



The Royal Society of New South Wales Bulletin and Proceedings 316

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June 2008

Future Events 2008

Lectures in Sydney are held in Lecture Room 1, Darlington Centre, University of Sydney at 7 pm on the first Wednesday of the month with drinks available from 6 pm.

Wednesday 2 July

An Australian Ecological Blind Spot: rabbit impact on native plants and animals

Dr Brian Cooke
Institute for Applied Ecology,
University of Canberra.

Wednesday 6 August

Alzheimer's Disease: The man, the discovery, and prospects for avoidance

Dr Bruce Warren
Former Professor of Pathology, The
University of NSW.

Wednesday 3 September

Telomeres and Telomerase in Health and Disease

Professor Elizabeth Blackburn
Professor of Biology & Physiology,
University of California, USA.

Wednesday 1 October

Exploring the Milky Way: The Past, Present and Future

Dr Naomi McClure-Griffiths
Galactic Interstellar Medium Group,
ANTF, CSIRO.

Southern Highlands Branch

6.15 Thursday 19 June 2008

What we really need to worry about as the pendulum swings towards GM crops?

Tony Fischer, FAIAST, FTSE, AM

Drama Theatre, Frensham, Waverly Parade, Mittagong

Lecture 2nd July 2008

An Australian ecological blind spot: Rabbit impact on native plants and animals

Dr Brian Cooke

Institute for Applied Ecology, University of Canberra

Introduced wild rabbits have long been regarded as a major, almost insoluble economic problem in Australia, requiring the unusual step of introducing successive biological control agents, such as myxomatosis and rabbit haemorrhagic disease. Despite this however, the rabbits' impact on native vegetation has been poorly understood. CSIRO scientists, for example, worked on rabbits for over 50 years, yet relatively few papers were ever published on the effects of rabbits on native plants or fauna. It was left mainly to university researchers to describe and quantify this impact; the University of Adelaide Botany Department being a leader in this respect. Nevertheless, with the introduction of RHD in 1995, more care was taken to assess the benefits from reduced rabbit impact not only in terms of economics but also in terms of the gains and losses for natural ecosystems. It is now clear from these large-scale 'natural' experiments as well as other smaller but carefully structured experiments that rabbits compete directly with many of our common native animals such as grey- and red kangaroos and common wombats. Furthermore, it takes less than 1 rabbit/ha to completely inhibit regeneration of many of the more palatable tree and shrub species in natural woodlands.

Rabbits are building up again after being suppressed by RHD for a decade or more and in some areas they are already beyond the levels compatible with the maintenance of naturally functioning woodland ecosystems. Standards for rabbit control should now be re-set to help sustain natural ecosystems rather than simply being a response to overt economic damage. Saying that rabbits are not as widespread or abundant as they were before the introduction of myxomatosis and rabbit haemorrhagic disease is not an adequate criterion for judging the problem. We must assess what the current residual rabbit populations are doing.

Dr Brian Cooke MSc, PhD has worked on the management of pest animals for over 40 years, specializing on wild rabbits. Much of this work was done within the Animal and Plant Control Commission in South Australia but in 1995 he transferred to CSIRO to carry out work on the introduction of rabbit haemorrhagic disease virus into Australia. He has also spent time working in other environments including the sub-Antarctic Kerguelen Islands and 2 years in the equatorial Galapagos Islands. He now works with the Invasive Animals CRC in the University of Canberra where he is carrying out an industry-funded strategic review of the long-term prospects of rabbit haemorrhagic disease as a biological control agent.



Patrons

**His Excellency, Major General Michael Jeffery AC CVO MC (ret'd),
Governor General of the Commonwealth of Australia**

Her Excellency, Professor Marie Bashir AC CVO Governor of NSW

John Chalmers honoured with Alberto Zanchetti Life Achievement Award



Professor John Chalmers has been presented with the prestigious Alberto Zanchetti Life Achievement Award at the European Society of Hypertension Awards Ceremony and Presidential Lecture in Berlin.

