The Bulletin 400

The Royal Society of New South Wales

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For Your Diary:

Thursday, 21 July 2016
Southern Highlands Branch Lecture

Dr. David Suhy
"An Exciting New Platform For Silencing Unwanted Genes"

6:30 pm start
The Performing Arts Centre
Chevalier College, Bowral

Wednesday, 3 August 2016
1245th OGM

Mr. Jimmy Turner
will speak on
The Royal Botanic Garden

6:00 pm for 6:30 pm
Union, University & Schools Club
25 Bent St, Sydney
Fellows & Members $5; Guests, $20
Dress code: coat and tie

Second Society Forum
Tues, 29 November
Government House

"Society as a Complex System"
and Celebration of the 150th
Anniversary of Royal Patronage

Se***e last page for a summary of Events scheduled so far for 2016***

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 & 1244rd OGM
Wednesday, 6 July 2016

Dr. Robert Young

'Royal', not 'Philosophical' - W.B. Clarke's Inaugural Address to the Royal Society of NSW

Dr Robert Young is a geomorphologist whose research interests have overlapped many of the areas covered by WB Clarke. Long-term landscape evolution of south-eastern Australia, the distribution of deep-weathering profiles throughout Australia, the identification of tsunami deposits on the eastern Australian coastline, and sandstone geomorphology have been the major foci of his research. Since retiring as Associate Professor of Geosciences at the University of Wollongong, Dr Clark renewed a long-standing interest in history and found WB Clarke a fascinating and relevant subject to study. Earlier this year, his biography of Clarke "This Wonderfully Strange Country: Reverend WB Clarke, Colonial Scientist" was launched at the State Library of New South Wales, supported by the society.

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, by Friday, 1 July

Report of 1243rd OGM, 1 June 2016

Prof. Peter Hiscock

"The Curious Case of the Scientist in Cinema: How Indiana Jones Turns Out to Be the Bad Guy"

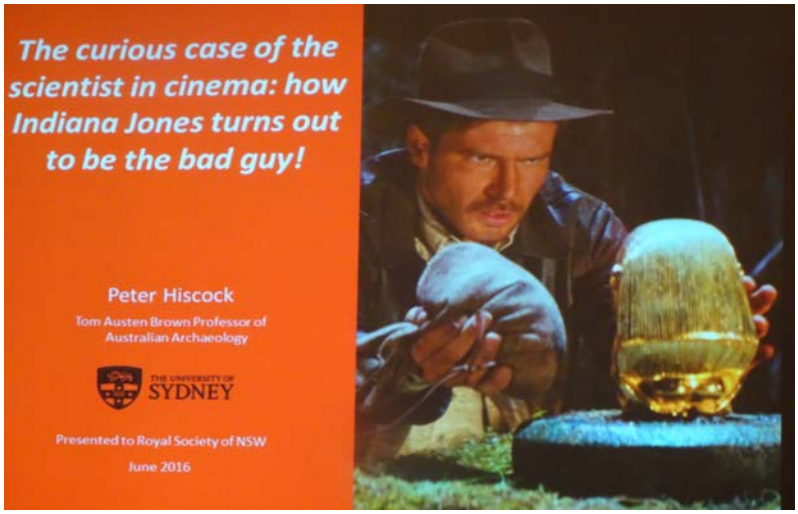
Prof. Peter Hiscock combined his scholarly skills and passion for cinema to provide the audience with an entertaining talk filled with thought-provoking insights. Although he focused on the depiction of archaeologists in film, he drew wider lessons concerning the depiction of scientists in popular culture.

He began by tracing the origins of the Indiana Jones character. Although Indiana Jones is perhaps the best-known film archaeologist, he is by no means one of a kind. His wardrobe of the well-used fedora and leather jacket (whip optional) appeared as early as 1954 on Charlton Heston in "Secret of the Incas" (1954). More generally, the plot of the archaeologist-adventurer searching for hidden treasure in competition with ruthless adversaries was established long before "Raiders of the Lost Ark.". With variations, the same plot continues to drive more recent movies such as "Lara Croft: Tomb Raider."

