



The Bulletin 368

The Royal Society of New South Wales

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July 2013

Future Events

Lectures in Sydney are held on the first Wednesday of the month at 6:30pm.

August

Wednesday 7 August 2013

6:00 pm for 6:30 pm

1213th OGM

How numbers came to rule the world: Luca Pacioli, Leonardo da Vinci and the merchants of Venice on Wall Street

Delivered by:

Jane Gleeson-White

Powerhouse Museum

500 Harris St, Ultimo

\$15/\$10 concession, Powerhouse Museum and RNSW members

NB: Refreshments at 6:00pm

Tuesday 13 August 2013

6:00pm

Poggendorff Memorial Lecture

Biodiversity & the Future of Agriculture

Delivered by Prof Geoff Gurr

Lecture Theatre 3

Charles Sturt University

Leeds Pde, Orange

Refreshments served afterwards

Thursday 15 August 2013

6:00 pm for 6:30 pm

Dinner with Professor Doherty

Union, University and Schools Club

25 Bent St, Sydney

Members and Fellows: \$85.00 plus optional tax deductible donation.

Non-members: \$95.00 plus optional tax deductible donation.

Corporate table: \$185.00 per person

Thursday 15 August 2013

An evening with Peter Doherty AC

Union, University & Schools Club, 25 Bent St, Sydney City

6:00 for 6:30 pm



Nobel Laureate Professor Peter Doherty AC is our guest of honour at a special dinner for Royal Society of NSW Fellows, Members and friends. Come and join us to support the Society and to meet Professor Doherty and hear about his most recent ground-breaking work.

Professor Doherty has dedicated his life to science with a vision to improve global health, well-being and prosperity. He has attracted many prestigious international awards and has been a Fellow of the Australian Academy of Science since 1983. He was Australian of the Year in 1997 and is one of Australia's most

highly respected scientists.

Register online by clicking [here](#) or copying and pasting the following link into your browser:

http://royalsoc.org.au/generator/assets/documents/2013/Doherty_dinner_booking_sheet_Aug_13.pdf

A separate booking form has also been included with this copy of the Bulletin.

Please contact the office if you have any difficulty booking.

WEDNESDAY 7 August 2013

6:00 for 6:30 pm start

How numbers came to rule the world:

Luca Pacioli, Leonardo da Vinci and the merchants of Venice on Wall Street

Delivered by: Jane Gleeson-White

Powerhouse Museum 500 Harris St, Ultimo

\$15/\$10 concession, Powerhouse Museum members and RNSW members

Registration:

Booking essential on the Powerhouse Museum website:

http://www.powerhousemuseum.com/whatson/talk_Gleeson-White.php

Refreshments will be served from 6:00pm

The main switchboard phone number for the Museum is (02) 9217 0111

Patrons of The Royal Society of NSW

Her Excellency Ms Quentin Bryce AC CVO, Governor-General of the Commonwealth of Australia

Her Excellency Professor Marie Bashir AC CVO Governor of NSW

From the President



It's hard to believe that we are already in the second half of 2013! The first half of the year has been busy and very successful – our Fellows investiture in March, our annual dinner and awards night in April, a very successful Forum in June, all of which was interspersed with a number of extremely interesting monthly lectures. The most recent of these was the talk by the NSW State Librarian, Dr Alex Byrne.

The second half of the year will be just as interesting. This week, we have Jane Gleeson-White presenting her very interesting talk “How numbers came to rule the world: Luca Pacioli, Leonardo da Vinci and the merchants of Venice on Wall Street”) held in conjunction with the Powerhouse Museum.

On Tuesday, 13 August, at Charles Sturt University in Orange, Professor Geoff Gurr, Professor of Applied Ecology at Charles Sturt University will deliver the Poggendorff Memorial lecture, “Biodiversity and the future of agriculture”. The Poggendorff lecture has only been delivered three times since its inception in 1987, the last time in 1993. The Council felt that this lecture should be revitalised and we were delighted that Professor Gurr was available to present it.