Established by the European Society of Hypertension in 1995, the award is presented to a scientist with life-long high quality scientific research in the field of hypertension. John is particularly known for his ground-breaking work on the role of the brain in the development of hypertension.

John's achievements in medical science and research have been recognised through many other awards including a Wellcome (Australia) Medal (1980), the RT Hall prize of the Cardiac Society of Australia & New Zealand (1996), the Volhard Medal Award and Lecture of the International Society of Hypertension (1998) and the Twenty Year Medal of the Centro di Fisiologia Clinica e Ipertensione in Milan (2002). In 2002 the Journal of Hypertension commissioned and published a series of Editorial reviews in his honour.

He was appointed a Companion of the Order of Australia in 1991 for his contributions to Medical Science and Medical Research, and awarded a Centenary Medal for contribution to Australian society and science in 2003. In 2007, he was named in The Bulletin's "Smart 100", among the 10 most creative and innovative Australians working in Health and Medicine.

Acting editor, this issue, Bruce Welch

The Australian Tsunami Warning System

A summary of the June lecture by Dr Dale Dominey-Howes

Dr Dale Dominey-Howes described the terrible 2004 Indian Ocean tsunami that killed more than 300,000 people and caused damage exceeding \$10 billion. Although relatively close to the epicentre, Australia was spared significant damage because tsunamis are directional and this one happened to point away from Australia. Dale pointed out the tsunami risk to Australia is much greater than many people realize. Australia is surrounded to the northwest by a tsunamogenic subduction zone curving around the south of Indonesia (site of the 2004 Sumatra quake and 1977 Sumbawa quakes) and to the east by tsunamogenic subduction zones that arc across the Pacific. Historical records (which are very incomplete) record 80 events with the largest being a 6.0 m wave from the 1977 Sumbawa quake. Detailed modeling by Dale's group shows that a five metre tsunami striking Sydney would cause at least \$173 million damage to Manly alone.



Dale described the importance of using the geological record to estimate the frequency of major tsunamis striking Australia. Ted Bryant and others have found good evidence of about 6 sizable events striking Australia's east coast in the last 10,000 years. Bryant has also claimed evidence of mega events in the more distant past. However, excavations led by Dale at Minnamurra Point have disproved one of these claims, and further investigations are ongoing.

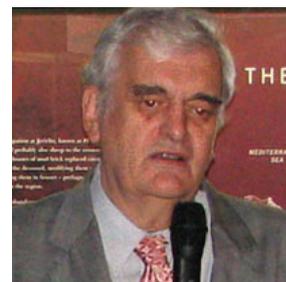
Dale indicated considerable concern with the state of the subduction zone south of Indonesia. He said that since the 2004 quake, there have been a series of smaller quakes marching south along the fault towards a highly stressed region south of Java. Hence there is the real possibility that in the not too distant future there will be a major quake near Java that could generate a large tsunami with catastrophic consequences for southern Java and the Northwest Shelf of Western Australia. Dale and Geoscience Australia have urgently applied for funding to assess the historical record of tsunamis in the region.

The 2004 Indian Ocean tsunami served as a wake-up call to Australia. Since then, the Federal government has committed \$70 million to create the Australian Tsunami Warning System. Dale has been involved with the setting up of the network and he described its function in some detail. An earthquake detected by an international network of seismic monitors triggers an alert at the dual warning centres at Geoscience Australia and the Bureau of Meteorology. Computer models then use this data to forecast tsunamis. A network of undersea "tsunami meters" detect the tsunami and communicate this by satellite. The Bureau then issues a warning to state emergency services and the public. The system works – in April 2007 a quake in the Solomon Islands created a tsunami. Fortunately, the tsunami raced parallel to the Australian coast, rather than striking it directly. The Bureau issued a timely warning (correctly predicting the tsunami's arrival time to the minute) and east coast beaches were closed. However, surfers reacted in typical Aussie fashion, going down to the beach to catch the king wave! Clearly Australians have much to learn about how to handle tsunamis. A vote of thanks was proposed by Dr Lin Sutherland.

