



The Royal Society of New South Wales Bulletin and Proceedings 332

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February 2010

Future Events 2010

Wednesday 12 March 2010 6.30pm

Society's Annual Dinner

Forum Restaurant, Darlington Centre,
174 City Road, Sydney University
(see details at right)

Wednesday 7 April 2010 7pm

Annual General Meeting

Lecture Room 1, Darlington Centre,
University of Sydney

Southern Highlands Branch

Meetings are held on the third Thursday of each month in the Drama Theatre at Frensham School, Mittagong (enter off Waverley Parade), at 6.30pm.

next talk

Thursday 18 March 2010, at 6.30pm

Dr Michael McKinley from ANU will speak on **Tridentine America**.

This meeting will be preceded by the Branch AGM starting at 6 pm.

Bulletin Editor, Bruce Welch

Royal Society of NSW Annual Dinner 12 March at the Forum Restaurant, Darlington Centre



The 2010 Annual Dinner of the Royal Society of NSW will be held on Friday 12 March at 6:30 for 7:00 pm at the Forum Restaurant, Darlington Centre, 174 City Road, Sydney University.

The NSW Chief Scientist and Scientific Engineer, **Professor Mary O'Kane**, will present the Society's Awards for 2009 and give an Occasional Address.

All members, friends, colleagues and family are cordially invited to attend.

This is a table-waited three-course dinner including sparkling wine/water on arrival and a range of table wine.

The price of \$85.00 has been kept as last year's level.

The bar will open for additional purchases.

Booking with payment is due by Friday 5 March 2010.

Please indicate special dietary requirements (including fish) when booking.

Contact the office on 9036 5282 for more information.

Royal Society Councillor receives award

Marian Haire, the Society's Hon. Treasurer, received an Australia Day Achievement Medallion for her significant contribution to the Public Service over the past year.

Marian is the manager of the National Measurement Institute (NMI) Training Section. As part of the transition to national trade measurement Marian has lead the work to develop a qualification framework for trade measurement inspectors and established NMI as a Registered Training Organisation.



Marian Haire (left) and Mark Patterson, Secretary of the Department of Innovation, Industry, Science and Research

Patrons of The Royal Society of NSW

Her Excellency Ms Quentin Bryce AC

Governor-General of the Commonwealth of Australia

Her Excellency Professor Marie Bashir AC CVO Governor of NSW

The Society's Studentship Lectures delivered on Wednesday 2 December 2009 at St Paul's College

Minors, molecules and maintaining genetic diversity: a great end to the events of 2009!

At the 2 December meeting of the Royal Society of NSW, the audience was treated to three engaging presentations from our most recent studentship award winners, Danielle Sulikowski, Isa Chan and Tamara Keeley confirming that they were indeed worthy recipients.

Every Sydneysider is familiar with the noisy minor but not many are as knowledgeable on the feeding behaviour of these urban dwellers as Danielle Sulikowski. Danielle gave a most interesting talk on her PhD research which focuses on spatial memory and specific foraging demands of the noisy miner, *Manorina melanocephala*. The tendency of many nectar-feeding birds and insects to avoid locations where they have recently found food is called 'win-shifting'. Danielle is investigating whether noisy minors have a win-shift

bias and if they do, is this sensitive to the foraging context. Danielle is at Macquarie University's Department of Brain, Behaviour and Education.

Many biologically active compounds such as amino acids, sugars and enzymes are chiral. Isa Chan enlightened us on chirality, or 'handedness', as the structural characteristic of a molecule that cannot be superimposed on its mirror image. She clearly communicated through a simple demonstration that chirality causes some molecules to taste and smell differently. And, importantly causes drugs to act differently: the most famous chiral drug being thalidomide. Isa's research is in devising more efficient methods in the generation of chirally pure compounds by identifying the solvent used for crystallisation. Isa is at the School of Chemistry, University of New South Wales.

Tasmanian Devil Facial Disease is fatal. It was first identified in 1996 and has since caused the Tasmanian Devil to be placed on the endangered species list in 2008 as its impact has been so significant. Tamara Keeley, currently of the Faculty of Veterinary Science, University of Sydney and Taronga Conservation Society of Australia, is undertaking research into the preservation of this iconic species through artificial insemination of cryopreserved spermatozoa. Tamara described her work on understanding the reproductive biology of the females and developing techniques for the cryopreservation of sperm establishing that the freezing rate is important to their viability and motility. Important work as the Tasmanian Devil population is in steep decline.

There was a lively discussion with Danielle, Isa and Tamara as we moved off into the Royal Society's Christmas party after an excellent start to the evening. We will watch their growth in the scientific profession with interest and encourage other young students of science to join in with the society's activities.

Julie Haeusler,
Councillor

Southern Highlands Branch Report of February Meeting

The Life History of the Universe
Professor Brian P. Schmidt, ARC Laureate Fellow,
Australian National University, Mt Stromlo
Observatory, The Research School of Astronomy
and Astrophysics



Professor Brian Schmidt was welcomed by an audience of 85 when he arrived to address the February meeting of the Southern Highlands branch at 6.30pm on February 18th in the Drama Theatre, Frensham School, Mittagong.

