The Bulletin 389

The Royal Society of New South Wales

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Future Events

Thursday, 16 July 2015
Southern Highlands Branch Lecture
Australia as the 'food bowl' of Asia
Delivered by: **Dr. Brian Keating, CSIRO**
The Performing Arts Centre, Chevalier College, Bowral, ***Starting Time 6:30 pm***

Wednesday 5 August 2015
1235th Ordinary General Meeting
Complexity and Cultural Transitions 100,000 BP to the Present
Delivered by: **Dr Roland Fletcher**
Professor of Theoretical and World Archaeology & Director - Greater Angkor Project, University of Sydney
Union, University & Schools Club
25 Bent St, Sydney, **6.00 pm for 6:30 pm**

Sydney Science Festival
+ Free to public +

13–23 August 2015
Open Lunchtime Talks by Society Fellows
All talks **12:30-1:30 pm** at U. of Sydney Business School CBD Campus, **Level 17, 133 Castlereagh St.**

Fri, 14 Aug – Prof Michael Jacobson
Beyond Failing to Learn: Restructurations, Productive Failure, and Transforming Science Education

Tue, 18 Aug – Prof Ragbir Bhathal
Aboriginal Astronomy and the Clash of Cultures

Thur, 20 Aug – Prof David Christian
Big Science and Big History: From the Big Bang to Us

Fri, 21 Aug – Prof Michael Burton
The Wonders of the Hubble Space Telescope

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 – Wednesday, 1 July 2015
"Science in Literature"

Dr. James Ley
Editor, *Sydney Review of Books*
Union, Universities, & Schools Club, 25 Bent St, Sydney
6:00 for 6:30 pm, Welcome drink at 6:00 pm
Fellows and Members $5; Guests, $20
Please note dress code: jacket and tie
Please join us for dinner afterward, $75 per person

Literature and science have historically been seen as competing and sometimes opposed disciplines, confined to their own discrete modes of comprehension. The paper will consider some of the ways in which contemporary literature has sought to embrace and naturalise scientific understanding, while grappling with the moral implications of advances in scientific knowledge. It will argue that the language of literature has the potential to humanise complex scientific views and thus render them comprehensible, and in doing so play a role in disseminating scientific truths.

James Ley is the Editor of the *Sydney Review of Books* and the author of *The Critic in the Modern World: Public Criticism from Samuel Johnson to James Wood* (2014). In 2014, he was awarded the Geraldine Pascall Prize for Australian Critic of the Year. According to the judges' report, "He operates at the point where scholarly precision and essayistic liberty intersect. … In a Ley review, you may be sure that an independent opinion informed by wide reading and sharp thinking is being stated." See http://www.sydneyreviewofbooks.com/)

From the President

Planning is now well advanced for the events and activities for the second half of the year. In addition to our monthly meetings, the Clarke Lecture is expected take place in at Macquarie University on Thursday 6 August – final details are just being confirmed now. The lecture will be delivered by Professor Bill Griffin, the 2014 Clarke Medal winner. Professor Griffin is an international authority on the petrology geochemistry of the Earth's crust and mantle. His research is of particular importance to the minerals industry.

The Royal Society of NSW and Four Academies Forum will take place on Tuesday 15 September. Our patron, the Governor, has kindly offered to host the event at Government House. We expect the topic, "The future of work" to attract particular interest and are delighted to have the support of the four national Academies and the office of the Chief Scientist and Engineer of NSW.

There are also our usual named lectures that will be announced a little later in the year and, of course nominations are now open for the Society's 2015 awards. These are some of the most prestigious awards in Australian science and every year we have very strong fields of candidates that have been nominated. We have started to carefully extend the awards programme beyond science, with the inaugural award of the Royal Society of NSW History and Philosophy of Science Medal in 2014. We would like to further extend our awards programme and we are seeking funding to create further awards in literature art and philosophy to complement those that recognise distinguished achievement in science.

The Council has been considering the aspects from the member consultation that took place in March and April and we expect to be able to update the membership on a number of projects resulting from that process over the next month or so. One important development is the commitment to substantially redesign the Society's web site to be launched in the next couple of months.

Finishing touches are being applied to the latest edition of the Journal and Proceedings – I'm sure you will find this a particularly interesting edition.

The end of the financial year is approaching and it is a good time to consider making a tax-deductible donation to the Society. The Society has two funds that have Australian Tax Office approval: the Library Fund and the Scholarship Fund. In recent years, we have received a number of very generous donations to these funds. There can be no better way of advancing knowledge in NSW and Australia generally than supporting development of our library and the funding of scholarships and awards through making a tax-deductible donation.

As always, I am easily contacted by email at president@royalsoc.gov.au and would like to hear from you.

