



# The Bulletin 401

The Royal Society of New South Wales

ABN 76 470 896 415

ISSN 1039-1843

27 July 2016

## For Your Diary:

### RSNSW Sydney Science Festival Lunchtime Talks

University of Sydney Business School  
Level 17, 133 Castlereagh Street  
Entry: Free, for details, see p. 5

#### Talk 1: "Complex systems and swarm intelligence"

Friday 12 August, 12.30 – 1.30pm  
Professor Mikhail Prokopenko

#### Talk 2: "The Royal Botanic Gardens 200th Birthday"

Tuesday 16 August, 12.30-1.30pm  
Dr Brett Summerell

#### Talk 3: "Courts, criminals and chemistry: forensic Science in NSW"

Wednesday 17 August, 12.30 to 1.30pm  
Professor Brynn Hibbert

#### Talk 4: "Community-driven Internet of Things: the new revolution?"

Thursday 18 August, 12.30-1.30pm  
Professor Pascal Perez

### Thursday, 18 August 2016 Southern Highlands Branch Lecture

**Dr Ian Skinner**

**Chronic Pain**

6:30 pm start

Chevalier College, Bowral

### Wednesday, 3 August 2016 1245th OGM

#### Mr Richard Neville, "History of the Royal Society of NSW"

6:00 pm for 6:30 pm

Union, University & Schools Club  
25 Bent St, Sydney

### Patron of The Royal Society of NSW

His Excellency General The Honourable  
David Hurley AC DSC (Ret'd)  
Governor of New South Wales

## Public Lecture & 1245<sup>th</sup> OGM Wednesday, 3 August 2016

### Dr Barbara Briggs

Honorary Research Associate, Royal Botanic Gardens

## "Celebrating the 200<sup>th</sup> Birthday of Royal Botanic Gardens: a Personal History of 57 Years of Science"



Dr. Barbara Briggs is one of the foremost Australian botanists, and she is the Garden's longest serving female scientist. In her talk, Dr. Briggs will describe the history of the Gardens and her life there as a scientist. She will recount the early years, how the original Garden survived because its soil was so poor for growing plants. She will talk about the scientific advances in which she has played a part, including identification of 80 new plant species, the discovery of the Wollemi Pine, and the analysis of a tiny leaf fragment that helped solve a murder case. She will also discuss the challenges and opportunities facing the Gardens over the next 200 years. *(For more information, go to page. 6.)*

Union, Universities, & Schools Club, 25 Bent St, Sydney

**6:00 for 6:30 pm**, Welcome drink at 6:00 pm

Fellows & Members \$10; Guests, \$20

Please note dress code: jacket and tie

**All are welcome**

To register for the event plus dinner afterward (two courses plus wine, \$80 per Fellows/ Members, \$90 Guests), please go to <https://nswroyalsoc.currinda.com/register/event/16> or email the Society at [royalsoc@royalsoc.org.au](mailto:royalsoc@royalsoc.org.au), by Friday, 1 July

# Report of 1244<sup>th</sup> OGM, 6 July 2016

Dr. Robert Young

## 'Royal', not 'Philosophical' - W.B. Clarke's Inaugural Address to the Royal Society of New South Wales"



Dr. Robert Young

It is 150 years old this year since the Royal Society of New South Wales was granted Royal Assent. The Inaugural Address in 1867 by Rev. William Branwhite Clarke is the key not only to understanding the origin of the Royal Society of New South Wales, but also, to a very considerable extent, its continuing role in supporting scholarly research. In this talk, Dr Young outlined the development of Clarke's ideas about science and the impact that they had on the understanding of "This wonderfully strange country

Clarke (1798-1878) not only announced a change in name from the Royal's forerunner, the "Philosophical Society" but launched into an attack on contemporary philosophy which he described as "a desert, whose only semblance of

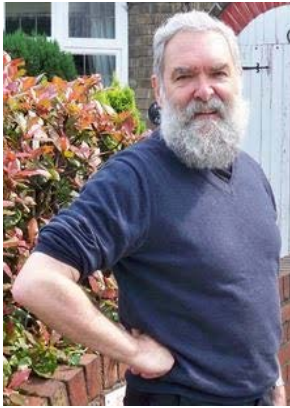
vegetation is a mirage". What was needed, he argued, was factual science, not metaphysical speculation.

