

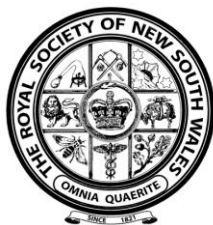


# The Royal Society of New South Wales

ABN 76 470 896 415

*"for the encouragement of studies and investigations in Science Art Literature and Philosophy"*

## Annual Report of Council for the year ending 31 December 2013



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### ABOUT THE SOCIETY

The Society is the oldest learned society in the Southern Hemisphere, tracing its origin to the *Philosophical Society of Australasia*, founded in Sydney in 1821. It became *the Royal Society of New South Wales* by Royal Assent in 1866 and was incorporated by an Act of the NSW Parliament in 1881. The Society exists for ...*the encouragement of studies and investigations in Science Art Literature and Philosophy...*, in particular: publishing results of scientific investigations in its *Journal and Proceedings*; conducting monthly meetings; awarding prizes and medals; and by liaison with other learned societies within Australia and internationally.

Membership is open to any person whose application is acceptable to the Society. The Society welcomes both members and non-members to its activities.

### OFFICE BEARERS

The members of the Council of the Society for 2013 were elected at the Annual General Meeting held on Wednesday 3 April 2013. They hold office from that date until the next Annual General Meeting. They are:

Patrons	Her Excellency the Honourable Quentin Bryce AC CVO Governor-General of the Commonwealth of Australia Her Excellency Professor Marie Bashir AC CVO Governor of New South Wales
President	Dr Donald Hector BE(Chem) PhD (Syd) FICHEM FIEAust FAICD MRSN
Vice Presidents	Mr John Hardie BSc (Syd) FGS MACE MRSN Em. Prof. Heinrich Hora DipPhys Dr.rer.nat DSc FAIP FInstP CPhys Em. Prof. David Brynn Hibbert BSc PhD(Lond) CChem FRSC RACI
Hon. Secretary (Ed.)	Prof. Michael Burton BA MA (Cantab) PhD (Edinb) FASA FAIP
Hon. Secretary (Gen.)	Mr Colin Bradley BBus MA (Bus Res) MHA GAICD
Hon. Treasurer	Mr Shakti Ram BComm (Macq) MBA (Deakin) CPA GAICD
Hon. Librarian	(Vacant)
Councillors	Prof. Richard Banati MD PhD Mr David Beale BSc(Tech) (NSW) FIEAust Mr Brendon Hyde BE(Syd) MEngSc(NSW) MICE (Lon) FIEPak FIEAust CPEng Em. Prof. Roy MacLeod AB (Harvard) PhD, Litt D (Cantab) FAHA FASSA Dr Frederick Osman BSc(Hons) PhD(UWS) Grad Dip Ed FACE MAIP MRSN SSAI JP
Southern Highlands Branch Chair	Mr Hubert Regtop BSc (NSW)
Central West Branch Chair	Assoc. Prof. Maree Simpson BPharm (UQ) BSc(Hons) (Griffith) PhD (UQ)

The Council met eleven times during the reporting period at the Society's Rooms, and in addition, several meetings of Council sub-committees were held. Sub-committees for Awards, Events, Fellows, Finance and Risk, Historical Assets, and Publications were active during the reporting period, as were Branches in the Southern Highlands and Central West (see later in this report).

#### **OFFICE**

The Society occupies premises at 121 Darlington Road, University of Sydney. The Society is grateful to the University of Sydney for providing this accommodation to the Society.

#### **LIBRARY**

The Society continues to operate a journal exchange program with a large number of overseas organisations. The exchanged journals are housed in the Dixon Library at the University of New England, which maintains and provides full access to this material. The Society wishes to thank the University for its support of the Society's collection. Further library holdings of the Society continue to be housed in secure warehouse accommodation. The Society thanks Mr Clive Wilmot for this contribution.

#### **PRESIDENT'S REPORT**

The Council has continued its on four main areas of activity: presenting events and lectures by distinguished speakers that are both important and interesting in the today's context; continuing to develop the Society's prestigious awards programme; continuing to develop our main publication, the Journal and Proceedings of the Royal Society of New South Wales; and reversing the long-term, gradual decline in membership. These remain our major areas of focus, with the last of these – developing our membership base – being by far the most important. In addition, in the last 12 months we have embarked upon a substantial modernisation of our back-office systems, in particular, our membership database and our accounting system.