Jim Franklin

Gavin Brown appointed Inaugural Director of the Royal Institution of Australia

Professor Gavin Brown, the outgoing Vice-Chancellor of the University of Sydney and a strong supporter of the Society, has been appointed the inaugural Director of the Royal Institution of Australia, based in Adelaide. We wish Professor Brown well in his new appointment and hope to continue the fruitful relationship with him in his new role, which he will commence in August.



Southern Highlands Branch 6.15 Thursday 17 July 2008 The Science of Weight Loss

Drama Theatre, Frensham, Waverly
Parade, Mittagong

Dr Amanda Sainsbury-Salis
Conjoint Senior Lecturer UNSW and
Senior Research Fellow
Neuroscience Research Program,
Garvan Institute of Medical Research



With a Bachelor of Science with Honours from the University of Western Australia and a PhD from the University of Geneva, Switzerland, Dr Sainsbury-Salis leads a research team at the Garvan Institute of Medical Research in Sydney investigating how the brain controls appetite, body weight, body composition, fertility and bone health, and how these pathways are coordinately affected by food, age, gender, genes, medications and diseases such as type 2 diabetes and hypothyroidism.

Dr Sainsbury-Salis' research has been published in leading journals such as *Nature Medicine*, *JCI* and *PNAS*, and she has been continuously supported by highly competitive fellowships such as her current Career Development Award from the National Health and Medical Research Council. Dr Sainsbury-Salis was awarded Young Investigator of the Year by the Australian and New Zealand Obesity Society in 2002, and in 2004 received a Young Tall Poppy Award from the Australian Institute of Policy and Science. In 2008 the International Association for the Study of Obesity selected her to co-chair the International Conference on Sex and Obesity.

From the President

Our push to regain Science House for Science is moving forward, if slowly. Since the last report there have been two meetings held with the Office of Science and Medical Research, who have shown a great deal of empathy with our aims. The building, however, remains vacant and with no tenant signed up.

We have garnered support from a large number of practising and non-practising scientists and this is very pleasing to us, showing that there is a great deal of will out there to make this dream a reality.

Our next step is to develop a business plan for the project and we have sought funding from OSMR to help with this. Robyn Stutchbury, the powerhouse behind this initiative, is going overseas for two months, so if you have ideas or other contributions to the project, please direct them to me. Professor Eugenie Lumbers and I will keep up the momentum in Robyn's absence.

On other matters, I have had discussions with the Sydney University printery, together with Mike Lake and Bruce Welch, about modernising the look of our Journal. We should see a new cover for the Journal with the next Volume.

I was pleased to be able to represent the Society at a reception at Government House last week to mark the 82nd birthday of Her Majesty The Queen.

John Hardie



Science House Update

We have now held our second meeting with the Office of Science and Medical Research (OSMR) about how our Science for Science House initiative might be moved forward. We have also revisited the building, this time with one of their officers. They have asked us to develop a business plan for the operation of the enterprise, once established. We see this as an important first step too.



We have been put in touch with professional business management people who are supportive of the project and who should be able to help develop the business plan for us. We have sought funding from the OSMR and from the City of Sydney to enable a proper plan to be developed.

Even though we have done remarkably well, the initiative still needs the full backing of those of far greater entrepreneurial skill than we have. We are currently looking at how such people might become involved. The ideal would be for the NSW government

to follow the South Australian Rann government and take on the funding of the initiative in the same way. Once it is seen as a government-backed project, industry and philanthropists will start talking business. We will be asking our high-powered supporters to put pressure on the government until they come to the party.