Clarke was Vice-President of the Royal Society of New South Wales from 1861 to 1878. He gave important annual addresses to the Society, and published many papers in its Proceedings. The Clarke Medal, awarded by the Society each year for contributions to Geology, Zoology or Botany, was established in his honour.

Although known as "the Father of Australian Geology", for more than a decade after his arrival in Sydney in 1839, Clarke wrote numerous articles that laid the foundations of the study of meteorology and climatic change in Australia; and he played an important practical role in the development of hydrology, especially with regard to the water supply of Sydney. By mid-century he had become regarded as the foremost authority on various aspects of Australian geography, notably in his journalistic support of the expeditions of Leichhardt and Kennedy. After 1860 he was a major player in the controversy over evolution, but his role in it was hardly that of "Darwin's bulldog" as some authors have considered him."

Dr. Young, was, before his retirement, an Associate Professor of Geoscience at the University of Wollongong. He has been member of the Geological Society of Australia and the Geographical Society of New South Wales and was Associate Editor of *Australian Geographer* from 1981-92. He has published 5 books and over 100 research papers on topics ranging from weathering and erosional sequences, sandstone landforms, sea level change, tsunamis, and the history of landform studies.

# From the President



It occurred to me listening to the highly entertaining talk at the last OGM (1244<sup>th</sup>, 6 July 2016), "*Royal*", not '*Philosophical*' - *W.B. Clarke's Inaugural Address to the Royal Society of NSW*" given by historian and, like W B Clarke, a geoscientist Bob Young, that the world is full of such interesting news these days that an inaugural address of a President of the Royal Society of New South Wales would not be contemplated as copy to fill page 2 of the Sydney Morning Herald, as happened in 1866.

The text of the address was published in 1887 in Vol. 1, 1:27 of the *Journal and Proceedings of the Royal Society of NSW* <http://www.agsm.edu.au/bobm/JProcRSNSW/v01.html> – see the new and complete index prepared by our Journal Editor Bob Marks, presently housed at the AGSM but coming to the new web site soon. We have often debated how “... advance knowledge through the encouragement of studies and investigations in Science Art Literature and Philosophy” should be interpreted, and we have guidance from the Rev W B Clarke who wrote: “Its original Constitution provided that “*our meetings will be open for the reception of contributions and the discussion of subjects of every kind*” if “*in accordance with our fundamental rules and by-laws:*” and it is stated in those rules, that “*the object of the Society is to receive at its stated*

*meetings, original papers on subjects of Science, Art, Literature, and Philosophy.*” Further, in the new rules that have been framed since the change of title, you will find that there is added: “*and especially on such subjects as tend to develop the Physical character of the Colony, and illustrate its Natural history and Productions.*” Clarke goes on to beat up philosophy, but I shall leave that to Dr Young to describe in a forthcoming paper to the Journal. However I like “... *discussions of subjects of every kind*”.

As excited we were to celebrate Distinguished Fellow Mike Archer’s Nature paper last month, we were not expecting the media furore that greeted Councillor Mohammad Choucair’s Nature Communications paper “Room temperature manipulation of long lifetime spins in metallic-like carbon nanospheres” <http://www.nature.com/ncomms/2016/160718/ncomms12232/full/ncomms12232.html>. I caught him on RN Breakfast and in The Conversation. I recall Distinguished Professor Michelle Simmons’ talk on quantum computing to the Society in 2013, and now Mohammad has made a breakthrough in long lived q-bits made out of ‘mothball ash.’ Mohammad explains his work clearly, and with that exuberance of youth, the Society should promote and nurture.

Meanwhile the Forum planning is coming together. We welcomed eleven new Fellows this month and will recommend seven to the next OGM. Given national and world events, and a disturbing tide of anti-reason, I hope that this Society of ideas can offer sense and independent comment in an uncertain world. As ever, please write with your news, c o m m e n t s a n d i d e a s t o [President@royalsoc.org.au](mailto:President@royalsoc.org.au).