The programme of events, coordinated by John Hardie, was a full one, with several months seeing more than one event being held. Our signature events, the annual dinner and awards presentations and the Royal Society of NSW Forum 2013, together with a number of special events and named lectures were all very well attended. The events programme was well integrated with the awards programme and during the second half of the year, the Poggendorff Memorial, the Pollock Memorial Lecture and the Dirac Lecture were all held.

The Awards Committee, chaired by Professor Brynn Hibbert and advised by a panel consisting of the Deans of Science of the NSW-based universities, chaired by the Chief Scientist and Engineer of NSW, Professor Mary O'Kane, has made substantial progress with the Society's awards programme. There was a truly outstanding field of candidates for the Society's 2013 awards and it was gratifying that the James Cook Medal, that had not been awarded for some years, was won by very distinguished Australian. In addition, for the first time in many years, the Poggendorff Memorial Lecture was presented in conjunction with Charles Sturt University in Orange. We hope to continue this practice in future years. A new prize, the Royal Society of NSW History and Philosophy of Science Prize was instituted and it is expected that this will be awarded in 2014.

Professor Michael Burton continued to do an excellent job as editor of the Journal and Proceedings. The progress made over the last few years was continued and a very

interesting mix of papers was published in 2013. Of particular note was the second edition which focused on the career of Professor Jak Kelly, a former president of the Society. This highlights a very important role for the Journal and Proceedings – a record of scientific achievement in New South Wales.

The major development for the year was the substantial change made to the Rules and By-Laws of the Society. These changes were important for two reasons: first, was to update them to make them consistent with modern corporations law; and second, and most important, was to introduce a new category of membership, that of “Fellow”. What is now referred to as Distinguished Fellowship was introduced in 2009 and was very successful in recognising highly distinguished Australians who have an international reputation in their field. But there was a big gap separating Distinguished Fellows from our general Members, many of whom are very accomplished. On 18 December 2013, the Members of the Society voted overwhelmingly to introduce this new category. It is anticipated that this will stimulate substantial interest in the activities of the Society in areas where its reputation is not widely known. It also provides a platform for liaising in cooperating with other like-minded institutions. We have already begun discussions with the NSW chapters of the four Australian learned academies regarding joint activities and there is significant interest in working together. The Council intends to make this its main area of focus in 2014.

The Council is unable to present the membership with audited accounts. Regrettably, at short notice, the honorary auditor who had agreed to undertake the audit, for personal reasons, was unable to do so. This is an entirely unsatisfactory state of affairs and efforts are underway to find an honorary auditor who is willing to undertake the task.

Acknowledgement is due to the substantial contribution made by John Hardie, Heinz Hora, Brynn Hibbert, Michael Burton, Colin Bradley, Shakti Ram and Roy MacLeod in the work they have done this year. Thanks are also due to the committee of the Southern Highlands branch, chaired by Hub Regtop for the excellent programme that they have once again provided. The Council would also like to acknowledge Ms Emma Dallas, the Society’s Executive Officer, for juggling so many activities and at the same time keeping the office running.

#### **TREASURER’S REPORT**

For many years, Society has been making small trading losses largely due to a gradual decline in membership revenue, a lack of large donations and the absence of government funding. The Council has put in plans to expand membership through the introduction of the new fellowship category, which is expected to improve the financial position.

There have also been significant increases in expenses that reflect increased activity in the Society, such as member engagement. In order to reverse the losses, the Council has determined that the Society must operate on a cost-recovery model and during 2013 introduced subscription charges for the Journal and Proceedings and other services provided to members. Charges levied for members for these products and services are heavily discounted in comparison to the rates for non-members.

