surface.

Other academic positions he has held include, Professor of Electrical Engineering at Arizona State University and Professor of Applied Physics at The Technical University of Vienna. He has held Fellowships or research positions at Sussex University, in the UK, at Argonne National Laboratory and UC Berkeley in the USA.

More details are available in *Who's Who in the World* and *Who's Who in Science and Engineering*.

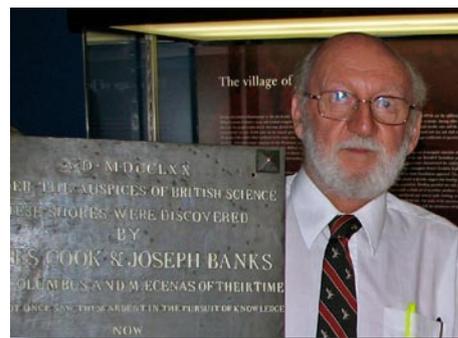
## Meet Lin Sutherland



Lin Sutherland

F. Lin Sutherland enjoys 'Royal Society', as a member of both the Royal Society of New South Wales and the Royal Society of Tasmania. He joined the NSW Society in 1975, but his Tasmanian membership goes back to 1963. He was active on the NSW Society Council between 1975 and 1999, and was President in 1987 – 88 and 1992 – 93. He particularly enjoyed participating in the Society's Student Summer Schools in those years. His background in geology led to various publications in the *Tasmanian Papers and Proceedings* and the *NSW Journal and Proceedings* of the two Royal Societies from 1964 to 2007, mostly on topics related to Australian volcanic rocks, minerals and gemstones. However, he expanded into the mass extinction events in his Presidential Addresses. He was able to indulge his twin interests in volcanoes and natural history museums, in extensive overseas travels.

A highlight of his Royal Society of NSW association was receipt of the Royal Society of NSW medal in 1991. Another event was an address to the Royal Society of Tasmania, on Dinosaur extinction, at a meeting at Government House in Hobart, with the Governor in the Chair, in 1995. Since his retirement from the Australian Museum in 2001, he continues his researches as a Senior 'Fellar' at the Museum and as an Adjunct Professor in the School of Natural History, University of Western Sydney. His interests include field trips into rocky corners of Australia and classical music.



Jak Kelly with the plaque erected at Kurnell, to commemorate the first landing of James Cook & Joseph Banks. It was erected in 1821 by The Philosophical Society of Australasia, the predecessor of the RNSW. It was later removed for restoration but numerous dimples from shot gun pellets can still be seen in the metal. The Australian tradition of shooting at signs goes back a long way.

# All there is to know about **sims**

'What is **sims**?' you ask. It is an exciting new venture established in the old defence site at Chowder Bay, Mosman, by the four leading universities, Macquarie, UNSW, UTS and Sydney. The Sydney Institute of Marine Science (**sims**) is a non-profit public company aimed at supporting marine research and education.

## Why do we need **sims**?

Because **sims** is the only marine research centre situated in a large and rapidly growing metropolitan area, an area subjected to pollution, over-fishing, species decimation, and invasion by alien species. The world's maritime cities are threatened by the changes predicted through global warming and Sydney is certainly one of them.

**sims**, through its research, will focus on ensuring that Sydney's waters will be sustainable for commercial and recreational users.

**sims** is run by a Board of Directors, including four university representatives, the head of the Scientific Advisory Committee (SAC), and two independent public members.

SAC comprises 16 scientists and together with the Chief Operating Officer (COO), they advise on scientific research programs.

**sims** has been joined by four Associate Members: the Universities of Wollongong and Newcastle; the Australian Museum, and the Department of Primary Industries. In return for their financial support they have access to research facilities.

Base funding to cover lease, facilities and two employees, is provided by the four Member Universities. Set-up grants have come from the universities and government.

Take a look at the **sims** website [www.sims.org.au](http://www.sims.org.au) to learn about current and future research projects. The fishermen amongst you will be delighted to know that one of the projects involves the release of Mulloway fingerlings (Jewfish for those old enough to remember) into the estuaries in and around Sydney Harbour.

## Why does **sims** need you?

**sims** needs community and corporate support. Philanthropy is essential to an organisation that so benefits our community and its future, especially when we are facing such threatening global changes. Funding is urgently required to support research facilities and community programs.

Perhaps you might like to become involved in **sims** and its activities. You could join us to become one of either a Member, a Patron or a **FutureMaker**.

You are more than welcome to visit us at **sims**. Chowder Bay is one of the most beautiful bays within our exquisite Sydney Harbour. You can sit at one of the cafés or restaurants after taking a look at the aquaria and current research. On the first Friday of each month, from 10.00 – 11.30 am, A/Prof Iain Suthers (UNSW), the Mulloway man, will be on hand to explain the many research projects. Professor Frank Talbot and Robyn Stutchbury will also be there to show you some of the beautifully restored buildings being leased by **sims**.