Donald Hector
June 2015

Contact Your Officer Bearers and Council Members

Dr Donald Hector President: <president@royalsoc.org.au>
Em. Prof D. Brynn Hibbert Vice President: <b.hibbert@unsw.edu.au>
Mr John R Hardie Vice President: <john.hardie@royalsoc.org.au>
Ms Judith Wheeldon AM Vice President: <judith.wheeldon@mac.com>
Prof. Michael Burton Hon.Secretary (Editorial): < editor@royalsoc.org.au>
Prof. Neil Foster Hon. Secretary: <n.foster@unsw.edu.au>
Dr Ragbir Bhathal Hon. Librarian: <R.Bhathal@uws.edu.au>
Mr Hub Regtop (Southern Highlands Rep): <regtop@ozemail.com.au>
Dr Frederick Osman: <fosman@trinity.nsw.edu.au>
Prof Richard Banati: <rib@ansto.gov.au>
Em. Prof Roy MacLeod: <roy.macleod@sydney.edu.au>
Dr Erik Aslaksen <erik.aslaksen@bigpond.com>
Em. Prof Heinrich Hora: <h.hora@unsw.edu.au>
Dr. Desmond Griffin AM: <desgriffin@optusnet.com.au>
Prof. E. James Kehoe: <ejameskehoe@gmail.com>
Prof. Bruce Milthorpe: <Bruce.Milthorpe@uts.edu.au>
Prof. Ian Sloan AO: <i.sloan@unsw.edu.au>
Prof. Ian Wilkinson: <ian.wilkinson@sydney.edu.au>

The Bulletin is issued monthly by the Royal Society of New South Wales Editor: Prof. E. James Kehoe; Managing Editor: Edward Hibbert
Contact: Ms. Sophie Eder, Phone: +61 2 9431 8691 Fax: +61 2 9431 8677 Email: info@royalsoc.org.au
Mailing Address: The Royal Society of NSW, PO Box 576, Crows Nest NSW 1585, Australia

"The Science of Spontaneity: Fred Astaire as Consummate Craftsman"

Dr Kathleen Riley

1232nd Ordinary General Meeting, Wednesday 3 June 2015

Fred Astaire has been described as the Newton of cinematic dance and as having the same concentration of genius as Bach. He had astounding physical abilities and an apparently spontaneous and easy manner that redefined the notion of grace in American cinema. After setting the scene with a collection of extraordinary clips of Astaire's dancing abilities, Dr Kathleen Riley, a classical scholar, writer and theatre historian, explored parallels between Astaire's performances and the traditions of Greco-Roman theatre.

Astaire was not interested in the history or philosophy of dance – he just danced. His physique was slender and in near-perfect proportions. He had the right height, was quick, nervous and energetic. He had, as the Greeks used to say, perfect form or "symmetria". (According to the Greeks, "the beautiful and good are masters of symmetria".)

Astaire was largely self-taught and had a fine sense of musicality. He was able to translate music into vision – indeed, in some of his performances, one can almost hear the music by simply seeing the dance. Dr Riley argues that Astaire seems to have recreated a style reminiscent of the ancient pantomimic or Pyladean tradition that flourished in Rome from the end of the first century BC until around 600 AD. This ancient pantomime was a ballet-style of entertainment that emphasised a solo dancer accompanied by music and song, that strove for eloquence in movement through the use of hand gestures (cheironomia), having a natural rhythm and having a beat like music (eurhythmia). Mastery of the style requires exceptional musicianship and musicality as was achieved by Astaire.

Astaire said that "either the camera will dance or I will". He made creative use of shadows and special effects and even had sets designed so that he could give quite extraordinary performances. In one instance, he had a room constructed in a gimbal, so that while the room rotated he could give the appearance of dancing on the floor, the walls and the ceiling. It was said that he could synchronise his movements "down to the sprocket-hole" of movie film (24 frames per second, four sprockets per frame). He made extraordinary use of props, often apparently bringing to life mundane, every-day items such as chairs and coat-stands. His fine sense of musicianship led him to work with some of the finest composers of the day – in particular, he had a long association with the Gershwins. He also had a selection of remarkably talented partners, the most notable of whom were his sister, Adele and Ginger Rogers.

Kathleen Riley's exploration of the creative genius of Fred Astaire, his extraordinary talent and contribution to American dance and cinema was both entertaining and scholarly.

Report of 18 June 2015 Meeting of the Royal Society Southern Highlands Branch

Ethics and Thinking Program for Schools

Michael Parker

Headmaster, Oxley College, Burradoo

Michael Parker

The audience of 75 people who attended the Southern Highlands Branch June lecture on Thursday evening had to brave extremely cold, dark, wet conditions to take their seats at the Performing Arts Centre, Chevalier College. They were aware that the media had been heavily involved in discussions and reports of ethics in schools in the previous weeks, and so made the effort to hear this extremely relevant and timely lecture. The committee members had engaged this speaker many months ago for the 2015 program, and were quite surprised and delighted that the lecture was scheduled quite coincidentally with the media coverage.