According to Prof. Hiscock, a major plot device in these movies is the inadvertent release of malevolent forces when the treasure object is found. The audience was treated to a clip of the 1932 version of "The Mummy," in which an assistant cannot resist opening and reading an ancient scroll that awakens the mummy of Imhotep, who then proceeds on a murderous course. Prof. Hiscock noted that the less-than-favourable consequences of opening ancient chests, boxes, or jars would have been prevented if the heroes and/or their antagonists had simply decided to take a holiday rather than setting off on a treasure hunt. In this regard, the hero and antagonist share the same motives and largely adopt the same tactics.

Stepping back to a broader perspective, Prof Hiscock argued that the cinematic archaeologist releasing malevolent forces when dabbling in ancient mysteries – especially those connected with the dead – represents wider fears that scientists are also, in various ways, releasing forces with unknown consequences. He noted that "The Mummy" was essentially a remake of "Frankenstein," which capitalised on Boris Karloff's previous portrayal of the revived corpse morphed into the revived mummy. By extension, the cinematic archaeologist becomes the action representative of all scientists and their research.

Prof. Hiscock is also an important archaeologist in his own right. Audience members were eager to have Prof. Hiscock return sooner rather than later to talk about his work. His investigations reconstruct sequences of technological change and the articulation of technology to occupational strategies and environment. Recently, rather than a golden casket or magical amulet, he discovered the oldest axe head to be found in Australia or anywhere else.

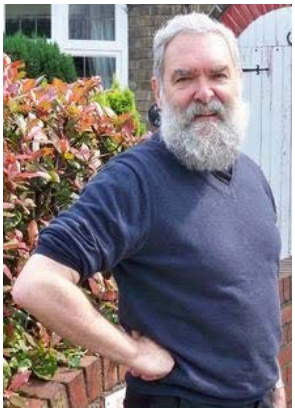


Peter Hiscock's opening slide

Peter Hiscock delivering his speech to the Royal Society

From left to right: James Kehoe (Editor), Peter Hiscock, Judith Wheeldon (Vice President), Brynn Hibbert (President)

From the President



In my monthly column as well as telling you all about the Royal Society, I would like to comment on scientific and learned matters that occur to me, and indeed invite you to write back for publication in The Bulletin (and perhaps, soon, in a blog). I am a chemist, so will rely on members to point me to interesting signs and portents that might be relevant or of interest to the Royal Society.

But to start with Society news. The first, now bimonthly, meeting of Council went well, with the participation of our new members Mohammad Choucair, Stephen Hill, and Max Crossley, plus web master Chris Bertram. You will read about them in The Bulletin over the next few months. The Society has had some interactions with our Patron, His Excellency General The Honourable David Hurley AC DSC (Ret'd), Governor of NSW. I visited His Excellency at Government House in May, conveying my appreciation for his, and Mrs Hurley's, attendance at our Annual Dinner, and discussing how the Royal Society could help his work in supporting the people and community organisations of New South Wales. As reported in the Sydney Morning Herald (http://www.smh.com.au/nsw/nsw-governor-david-hurley-joins-swarm-of-new-beekeepers-20160405-gnyv3l), His Excellency keeps bees. So, we were pleased to facilitate a visit by him to the Behaviour and Genetics of Social Insects Lab at Sydney University. Apparently there were good discussions on native bees and pollination of tomatoes. Two functions to celebrate Her Majesty Queen Elizabeth II's 90th birthday were a Garden Event at Government House, complete with pipe bands and horse displays, and a lunch, also attended by His Excellency and Mrs Hurley, organised by the Royal Commonwealth Society. Our long time member and sometime Treasurer David Beale is President of the RCS, and he extended a warm welcome to Marian and me representing the Royal Society.