## EVENTS AND LECTURES

The Society's Events Committee comprised:

Chair	Mr John Hardie
	Em. Prof. Brynn Hibbert
	Em. Prof. Heinrich Hora
	Dr Fred Osman
	President ( <i>ex officio</i> )

The Society held a full program of eleven monthly lectures in Sydney, which included the Annual Forum, in addition to special named lectures and events during the reporting period. The monthly lecture series, for the most part held at the Union Universities and Schools Club, 25 Bent Street, Sydney, were as follows:

6 February 2013	2013 Royal Society of NSW Scholarships winners: Ms Helen Margherita Smith  Ms Jendi Kepple (presented by Mr Nicholas Coombe)  Ms Anwen Hrause-Heuer	<i>Replacing Natives with Exotics: Wildlife Responses to Black Rat Invasion in the Sydney Harbour National Park</i> <i>Robust Design of Imperfection Sensitive Composite Launcher Structures/Stiffened Composite Panels</i> <i>Development of new cancer drugs based on cis-platin</i>
6 March 2013	Dr Ray Norris	<i>The evolution of galaxies</i>
3 April 2013	Prof. Michael Archer (Inaugural Fellows Lecture)	<i>An evolutionary history of Australia</i>
1 May 2013	Em. Prof. W. Boyd Rayward	<i>In an Analogue World, Envisioning the Digital Future: Paul Otlet, a Forefather of Today's Information Society</i>
6 June 2013	Annual Forum (see below)	
3 July 2013	Dr Alex Byrne	<i>Caring for highly processed wood pulp? The role of the State Library in the twenty-first century</i>
7 August 2013	Ms Jane Gleeson-White (at Powerhouse Museum)	<i>How numbers came to rule the world: Luca Pacioli, Leonardo da Vinci and the merchants of Venice on Wall Street</i>
4 September 2013	Dr Matthew Todd	<i>Open Science</i>
2 October 2013	Prof. Malcolm Walter	<i>Astrobiology: the latest from 'Curiosity'</i>
6 November 2013	Dr Mark Butler	<i>Re-thinking science education in Australian schools: development and implementation of the National Science Curriculum</i>
18 December	Winner of the AIP / Royal	<i>Probing the Nano-World with the</i>

2013                      Society of NSW Jak Kelly                      *Symmetries of Light*  
Award and Scholarship Xavier  
Zambrana-Puyalto

The Society is grateful to the Union Universities and Schools Club for providing an excellent venue for our meetings.

The Society held the third of its Forums on 6 June 2013 at the Powerhouse Museum. Andrew Funnell of Radio National's *Big Ideas* moderated a debate between:

- Professor Brian Schmidt AC FRS FRSN
- Emeritus Professor Steven Schwartz AM
- Professor Merlin Crossley, and
- Ms Judith Wheeldon AM

The topic was *Maths and science education in Australia – is there a crisis?*

The annual Four Societies Lecture was held on 27 February 2013 in conjunction with the Nuclear Engineering Panel of the Sydney Branch of Engineers Australia, the Australian Nuclear Association and the Australian Institute of Energy. This year's lecture was delivered by Prof. Stefaan Simons. His topic was *Going low carbon – the approach of the International Energy Policy Institute*.

The inaugural Fellows Lecture was held at the 1209<sup>th</sup> OGM on 3 April 2013, delivered by Prof. Michael Archer.

After a hiatus of 20 years, the Poggendorf Lecture was delivered in conjunction with Charles Sturt University, Orange, on 13 August 2013. Professor Geoff Gurr, a biologist and entomologist and Professor of Applied Ecology at Charles Sturt University, delivered the lecture on *Biodiversity and the future of agriculture*.

The Society was pleased to hold the Dirac Lecture in conjunction with the University of New South Wales and the Australian Institute of Physics. This year Sir Michael Pepper, FRS, Pender Chair of Nanoelectronics, University College London, delivered the lecture on 21 November 2013. His topic was *Semiconductor Nanostructures and Quantum Phenomena*.

The Society held its Christmas Party at the Union Universities and Schools Club on Wednesday 18 December 2013. The event was preceded by the presentation of the 2013 Jak Kelly Award.