Michael Parker opened his lecture with the question, "Would you rather your child was smart or good?". Participants could respond with one or the other, but not both. This question was then used as the opening to the issues to be discussed. He said that when this question was posed to parents in general, the majority response was that people would prefer their children to be good, if they could choose only one answer. Of course, this outcome raised many more issues on people's own ideas of what constituted "good".

Parker spent quite some time examining the continuum of behaviours that are understood by people to lie within the concept of "ethics". At one end of the spectrum lay the authoritarian approach, where the rules of behaviour were laid down with iron bars and could not be challenged. Children being taught this way were told what was right and wrong and were not free to challenge the advice. At the other end of the spectrum was the permissive approach, which Parker described as a swamp, where children were free to roam with no guidance on thinking whatsoever. The vast middle ground lay between the two ends, and the many positions available there were classed as the liberal positions. In these states, children were given information relevant to situations, so that they could better make an informed decision on matters before them, based on their own critical thinking.

Keeping young students interested in ethics and thinking would appear to most to be a challenging task, but as the lecture progressed it became clear to all that Parker's skills in this area were second to none. An example he gave was of his own "discussion tennis", where students are given a controversial subject for discussion, then move physically to the side of the tennis net where they feel their view lies. Students holding the opposing view take the other side. In a very orderly way, ideas are thrown back and forth over the net as the discussion advances, and participants can walk to the other side if they feel they have enough evidence to make them want to change their mind.

This strategy also has the advantage that it clearly demonstrates to students that when new information comes to hand, there is nothing wrong or weak in changing one's position. Parker carried out this exercise with a group of volunteers from the lecture audience. What an excellent strategy that demonstrated that the process of engaging students in critical thinking can be so enjoyable. No wonder students in his ethics and thinking classes are not simply pining for lunchtime!

Michael Parker has done much to share his innovative strategies with a wider audience, through the release of his highly successful books. In 2012, he published *Ethics 101: Conversations to Have With Your Kids*. This book has since been published in 2013 in USA. His second book in the series was *Talk With Your Kids: Big Ideas*, followed by *Talk With Your Kids: Ethics*. His talents do not lie solely in the world of Education publishing. He has had two novels published, including a young adult novel which was shortlisted for the NSW Premier's Award in 2007, and a children's picture book, *You Are a Star*, which was published with Bloomsbury in USA in September 2012.

Anne Wood

Reverend William Branwhite Clarke FRS

The Clarke Medal – recently awarded to Professor William L. Griffin of Macquarie University – is named in honour of the Reverend William Branwhite Clarke (1798–1878). The Rev Clarke has been named as the "Father of Australian geology." Clarke was a founder of the Royal Society of New South Wales in 1867 and its vice-president until 1876. He was a churchman, serious scientist, and a public advocate of science, writing over 80 scientific papers and contributing countless editorials, articles, reviews and letters to the Sydney press. He was also a trustee of the Australian Museum.

Rev. Clarke was born, raised, and educated in England, receiving his BA and MA from Jesus College, Cambridge. As a young clergyman, he held posts in several parishes and used these opportunities to pursue an early interest in geology, which he had studied alongside the classics at Cambridge. He joined the Geological Society of London in 1826 and published findings of his fieldwork in its proceedings and elsewhere. He began a long correspondence with Rev. Adam Sedgwick, Woodwardian Professor of Geology, and Sir Roderick Murchison, which continued after he emigrated to Australia.

In 1839, he travelled with his wife and children to New South Wales to take up a chaplaincy there. He served briefly in St. Peter's parish, Campbelltown and then as headmaster of The King's School, Parramatta, with charge of the nearby parishes of Castle Hill and Dural. At those locations he also established weather stations. From 1844-1846, he was rector of Campbelltown. In August 1846 he moved to St Thomas's Church, North Sydney, and remained there as its first rector until his retirement in 1871. A window in that church memoralises his service.

Along with his clerical and family duties, Rev. Clarke pursued wide-ranging geological fieldwork immediately after his arrival in Australia. In 1841, he confirmed previous reports of gold deposits west of the Blue Mountains. In 1851-1853, Clarke acted as the government's geological surveyor and scientific adviser on gold discoveries. He also identified the presence of diamonds and tin in Australia. He did valuable work in dating the geological strata of Australia. He discovered Silurian rocks (443–420 million years) and ascertained the age of coal-bearing rocks in New South Wales. He also had a longstanding interest in zoology and paleontology. Among other things, in 1869, he announced the discovery of remains of the extinct giant moa (*Dinornis*) in Queensland.

Late in life, Rev. Clarke's work received international recognition. He was elected a Fellow of the Royal Society of London in 1876. The following year, he was awarded the Murchison medal by the Geological Society of London for his work on coal in New South Wales.

The sources for this brief biography may be found at:

http://www.auspostalhistory.com/articles/191.php

http://en.wikisource.org/wiki/1911_Encyclop%C3%A6dia_Britannica/Clarke,_William_Branwhite

http://adb.anu.edu.au/biography/clarke-william-branwhite-3228