Planning for the Forum goes apace with the list of speakers coming together nicely. The theme of the Forum: "Society as a Complex System" is proving itself to be a suitably 'wicked problem.' A note for the diary – 2020 will be the 250th anniversary of Captain Cook's arrival. We are talking to Richard Ferguson, of the Royal Society of Victoria, who has a position at the Australian Maritime Museum to coordinate celebrations.

Meanwhile on science, my mob, the International Union of Pure and Applied Chemistry, has just announced the names of the four elements recently judged to have been discovered. They are presently on public review and barring any great complaint will be approved in November. They are Nihonium and symbol Nh, for the element 113, Moscovium and symbol Mc, for the element 115, Tennessine and symbol Ts, for the element 117, and Oganesson and symbol Og, for the element 118. For the aficionados, note that the name of 117 ends in –ine, because it is a halogen, and 118 ends in –on because it is expected to be a noble gas. Thus we complete period 7 of the Periodic Table.

Finally, Distinguished Fellow Mike Archer has just become a little bit more distinguished with a letter in Nature Scientific Reports announcing discovery of the fossil of a snail-eating marsupial that lived in Australia 10 – 15 million years ago. Read more at http://www.nature.com/articles/srep26911.

The Royal Society is strictly independent and non-party political, but we will occasionally point out some of the worst excesses (or triumphs – who knows) of our society. Letters to the media might be signed by a RSNSW office bearer, but will always make clear whether this is a personal view or one endorsed by Council.

Plaudits and abuse, please send to President@royalsoc.org.au .

Brynn Hibbert

Report of 16 June 2016 Meeting
Royal Society Southern Highlands Branch

Speaker: Dr Ken McCracken

Topic: The Sun, Sunspots and Space Weather

Dr. Ken McCracken

The Southern Highlands Branch of the Royal Society was extremely fortunate to have as speaker for the June meeting Dr Ken McCracken who had returned only days before from his ongoing projects in Europe. This world renowned scientist is a most humble, yet highly entertaining speaker who resides in the Southern Highlands, so it was no surprise that eighty people were drawn to hear him deliver updates from his previous presentations and findings.

Until recently, all of our information about solar flares, sunspots, etc., has come from telescopes on Earth or from satellites orbiting Earth. As a result, scientists have been able to achieve only a 2-dimensional understanding of these phenomena. To overcome this limitation, STEREO (Solar Terrestrial Relations Observatory) spacecraft were launched a decade ago with the introduction of new technology. The long lives of the two stereo spacecraft, now nine years old, have been a boon for scientists studying the Sun and its influence throughout the solar system. The two STEREOs slowly drifted away from Earth as they orbited the Sun, one ahead and one behind our home planet, giving scientists constantly improving views of the Sun's far side, allowing us for the first time to see the whole Sun at once.

This research is extremely important because conditions on the Sun and in the solar wind, magnetosphere, ionosphere and thermosphere can influence the performance of space-borne and ground-based technological systems, and can endanger human life or health. Major economic and legal implications can arise from radiation exposure to pilots, astronauts and perhaps airline passengers. The shut-down of national electricity grids is also a serious possibility, with the frightening prospect of losses in the order of two trillion dollars according to US estimates. The commercial lifetime of satellites may be appreciably shortened by conditions emanating from the Sun, to say nothing of the threat of disruption of radio communication and perhaps the accuracy of GPS.

McCracken went on to present likely advances in space weather research for the future. He spoke in some detail about planning which is now in place for sentinel satellites to be located at Lagrange points, or stationary points, where the forces on a satellite would be zero in the rotating reference frame. For any two massive bodies such as the Sun and the Earth which rotate about their centre of mass, there exist five such stationary points. Debate is currently raging in scientific circles about which two of the Lagrange points should be chosen for satellite location to optimize data collection in this very expensive project. Ken McCracken is hoping for one of the satellites to be located at the Lagrangian point known at L5, where conditions at the back of the sun would be used to predict what would soon happen on Earth.

In closing, McCracken reminded his audience that the sun continues to decline in activity and that this decline may continue for 20 to 100 years. He said that the Earth will cool – maybe a little – maybe a lot. Then it will heat up again.