On Thursday 15 August we have “An evening with Peter Doherty” at which Peter Doherty AC, the 1997 Nobel Prize winner in Physiology or Medicine will be spending a couple of hours with our members and some invited guests. If you haven't registered already, please do so – we expect it to be heavily subscribed.

Our awards process is about to commence and both the Clarke and Pollock lectures will be held later in the year. If you know of colleagues whom you believe are worthy

of one of the society's awards, please initiate the nomination process (full details are available on our website at <http://royalsoc.org.au/awards/awards.htm>).

The Council is also undertaking a substantial review of the Rules and Bylaws of the Society to modernise them and make some changes that we expect will give further opportunities to increase our membership. As mentioned last month we are also working on establishing alliances which we expect will add significant value for members.

It's most important that we continue to increase our membership base – please nominate any people that you think might be interested in the work of the Society in the very interesting things that we do. (Nomination forms can be downloaded from the website.)

Donald Hector

Pollock Memorial Lecture



The Society announced at its July meeting that the Pollock Memorial Lecturer for 2013 is Scientia Professor Michelle Simmons, Director of the Australian Research Council Centre of Excellence for Quantum Computation and Communication Technology at the University of New South Wales.

Professor Simmons is Chair of the Australian Academy of Science National Committee for Physics, an Associate Editor of IEEE Journal for Nanotechnology and has recently been recognised by the Bulletin and Cosmos Magazine as one of Australia's top ten scientific minds under the age of 45. In 2008 she was awarded a second Federation Fellowship by the Australian Government.

The Pollock Memorial Lectureship has been awarded about every four years since 1949 and is sponsored by the University of Sydney and the Royal Society of NSW in memory of Professor James A. Pollock FRS, the second Professor of Physics at the University of Sydney (1899-1922) and a member of the Royal Society of NSW for 35 years. The previous Pollock Lecturer was Nobel laureate and Society Fellow Professor Brian Schmidt.

Wednesday 23 October 2013
6:00 pm
Eastern Ave. Auditorium, University of Sydney

Details in subsequent Bulletins.

New Members of the Society

We welcome the following new members to the Society:

- Man Fai Ho

For information about membership please contact the Society's office or visit the Society's website or contact Emma at royalsoc@royalsoc.org.au

We encourage members to introduce new members to the Society.

Report on the 1212th Ordinary General Meeting

Held on Wednesday, 3 July 2013

Caring for highly processed wood pulp?

The role of the State Library in the 21st century



At the 1212th ordinary general meeting of the Society held on Wednesday 3 July 2013, we were delighted to welcome Dr Alex Byrne, State Librarian and Chief Executive of the State Library of NSW. Dr Byrne gave a wide-ranging talk about the State Library and the extraordinarily valuable collection that it holds.

The State of NSW is fortunate to have perhaps the most important collection in Australia. There is no other state library that is its equal and the only Australian library that might come close is the National Library in Canberra. The State library is a library of deposit (meaning that there is a legal requirement for every printed publication produced in the State of NSW to be lodged with the library. There are two other libraries of deposit in NSW – the Parliamentary Library and Fisher Library at the University of Sydney). The collection that the Library houses extends to 138 linear kilometres of shelf-space and this is being added to at a rate of 2 linear km per year. The collection represents one of the major assets of the State of NSW and is valued at \$2.1 billion.

Examples of important items that the Library holds are the stern-plate of *HMS Resolution* (James Cook's ship on his second and ill-fated third voyages) and Cook's ammunition belt. There is an extensive World War I collection and of particular importance are personal diaries kept by soldiers. Many soldiers kept these small, notebook-size dairies and they give deep insight into the personal experiences of the writers. There is even one diary that was written by an Australian General, despite these being strictly against regulations.

The collection is diverse and is not restricted to printed materials. There are many important paintings, the entire collection from the Packer Press of newspaper photographs (over 350,000 images) and a wide variety of other artefacts that give an enormous insight into the cultural narrative that has unfolded over the last 200 years or so (the Library started as the *Australian Subscription Library* in 1826).