## FELLOWS

The Society's Fellows Committee comprised:

Chair	Em. Prof. Heinrich Hora
	Em. Prof. Brynn Hibbert
	Prof. Michael Archer Dist FRSN
	Mr John Hardie
	Prof. Bruce Warren Dist FRSN
	President ( <i>ex officio</i> )

The position of Fellow was introduced by the Society in 2009 for persons of a distinguished standing in science and related fields. The first seven Fellowships were awarded by these Society's joint-patron, Her Excellency the Honourable Quentin Bryce, Governor General of Australia at Admiralty House on 29 March 2010.

After wide consultation and the consideration of the practice of other similar institutions, the Fellows Committee recommended to the Council that the membership category of Fellow ought to be available to a larger group of accomplished Australians, while preserving the distinction associated with the Society's existing 14 Fellows. The membership model in broad terms would recognise members of international distinction, members who are regarded as being accomplished and leaders in their field and the traditional membership body who belong to the Society because of their interest in encouraging and participating in the advancement of knowledge.

Reflecting this, the Society membership approved changes to the Rules and By-Laws of the Society on 18 December 2013. A new, honorary membership category "Distinguished Fellows" (Dist FRSN) was introduced and the existing Fellows were appointed to this category. The number of Distinguished Fellows is limited to 25. The membership category of Fellow (FRSN) is now available to members of the Society who are considered to be leaders in their field or discipline. Objective criteria were established for the appointment of both Distinguished Fellows and Fellows and these criteria are included in the By-Laws.

#### Events Subsequent

Since the approval of the changes in December 2013, Council has received a number of applications from highly suitable candidates for fellowship. Approximately thirty approved candidates will receive their certificates at the Society Annual Dinner on 7 May 2014.

#### **AWARDS**

The Awards Committee of Council was constituted as follows:

Chairman	Em. Prof Brynn Hibbert
	Mr John Hardie
	Em. Prof Heinrich Hora
	Assoc. Prof Bill Sewell
	President ( <i>ex officio</i> )

As done in 2012, an Advisory Panel of the Chief Scientist and Engineer of NSW, Prof Mary O'Kane, and the Deans of the Science faculties of NSW universities was invited to participate in the process. The Awards Committee received thirteen nominations for the four awards and nine nominations for the three Scholarships to be awarded. When nominations for the awards of the Society were all received, a meeting of the Advisory panel with Prof Hibbert in attendance ranked the candidates and gave advice on their merits. This was communicated to the Awards Committee who made final recommendations to the Council.

At the meeting held on 27 November 2013, the Council made four awards. They were:

Warren Burfitt Prize	<b>Prof. Michelle Simmons</b>
Clarke Medal (geology)	<b>Prof. William Griffin</b>
Edgeworth David Medal	<b>Assoc. Prof. David Wilson</b>
James Cook Medal	<b>Prof. Brien Holden</b>

The awards will be presented at the Annual Dinner to be held on 7 May 2014.

The winner of the Jak Kelly award made by the Royal Society of NSW in conjunction with the Australian Institute of Physics was Mr Xavier Zambrana-Puyalto. Mr Zambrana-Puyalto gave a presentation on his work and was presented with the award by Mrs Irene Kelly at the general meeting held on 18 December 2013

The Society's Scholarships for 2013 were awarded to Mr Jiangbo Zhao, Mr John Chan and Ms Jessica Stanley. Each of the scholarship winners made presentations on their research work at the general meeting held on 5 February 2014.

### **JOURNAL AND PROCEEDINGS**

Two editions of the Journal and Proceedings of the Society were published in 2013. Volume 146, Part 1 contained three refereed papers, two invited discourses and two thesis abstracts. The refereed papers featured articles by Robert Marks on the Global Financial Crisis, by Ragbir Bhathal on the career of astronomer Warrick Couch, and by Herma Buttner on the National Imaging Facility. The two invited discourses included an essay on the invention of the pendulum weight shift hang glider by its inventor, John Dickenson - a fascinating tale which developed from the sport of water skiing, together with a treatise by Society President Donald Hector on the humanist paradox.