Brian Schmidt set the scene for the astronomical distances he would be discussing in the lecture by using as

a ruler the speed of light, 300 000 km per sec. At this speed, light travels 7.5 times around the earth each second. He described the *Big Bang* as having occurred approximately 14 billion years ago, an estimate he himself had made in his thesis, and which was later confirmed by newer and more sophisticated experiments.

It was thought for many years that the universe would ultimately end in the *Big Crunch*, or the *Gnab Gib*, in Brian Schmidt's words, as gravity pulled back all matter created by the *Big Bang*. However, Brian Schmidt was led to the conclusion from his scientific observations that the universe would become infinitely large due to the factor that he terms "dark energy".

Schmidt's team found that the expanding universe was in fact speeding up as it expanded, rather than slowing down due to gravitational forces. As early as 1916, Vesto Sipher, using the Doppler shift, found that nearby galaxies were moving away from us and that the universe was expanding. The Schmidt team postulated that their finding that the expansion was accelerating was

due to some unknown factor pushing the universe further out, in complete contradiction of the traditional view that gravity would slow down the expansion. The Schmidt team described "dark energy" as the factor responsible for the accelerating expansion. This was an extraordinary discovery, and one that went on to win the prestigious Gruber Prize for Cosmology for Brian Schmidt.

The experimental data of the Schmidt team was largely based on observations of supernovae which are exploding stars typically five billion times brighter than our sun. The team used the largest telescopes in the world. In Australia, the telescopes used were the Anglo-Australian telescope, the ANU 2.3m telescope and also the Great Melbourne Telescope that was located at Mount Stromlo but which burnt down in 2003. Overseas telescopes included the Hubble Space Telescope, the Gemini Telescopes and the KEK telescopes. Brian Schmidt is looking forward to using the Giant Magellan Telescope for which the Australian Government has announced \$88M support. This telescope will use seven 8.4m mirrors combined to create

the equivalent of a 24m telescope.

One obvious conclusion which can be drawn from the little understood dark energy, and its effect on accelerating the expansion of the universe, is that galaxies that are in the universe today will all move further and further away from us at an ever increasing rate. The more the universe expands, the faster will be the expansion, so that at some point in time, it follows that the light from these galaxies will no longer be able to reach us. Over the next billions of years as the process goes on, most of the universe will become completely invisible to us because it will be too far for the light to get back to us.

The ultimate outcome is that dark energy will continue to accelerate the Cosmos. The growth of space created by the expansion will occur more quickly than even light can travel. We will live in an empty universe except for our own "super galaxy". The universe will, at an ever increasing rate, expand and fade away.

At the end of the lecture, Brian Schmidt dealt with as many questions as time allowed. Anne Wood gave the vote of thanks, and the audience showed with warm acclamation how much they had enjoyed this stimulating and exciting lecture.

Anne Wood

Southern Highlands Branch **Next meeting: Thursday 18 March** **2010**

The Annual General Meeting of the Southern Highlands Branch of the Royal Society of NSW will be held at 6.00 pm on Thursday 18th March, 2010 in the Drama Hall at Frensham School, Mittagong. Enter off Waverley Parade.

The AGM will be held immediately prior to the monthly lecture, which will commence at 6.30pm. This month we will hear from Dr Michael McKinley, Snr Lecturer, International Relations & Strategy, ANU, who will talk on **Tridentine America**.

From the President

Last year ended with a real bang with two major events occurring in December. At the first of these, the presentation of the Studentship Awards on 2 December, I was impressed with the high level of professionalism and dedication shown by our three winners. The Christmas Party that followed was a very enjoyable event. Once again the venue proved a major winner, and to top it off, for the conclusion of the International Year of Astronomy, we had a perfect moonrise over the gabled roofs of the St Paul's cloisters.

On 16 December we saw the launch of Roy MacLeod's major work on Archibald Liversidge, published jointly by the Society and Sydney University Press, by the Chancellor of the University, and our Patron, Professor Marie Bashir. The event was held in Liversidge's old lecture theatre in what is now the Pharmacy Building at the University. We are grateful to the Faculty of Pharmacy for supporting the launch.

This year we have already had one event, the Four Societies Lecture, held on 17 February at the Institution of Engineers Chatswood offices. These events are always popular and this year's was no exception with an overflowing audience of over 100. I must thank Dr Clarence Hardy for allowing us to have a brief Ordinary Meeting at the start of this lecture.

We have also seen a resurgence of activity associated with Science House. Dr Tim Entwisle, Executive Director of the Royal Botanic Gardens Trust, kindly hosted a meeting on 28 January which took stock of where we are with this project. Representatives from the Royal Society of NSW, the Linnean Society of NSW, the Australian Academy of Science, the Geographical Society of NSW and others interested in the success of this project met and resolved to continue to press the government for recognition of this worthy cause.

Councill member Julie Haeusler and I have met with the President of the RACI NSW Branch, Dr Adam Cawley, to discuss issues of mutual interest and to plan for the Society's Liversidge Lecture, which is due to be held again this year. We plan to have the lecture towards the end of the year as a preliminary function to kick off the International Year of Chemistry, 2011.