'Science communication' is the current catchphrase in the political arena (both overseas and here) at the moment and so we must demonstrate clearly how Science House will become a major communication centre for science, particularly when it comes to climate change, green energy and carbon trading. This would also be of paramount importance to those involved in R&D and innovation. This emulates the RiAust and the RiGB models on how to proceed.

I will be away for a couple of months from now so am leaving this important work with the President and Professor Eugenie Lumbers who have worked closely with me on the project.

Robyn Stutchbury

Honour for Charles Birch



Professor Charles Birch, a prominent figure in biological circles for many years, has been awarded an AM in the recently announced Queen's Birthday Honours list. The citation for the award mentions that, among other achievements, the award was made for 'contributions to the understanding of the relationship of science to religion'. The Society encourages such cross-discipline thinking and congratulates Professor Birch on his achievement.

Reminder

Donations are Tax Deductible

As the end of the financial year looms, we remind members that donations over \$2 to the Library Fund and the Scholarship Fund are tax deductible.

Membership Renewal

There are still outstanding membership subscription fees. Your prompt payment would be appreciated. You can now pay your membership electronically; for more details contact the Society's office. When using this system be sure to include your reference details i.e. membership number and name. You should also send a fax or email to the office to allow us to check the payment is actually received.

One Hundred Years Ago ...

At the June 1908 meeting of the Society two papers were read. The Viscosity of Water, by Richard Hosking, B.A. (Camb.), communicated by Prof. Pollock, D. Sc., read before the Royal Society of N. S. Wales, June 3, 1908

"In my previous experiments on the determination of viscosity by the efflux method, I have always arranged to have the rate of flow of liquid in the capillary tube very small. ... The glichrometer used in these experiments was of the same form as those previously used by me, but the bulbs were larger. It is shown in Plate 4, fig. 1."

Who has heard of a glichrometer? This instrument consists of two glass bulbs of accurately known volume connected by a capillary tube. Movement of water between the tubes is timed and knowing the temperature and applying a formula one can calculate the viscosity. The term is now rarely used. A search on Google for "glicheometer" gives just five results. Two of these are from the Philosophical Transactions of the Royal Society of London, one from the 1894 Bakerian Lecture and one in 1897.

Timing of the water flow was critical for these experiments and Mr Hosking mentions that "The chronograph used was kindly supplied by Sydney Observatory".

In his talk Mr Hosking also mentions that "In the Journal and Proceedings of the Royal Society of New South Wales are published three most important papers by G. H. Knibbs, dealing with the history, theory, and determination of the viscosity of water by the efflux method."

Notes on a Cupriforous Porphyrite and Quartz Veins in the Nelligen District, by H. I. Jensen, D. Sc., read before the Royal Society of N. S. Wales, June 3, 1908

"On a recent trip to the South Coast Districts I was interested to find between Nelligen and Braidwood, near Sugarloaf Mountain, an extensive outcrop of a dark basaltic looking porphyrite which contained fragments of native copper and small masses of carbonates and silicates of copper. Local residents informed me that lumps of native copper up to 70 lbs. in weight had been obtained in this rock, but all endeavours to find 'the lode' had been fruitless."

Dr Hosking bought back to Sydney a sample of this material for assay and concluded that the copper was not an original constituent of the magma that formed the basalt but was "derived from a metalliferous lode through which the basalt had burst ...". Dr Hosking described this basaltic mass as being of an extent about half a mile wide and ten miles long and that "from an economic point of view the occurrence is valueless, the basalt being nowhere rich enough in metal to pay for the extraction".

He then went on to talk about the many small lenticular quartz veins that he observed in cliff faces and road cuttings of the Nelligen District. This was of great interest at the time as gold often occurs in such veins.

The list of members in the 1908 Volume XLIII includes "Jensen, Harold Ingemann, D. Sc., Macleay Fellow of the Linnean Society of New South Wales, "Roslyn," Plunkett-street, Drummoyne." Hosking was not a member so his paper was communicated by Prof. Pollock. Michael Lake

Contact your office bearers

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