Donald Hector

The Poggendorff Memorial Lecture

Presented by the Royal Society of NSW in conjunction with Charles Sturt University and Orange City Council

Professor Geoff Gurr, Professor of Applied Ecology at Charles Sturt University will speak about: *Biodiversity and the future of agriculture*

Professor Gurr will address one of the world's most urgent challenges when he answers the question:

Can we feed 9 billion people by 2050?

Not only do we have to meet that challenge, we have to do it in the face of declining availability of good-quality land and water, and the need to preserve biodiversity to provide critical ecosystem services. Professor Gurr will draw on his international research program to explain how biodiversity can be harnessed to provide effective pest suppression and illustrate how on-farm biodiversity can advantage growers and the wider community.

Professor Gurr is well known internationally for his work on pest biology and insect-plant interactions. This has been the major focus of his research group over the last 20 years, during which time he has garnered outstanding international recognition including Fellowship of the Royal Entomological Society of London.

The Poggendorff Memorial Lecture honours Walter Hans George Poggendorff, the eminent Australian agriculturalist, former Chief of the Division of Plant Industry in the NSW Department of Agriculture and former Hon. Librarian of the Royal Society of NSW. Venue: Lecture Theatre 3, Charles Sturt University, Leeds Parade, Orange

Free admission - bookings not required.

Tuesday 13 August 2013

6:00 pm.

Refreshments will be served following the lecture.

Southern Highlands Branch

Report of July Meeting 2013

“Nuclear Energy for Australia ”

Presented by Mr Tony Irwin

With 434 reactors operable in 31 countries, nuclear power has been an important source of energy security for many countries for 50 years. The advantages of nuclear as a baseload, low emissions generation technology are clear and understood, but there are often concerns expressed about safety, cost and radioactive waste. In addressing his 50-person audience, Tony Irwin examined these concerns and presented options for nuclear power in Australia.

Some of the main advantages of nuclear power are that it operates without greenhouse gas emissions and that reactors do not have to be located close to the fuel source. The NASA Goddard Institute for Space Studies and the Columbia University Earth Institute estimated in 2013 that global nuclear power had prevented an estimated 1.84 million air pollution related deaths. If the deaths per Twhr are compared across global averages for 7 different technologies, nuclear power is a clear winner. For comparison, nuclear scored <0.1, wind 0.15, solar rooftop 0.44, hydro 1.4, gas 4, oil 36 and coal 170.

Tony Irwin also presented interesting and telling comparisons of greenhouse gas emissions from electricity generation. With all units measured on the same scale, France with high dependence on nuclear technology scored 79, Tasmania with good levels of hydro 320, UK 457, China 766, Australia 841 and Victoria the high figure of 1200 due to its dependence on brown coal. Clearly, nuclear technology is the lowest cost, proven, low emissions baseload for electricity generation for Australia.

Many questions were asked by the audience concerning the safety aspects of nuclear technology, in particular the recent events at Fukushima. That led to a lengthy discussion on “safety culture” and risk assessment. The speaker’s opinion was most reassuring, as he described the safety aspects of the reactors themselves. In the case of Fukushima, which he visited on numerous occasions after the crisis, he was of the opinion that external factors, such as the insufficient height of the seawall, were largely to blame. Other nearby reactors with adequate walls were not affected in the same way. He praised the rapid response of the Japanese authorities in removing people from the danger zone. No lives were lost.

Tony Irwin commissioned and operated eight nuclear power stations for British Energy for more than 30 years. He was Reactor Manager at ANSTO during the commissioning and early operation of the new OPAL research reactor. His experience with the nuclear fuel cycle also includes managing fuel strategies for ANSTO and representing Australia at international meetings. Following the Chernobyl accident, Tony was a member of the World Association of Nuclear Operators (WANO) team who worked with Russian engineers to improve their safety culture. He is currently chairman of Engineers Australia Nuclear Engineering Panel.

With this wealth of experience behind him, Tony Irwin is of the firm opinion that SMRs –small modular reactors – are an emerging option for Australia. This recommendation is made on the basis of the small grids required in Australia and the remote locations that have to be served. He emphasized the extensive support and guidance that is now available to countries starting a nuclear program, particularly from the International Atomic Energy Agency (IAEA)

A nne Wood

Contact your office bearers

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