Brynn Hibbert

# Report of 21<sup>st</sup> July 2016 Meeting Royal Society Southern Highlands Branch

**Speaker: Dr David Suhy**

Chief Scientific Officer, Benitec Biopharma

**Topic: The Age of Genomics**



Dr. David Suhy

Dr David Suhy arrived to deliver his exciting lecture on the eve of his departure to the USA after spending one week at the Sydney Benitec offices. He lives and conducts his research in San Francisco. The audience of 40 was most appreciative of the fact that he managed to schedule time in the Southern Highlands of NSW to bring the latest updates from Benitec research in its quest to “silence genes for life.”

In this relatively small company of fifteen scientists, Dr David Suhy leads the development of all the therapeutic programs. Benitec’s new technology combines the application of RNA interference with gene therapy delivery approaches. Long gone are the days when scientists had to set up exhaustive screens of tens of thousands of compounds to identify new drugs to treat human diseases. The “Age of Genomics” has ushered in the unique ability to develop new drugs simply by knowing the sequence composition of the gene.

RNA interference, a technology that awarded its inventors the Nobel Prize for Physiology or Medicine in 2006, is showing remarkable progress in treating a wide variety of human maladies in clinical trials. In this lecture, Suhy explored how this technology can selectively silence disease causing genes. In addition, he described the advances that his team at Benitec Biopharma have made in pairing up this technology with gene therapy based delivery, thus creating the possibility of therapeutics that may significantly impact and improve human health with a single treatment.

Benitec believe their technology has the potential to be the “one shot” cure for a wide range of diseases that are currently addressed by strict ongoing regimens or that have no effective treatment or only palliative care options. Their RNA interference, called DNA-directed RNA interference, or ddRNAi, is being used to develop

their pipeline of product candidates for the treatment of several chronic and life-threatening human diseases such as hepatitis B, age-related macular degeneration, or AMD, and oculopharyngeal muscular dystrophy, or OPMD. These diseases have large patient populations, with the exception of OPMD which is a rare disease.

In addition, the company has licensed their ddRNAi technology to other biopharmaceutical companies whose pipeline programs are progressing towards, or are in, clinical development for applications including HIV/AIDS, retinitis pigmentosa, Huntington’s disease, cancer immunotherapy and intractable neuropathic pain.

David Suhy holds a BS in Biochemistry and Biophysics from the University of Pittsburgh, earned his PhD in Biochemistry, Molecular Biology and Cell Biology at Northwestern University, and conducted his post-doctoral work at Stanford University. His lecture, despite the intricacy of the subject field, was delivered so well that his excitement for his research flowed on to everyone in the Chevalier Performing Arts Centre, particularly when he quoted an informal note he had written in 2014. It read as follows:

“Today I was fortunate enough to see a gene therapy product that I had invented with two others in 2003, and worked on for the last 11 years, be dosed into the first human subject for clinical testing. This is the first time that RNA interference technology has been administered directly and systematically into man using recombinant viral vectors. Intended as a single shot treatment for hepatitis C, we are evaluating this drug, called TT-034, for safety and efficacy in individuals infected with HCV.”

**Anne Wood FRSN**

# Royal Society of New South Wales Sydney Science Festival

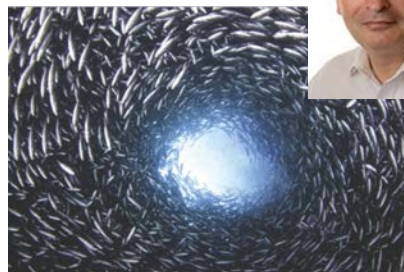
## Lunchtime Talks

The Sydney Science Festival is part of National Science Week and sees a range of events held across Sydney. The Festival aims to encourage an interest in science among the general public and young people.

More details may be found at: <https://sydneyscience.com.au/>

For enquiries and to register for the events email: [royalsoc@royal.soc.org.au](mailto:royalsoc@royal.soc.org.au)

Venue: The University of Sydney Business School CBD Campus  
Level 17, Stockland Building, 133 Castlereagh Street, Sydney  
Entry: Free



### Talk 1 "Complex Systems and Swarm Intelligence"

Date: Friday, 12 August 12:30 – 1:30 pm

Professor Mikhail Prokopenko

University of Sydney

Find out how the extraordinary dynamic schooling behaviour of fish can teach us to design complex systems with artificial intelligence.