**For details visit [www.sims.org.au](http://www.sims.org.au) or call Chief Operating Officer, Paul Hallam on 02 9969 2664 or contact **sims** by email: [info@sims.org.au](mailto:info@sims.org.au)**

## President's Column

October 2007

On Tuesday 2 October I attended the launch by HRH The Duke of Kent of The Royal Institution of Australia in Adelaide and the State Dinner that followed. This was an important event for science in Australia and the Royal Society of NSW was part of it. The advent of the Royal Institution will mean increased opportunities to increase the profile of science in Australia.

The Royal Institution also kindly offered the Royal Society the opportunity to invite a small number of guests to a fundraising dinner held at the Powerhouse Museum in Sydney the following Saturday in the presence of HRH The Duke of Kent. This was an opportunity for us to talk science with a wide range of business and political leaders.

Baroness Professor Susan Greenfield, the Director of the Royal Institution, spoke eloquently and provocatively about the importance of science for the future of humanity and science broadcaster Robyn Williams moderated a brief debate about this with guests. We hope to be able to engage further with the Royal Institution of Australia to explore our common goals for science.

I'm pleased to report that work is continuing on making enhancements to our website. Issues of appearance, content and functionality are being worked through by the newly-formed Publications Sub-committee.

Council unanimously endorsed the return of Dr Tony Baker from UTS to Council to fill a casual vacancy. Tony will concentrate initially on revitalising our Studentships program, which will hopefully be a productive source of new members.

*John Hardie*

### Christmas Party 2007

*Royal Society members are invited to kick up their heels at this year's celebrations to mark the end of a busy year. Wednesday 5th December at St Pauls College immediately following the Clarke Memorial Lecture. Pencil it into your diary now.*

**Details in Bulletin 310**

## Spare a moment for a little mirth...

These howlers have been posted on the Australian Science Communicators' List by Dr Will Rifkin, Director of the UNSW Science Communication Program.

I have selected a few from Will's many, mainly with Matthew Colless in mind:

*While the earth seems to be knowingly keeping its distance from the sun, it is really only centrifugating.*

*Most books now say our sun is a star. But it still knows how to change back into a sun in the daytime.*

*Some people can tell what time it is by looking at the sun. But I have never been able to make out the numbers.*

*There is a tremendous weight pushing down on the center of the Earth because of so much population stomping around up there these days.*

*When they broke open molecules, they found they were only stuffed with atoms. But when they broke open atoms, they found them stuffed with explosions.*

### A further reminder about Gould's Bird Calendar 2008

As mentioned in Bulletin 308, the Royal Society of Tasmania is producing a calendar for 2008 featuring Gould's birds.

For further information and orders, contact Donna Hartley, Administrative Assistant, The Royal Society of Tasmania Telephone: 03 6211 4177; GPO Box 1166 Tasmania 7001, Australia.

## Community Heritage Project Progress report October 2007

The final report for the Community Heritage grant is due at the National Library of Australia on 9th November 2007. Our consultant, Dr Peter Tyler, has already sent in a draft of the report including a section that deals with the Society's collection housed at the University of New England. Peter, who was in Armidale for the Australian Historical Association conference, was pleased to see the care that is being taken by the UNE librarians. The collection is housed in a special Royal Society of NSW room in the Library.

I have entered the items in the collection held at the Mitchell Library from Peter Tyler's three books of handwritten notes. He and I have worked together to summarise these for each of the many individual items and files indicating level of significance and state of preservation.

Some items are of remarkable historical value. From the 19th century are letters to and from many acclaimed scientists, including Society members, such as Lawrence Hargrave, J Dana, A. Liversidge and Edgeworth David.

A notable quote came by telegram (29/3/1983) from the then President of the Australian Academy of Science, Professor AJ Birch referring to the Society's collection: 'The academy regards the library as of unique national importance and wishes to take all possible steps to conserve the library and its historic core.' Here we are almost 25 years later and very few steps have been taken.

Peter has collected material he believes will form the basis of a history of the development of science in Australia and the important role played by the Royal Society of New South Wales.



*The locked room with a plaque proclaiming it to be 'The Royal Society of New South Wales Collection' located within the Dixon Library at the University of New England.*

Robyn Stutchbury

### Receiving your copies of the Bulletin

Thanks to all those who responded to our request to let us know your preferences for receiving the Bulletin and Proceedings. Eventually it would be ideal to be able to send the Bulletin out by email or via the Society's Website. However, there are many who do not yet have access to the internet and so we will continue to send copies by post.

For those who have not yet done so, please send your name and contact phone number or email address together with your preference for receiving the Bulletin either by email or post.

A special thanks to those who commented so favourably on the new format. It is encouraging to hear from you.

Robyn Stutchbury

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