On 4 February I attended a reception at the Australian Museum to mark the conclusion of *Evolution the Festival* and to celebrate Charles Darwin's 201st birthday. The event also welcomed the UN International Year of Biodiversity. It was attended by Darwin's great-great grandson, Chris Darwin, who lives in the Blue Mountains, and presided over by Dr Phil Batterham from the University of Melbourne, the Director of *Evolution the Festival*.

Our Annual Dinner is coming up very shortly and I would encourage everyone to attend. This year we are privileged to have the NSW Chief Scientist and Scientific Engineer, Professor Mary O'Kane, as our guest-of-honour. It will be interesting to hear from her about the important role she is playing to promote science in this state. Full details appear elsewhere in this Bulletin.

John Hardie

New Members

Six new members were announced at the February meeting of the Society:

Stewart William Franks - Full Member
Melinda Louise Challis - Full Member
Anthony Di Francesco - Full Member
Isa Yuen Han Chan - Associate Member
Tamara Keeley - Associate Member
Danielle Sulikowski - Associate Member

We welcome them into the Society.

Isolated Cases: 100 years of Australian medical research

The Society was pleased to be a Gold Sponsor for this event on Sunday 21 February 2010 at Royal Prince Alfred Hospital. A full report will appear in the next Bulletin.

Congratulations to Australia Day Honours recipients

The Society takes great pleasure in congratulating the following members and affiliates of the Society for their recent Australia Day Honours:



Professor Elizabeth Blackburn AC



Professor Jenny Graves AO



Professor Fred Watson AM



Emeritus Professor Bruce Thom AM



Emeritus Professor Robert Breakspere OAM

NOTICES

RACI News

RACI NSW Branch 2010

Workshop:

Communicating Chemistry in 2011 – The International Year of Chemistry

Saturday 27 March 9am to 5pm
Ground Floor Conference Room,
Building 12, Riverside Corporate Park,
CSIRO 11 Julius Avenue North Ryde

2010 NSW RACI Branch President's Awards Dinner

Celebrating Achievements and Excellence in Chemistry

(This will follow the Workshop held on the same day)

Presentation of the RACI FELLOWSHIPS and 50 Yr Memberships & presentation of "PRESIDENTS AWARD"

GUEST SPEAKER Dr Thomas Barlow

Thomas Barlow is Australia's leading research strategist. Over many years, he has advised a range of technology-intensive companies, as well as many of Australia's universities and major government research agencies. He has held prestigious research fellowships at Oxford University in the UK and at the Massachusetts Institute of Technology. He has been the Science Adviser to the Minister for Education, Science and Training in the Australian Government, and has worked as a weekly columnist for the Financial Times newspaper in London. Highly respected within the Australian scientific community for his imagination, optimism and vision, Dr Barlow is also widely recognised as the author of the essential book about Australian innovation, *The Australian Miracle*. He will present a talk entitled "The Future of Chemistry in Australia".



Come and be part of our celebration of Chemistry at an exciting venue;

The Grand Pittwater Function Centre, North Ryde RSL Community Club Ltd, Cnr Magdala & Pittwater Roads, North Ryde 2112, Saturday, 27th March 2010, 6.30pm for 7.00pm start.

RSVP by Friday 19th March 2010
Edwina Hine, School of Chemistry, UNSW NSW 2052, Ph. (02)9663 4960, Fax (02)9385 6141, E-mail: racinsw@chem.unsw.edu.au

Dress semi formal (Jacket and Tie)
\$65 per person RACI member and their guests (includes GST)

\$55 per person Retired or Student RACI member (includes GST), Non Member rate \$80 per person (includes GST)
3 course meal wine & soft drinks.

Australian Institute of Physics NSW Branch



8th General Meeting 2010

Tuesday 23 March 2010 at 6:30pm
Dr Jesse Shore, Prismatic Sciences; Living at the Speed of Light
Dr Marc Duldig, Senior Principal Research Scientist, Australian Antarctic Division; Particle Astronomy – the Second Window. Location of talks: Slade Lecture Theatre, School of Physics, University of Sydney. Refreshments are available from 6:00pm. Entrance to all events is free.

Dinner to follow at Buon Gusto Restaurant, Abercrombie St. Please contact Dr Fred Osman on 0418 444 477 to book.

Contact your office bearers

John Hardie President	02 9363 9360	Prof Heinrich Hora Vice President	02 4627 7769
Clive Wilmot Vice President	02 4886 4199	Robyn Stutchbury Vice President	02 9427 6747
Bruce Welch Hon. Secretary (General)	02 9569 9928	Prof Jak Kelly Hon. Secretary (Editorial)	02 9419 6877
Marian Haire Hon Treasurer	02 8467 3575	Alan Buttenshaw	02 9569 0236
Jim Franklin	02 9514 2195	A/Prof Bill Sewell	02 9295 8434
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The Bulletin and Proceedings is issued monthly by the Royal Society of New South Wales

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