<https://sydneyscience.com.au/event/complex-systems-and-swarm-intelligence/>



### Talk 2: "The Royal Botanic Gardens 200th Birthday"

Date: Tuesday, 16 August 12:30 – 1:30 pm

Dr Brett Summerell

Royal Botanic Gardens

Hear stories of botanical discovery from the past 200 years of the Royal Botanic Gardens, and its future in science.

<https://sydneyscience.com.au/event/the-royal-botanic-gardens-200-years/>

### Talk 3 "Courts, Criminals, and Chemistry: Forensic Science in NSW"

Wednesday, 17 August 12:30 – 1:30 pm

Professor Brynn Hibbert

President of the Royal Society of NSW

Emeritus Professor, University of New South Wales

Drugs, murders, doped sportsmen, horses and greyhounds – come and hear what really goes on in court!

<https://sydneyscience.com.au/event/nsw-courts-criminals-chemistry-and-forensics/>



### Talk 4 "Community-driven Internet of Things: The New Revolution?"

Thursday, 18 August 12:30 – 1:30 pm

Professor Pascal Perez

University of Wollongong

Connected devices are everywhere but what does the Internet of Things actually mean to you, your community or your business?

<https://sydneyscience.com.au/event/the-community-driven-internet-of-things/>

(Continued from page 1)

## Dr Barbara Briggs

Dr. Barbara Briggs comes from a distinguished family of scientists. She is the daughter of Edna Sayce, who, in 1917, became the first woman Physics graduate from the University of Sydney. Her father was also a distinguished physicist.

Dr. Briggs joined the Gardens as a botanist in 1969. Subsequently, she rose to become its senior assistant director and head of the science program at the National Herbarium of New South Wales until her retirement. Her special interests include plant evolution and Southern Hemisphere biogeography. She has published over 100 research papers, naming 80 new species, as well as reclassifying others.

Dr. Briggs was co-awarded the Clarke Medal of the Royal Society of New South Wales in 1994, along with Craig Anthony Atkin. Dr. Briggs was awarded the Public Service Medal in 1998.



Dr. Barbara Briggs

---

## Royal Botanic Gardens of NSW



Banksia ornata at Mt. Annan

Botanical investigations featured early in Australian history, starting with Joseph Banks's exploration of Botany Bay in 1770 as part of the crew of the *HMS Endeavour*. From the first settlement of Sydney in 1788, plants were cultivated at Farm Cove, but the foundation of the first Garden is marked as the 'particular and auspicious day' when Mrs. Macquarie's Road was completed on 13 June 1816.

While much has changed over the decades, science at the Gardens have retained an important role in maintenance of the National Herbarium of NSW – a comprehensive collection of botanical specimens – and in providing botanical information through their enquiry services, publications, and education programs. The original Royal Garden in Sydney has long been valued for its beauty, its attractive site, its horticulture and heritage, and as green space for the city. In more recent times, two large, additional gardens have been established at Mt. Tomah in the Blue Mountains (1972) and at Mount Annan between Campbelltown and Camden (1988).

## Schedule of RSNSW Events 2016

Date	Event	Speaker	Topic	Location
3-Aug-16	<b>1245th OGM</b>	Dr Barbara Briggs	Celebrating the 200th Birthday of Royal Botanic Gardens: a Personal History ....	Union, University & Schools Club
7-Sep-16	<b>1246th OGM</b>	Mr Richard Neville, State Library of NSW	History of the Society	Union, University & Schools Club
5-Oct-16	<b>1247th OGM</b>	Prof. Itai Ianev	From Sand and Rice Bubbles to Earthquakes and Volcanoes	Union, University & Schools Club
13-Oct-16	<b>Dirac Lecture</b>	TBA	TBA	UNSW
2-Nov-16	<b>1248th OGM: Jak Kelly Award</b>	Prof. E. James Kehoe	Horses for Courses: Advances in Instructional Design	Union, University & Schools Club
17-Nov-16	<b>AIP Postgraduate Awards Day</b>	TBA	TBA	Slade Theatre, University of Sydney
29-Nov-16	<b>Second Society Forum</b>	Contributors from Learned Societies	Society as a Complex System	Government House
7-Dec-16	<b>1249th OGM: Jak Kelly Award</b>	TBA	TBA	Union, University & Schools Club