Volume 146, Part 2 featured a special tribute to past Society President, the late Jak Kelly, with colleagues and former students writing about their interactions with Jak, and how he mentored them during formative stages of their own careers. David Mills introduced us to the then unfashionable world of solar collectors, Patrick Krejcik described the Stanford Linear Accelerator, where he was led from the UNSW High Voltage Accelerator Laboratory. Zoltan Kerestes extolled several lessons for the practicing scientist learnt under Jak's tutelage. Jim Williams discussed the trials and tribulations of Cockcroft-Walton accelerator, and how this led him into the field of ion channelling. Colleague Heinrich Hora, and also Society Vice-President, describes research avenues in theoretical physics that Jak's experimental endeavours turned him towards. We also heard from the current head of the School of Physics at UNSW, Richard Newbury, on how this job has changed since Jak's tenure in it more than two decades ago. Finally, the winner of the Society's 2012 Jak Kelly award, Andrew Ong, described his own research in the field of searching for variations in the fundamental constants of nature. This edition of the Journal had an additional refereed paper, two thesis abstracts, and a description of all the Society awards and award winners for 2013, together with a listing of all the talks given at Society meetings during the year.

Council has been considering new directions for the Journal. In particular, and following the success of the Jak Kelly edition, we see an opportunity for publishing articles recording historical events associated with Australian science, particularly by those involved with their development. We are keen to hear of any ideas that members may have for suitable articles, especially if they would like to write them.

Council has started a category called "Invited Discourses" for the Journal, allowing authors to expound on a particular area of interest, and also perhaps including a degree of commentary about events that happened in it. Council is also seeking new members to the Editorial Board of the Journal. In particular, it encourages members of the Editorial Board to take the



lead in soliciting articles for further special issues of the Journal, for instance perhaps based on the historical background to the development of research areas within Australia. Council also welcome other ideas for developing the Society's Journal.

#### **BULLETIN**

The Bulletin and Proceedings of the Society was published monthly during the year, except for December. The Council thanks the authors of short articles and for information submitted to the Bulletin and to members who assisted in its preparation and distribution, particularly the executive officer Ms Emma Dallas.

#### **SOUTHERN HIGHLANDS BRANCH**

The Southern Highlands Branch Committee for 2013/2014 was:

Chairman	Mr Hubert Regtop
Vice chairman	Dr John Wright
Hon. Secretary	Ms Anne Wood
Committee members	Dr Mike Jonas
	Ms Andrea Talbot
	Mr Ted Smith
	Mr Clive Wilmot

The Southern Highlands Branch held 10 meetings during the reporting period that were well attended by members and visitors.

21 February 2013	Prof. Gordon Parker	<i>Different depressive and bipolar mood disorders</i>
21 March 2013	Dr Michael Birrell	<i>King Akhenaten: pharaoh, fanatic or freak?</i>
18 April 2013	Dr Andrew Ash	<i>Climate Adaptation Flagship</i>
16 May 2013	Dr Rik Heslehurst	<i>Advances in aviation</i>
27 June 2013	Prof Chris Gibson	<i>Household sustainability: challenges and dilemmas in everyday life</i>
18 July 2013	Mr Tony Irwin	<i>Nuclear power in Australia</i>
8 August 2013	Dr Michael Raupach and William Kininmonth	<i>Climate Science Forum</i>
12 September 2013	Prof Ken Freeman	<i>Dark matter</i>
17 October 2013	Dr Peter Robinson	<i>The dynamic brain</i>
21 November 2013	Prof Liz Harry	<i>Superbugs</i>

### **CENTRAL WEST BRANCH**

The Central West Branch Committee for 2013/2014 was:

Chair	Assoc. Prof. Maree Simpson
Vice chairman	Dr Yann Guisard
Hon. Secretary	Dr Murray Fletcher
Committee members	Dr Scott Andrew

Early in 2013, Professor Simpson advised that the committee had formed the view that the Central West Branch was unsustainable and that it should be dissolved at the end of 2013. Reluctantly, the Council accepted this advice and thanks Professor Simpson and the committee for their work over many years.

### **OFFICE**

The Society is particularly grateful for the commitment and hard work of Ms Emma Dallas, Executive Officer of the Society.

A handwritten signature in black ink that reads "Donald Hector". The signature is written in a cursive style with a large initial 'D' and a long horizontal stroke at the end.

Donald Hector  
PRESIDENT