He also expressed his opinion that the new science of space weather leading to the introduction of STEREO satellites has revolutionised solar physics.

An exciting lecture.

Anne Wood

New Webmaster Assoc Professor Chris Bertram

As announced last month, Associate Professor Chris Bertram, School of Mathematics and Statistics at the University of Sydney, has become the webmaster for the Society's new website. For the past two months, Chris has been providing instructions to the Society's officers to enable them to upload information and keep the website fresh. The new website should go live within the next few weeks.

According to his university biography, Chris Bertram graduated in Engineering Science in 1971 and gained his doctorate in 1975 with a thesis on ultrasonic measurement of arterial mechanical properties. He then spent two years working in haemodynamics at Johns Hopkins University. In 1977, he went to Cambridge University's Applied Mathematics Department, where he worked on unsteady flow separation and modelled collapsed-tube flows.

In 1980, he was appointed lecturer at the Centre for Biomedical Engineering of University of New South Wales. He was promoted to senior lecturer in 1985, and to associate professor in 1990. In 2010, he moved to the School of Mathematics and Statistics at University of Sydney. There, he has continued his long-time work on the dynamics of self-excited oscillations of collapsed-tube flows. His current research is on cerebrospinal fluid mechanics, and pumping in the lymphatic system.

A/Prof. Bertram has been a member of the World Council of Biomechanics and served on the editorial boards of relevant journals.

Southern Highlands Branch Upcoming Event:

An Exciting New Platform For Silencing Unwanted Genes

Dr. David Suhy

Thursday, 21 July 2016
Chevalier College, Bowral

Dr. David Suhy was appointed as the Chief Scientific Officer of Benitec Biopharma in April 2015, after serving in a range of research and development roles. Among other things, he led the Target Validation Group at PPD Discovery, a company with proprietary technology for using genetic suppressor elements to identify "druggable" genomic targets for large pharmaceutical companies.

Dr 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 post-doctoral work at Stanford University.

Reverend William Branwhite Clarke FRS

In anticipation of this month's talk by Dr. Robert Young entitled "'Royal', not 'Philosophical' - W.B. Clarke's Inaugural Address to the Royal Society of NSW," we offer this reprint of a brief biography of W. B. Clarke, which was previously published in *Bulletin 389. - Ed*

The Clarke Medal 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

Schedule of RSNSW Events 2016

Date	Event/Location	Speaker	Topic	Location
6-Jul-16	**1244th OGM**	Dr. Robert Young	'Royal', not 'Philosophical' - W.B. Clarke's Inaugural Address to the Royal Society of NSW	Union, University & Schools Club
3-Aug-16	**1245th OGM**	Mr Jimmy Turner	Royal Botanic Garden	Union, University & Schools Club
7-Sep-16	**1246th OGM**	Mr Richard Neville, State Library of NSW	History of the Society	Union, University & Schools Club
5-Oct-16	**1247th OGM**	Prof. Itai Ianev	From Sand and Rice Bubbles to Earthquakes and Volcanoes	Union, University & Schools Club
2-Nov-16	**1248th OGM: Jak Kelly Award**	Prof. E. James Kehoe	Horses for Courses: Advances in Instructional Design	Union, University & Schools Club
17-Nov-16	**AIP Postgraduate Awards Day**	TBA	TBA	Slade Theatre, University of Sydney
19-Nov-16	**Second Society Forum**	Contributors from Learned Societies	Society as a Complex System	Government House
7-Dec-16	**1249th OGM: Jak Kelly Award**	TBA	TBA	Union, University & Schools Club

Southern Highlands Branch - 2016

Date	Event/Location	Speaker	Topic	Location
21-Jul-16	**Lecture**	Dr David Suhy	An exciting new platform for silencing unwanted genes	Chevalier College, Bowral
TBA	**Lecture**	TBA	TBA	Chevalier College, Bowral

Future lectures and other events will be scheduled, usually for the third Thursday in each month

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