## Southern Highlands Branch - 2016

Date	Event	Speaker	Topic	Location
18-Aug-16	<b>Lecture</b>	Dr Ian Skinner	Chronic Pain	Chevalier College, Bowral
15-Sep-16	<b>Lecture</b>	Assoc Prof Tony Masters	Sustainability - Chemical Solutions for Tricky Problems	Chevalier College, Bowral
20-Oct-16	<b>Lecture</b>	Prof Gordian Fulde	Emergency Practice	Chevalier College, Bowral
TBA	<b>Lecture</b>	TBA	TBA	Chevalier College, Bowral

### Contacts for Your Officer Bearers and Council Members

Em. Prof D. Brynn Hibbert President: [president@royalsoc.org.au](mailto:president@royalsoc.org.au)  
 Dr. Donald Hector Vice President: [dchector@unsw.edu.au](mailto:dchector@unsw.edu.au)  
 Mr John R Hardie Vice President: [john.hardie@royalsoc.org.au](mailto:john.hardie@royalsoc.org.au)  
 Ms Judith Wheeldon AM Vice President: [judith.wheeldon@mac.com](mailto:judith.wheeldon@mac.com)  
 Mr. John Wilmott Treasurer: [rjwilmott@gmail.com](mailto:rjwilmott@gmail.com)  
 Em . Prof Robert Marks Hon Sectry (Editorial): [editor@royalsoc.org.au](mailto:editor@royalsoc.org.au)  
 Dr. Herma Buttner Hon. Secretary: [secretary@royalsoc.org.au](mailto:secretary@royalsoc.org.au)  
 Dr Ragbir Bhathal Hon. Librarian: [R.Bhathal@westernsydney.edu.au](mailto:R.Bhathal@westernsydney.edu.au)  
 Mr Hub Regtop (Southern Highlands Rep): [regtop@ozemail.com.au](mailto:regtop@ozemail.com.au)  
 Dr Erik Aslaksen [erik.aslaksen@bigpond.com](mailto:erik.aslaksen@bigpond.com)

Dr. Mohammad Choucair [mohammad.choucair@sydney.edu.au](mailto:mohammad.choucair@sydney.edu.au)  
 Prof. Maxwell Crossley: [maxwell.crossley@sydney.edu.au](mailto:maxwell.crossley@sydney.edu.au)  
 Dr. Desmond Griffin AM: [desgriffin@optusnet.com.au](mailto:desgriffin@optusnet.com.au)  
 Em. Prof Heinrich Hora: [h.hora@unsw.edu.au](mailto:h.hora@unsw.edu.au)  
 Prof Stephen Hill [sthill@uow.edu.au](mailto:sthill@uow.edu.au)  
 Prof. E. James Kehoe: [ejameskehoe@gmail.com](mailto:ejameskehoe@gmail.com)  
 Prof. Bruce Milthorpe: [Bruce.Milthorpe@uts.edu.au](mailto:Bruce.Milthorpe@uts.edu.au)  
 Prof. Ian Sloan AO: [i.sloan@unsw.edu.au](mailto:i.sloan@unsw.edu.au)  
 Prof. Ian Wilkinson [ian.wilkinson@sydney.edu.au](mailto:ian.wilkinson@sydney.edu.au)  
 A/Prof Chris Bertram Webmaster [c.bertram@sydney.edu.au](mailto:c.bertram@sydney.edu.au)

The Bulletin is issued monthly by the Royal Society of New South Wales

Editor: Prof. E. James Kehoe; Managing Editor: Mr Edward Hibbert

Contact: Ms. Patricia Chiew, Phone: +61 2 9431 8691 Fax: +61 2 9431 8677 Email: [info@royalsoc.org.au](mailto:info@royalsoc.org.au)

Mailing Address: The Royal Society of NSW, PO Box 576, Crows Nest NSW 1585, Australia

For further information: <http://www.royalsoc.org.au/>

# Images from the Royal Botanic Gardens of New South Wales



Sydney



Mount Tomah



Mount Annan

