The Royal Society of New South Wales
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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 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.

Saturday 6 September

Science then and now - what 100 years have done for science

Prof. Jak Kelly, Vice President RSNSW
2-4pm, Science House, 157 Gloucester St, Sydney (see page 3)

Wednesday 1 October

Exploring the Milky Way: The Past, Present and Future

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

Southern Highlands Branch

6.15pm Thursday 21 August 2008

Friday 25 July
Metrology for Electron Microscopy
Lehany Theatre, National Measurement Institute, Lindfield
phone 8467 3512 for bookings
www.measurement.gov.au/nano

Tuesday 29 July
Joy and Worry: Commercializing a Physics Invention in Australia
Dr Ditta Bartels, INPHAZE Pty Ltd
Australian Institute of Physics NSW
6pm, Slade Lecture Theatre, School of Physics, University of Sydney

Lecture 6th August 2008

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

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

Alois Alzheimer was born on 14 June 1864. His father was a notary public in the Bavarian town of Markbeit. He attended several universities and received his medical degree in 1887 at the age of 23 from Wurzberg University. In 1894 Alzheimer married a banker's widow, Cacilia Geisenheimer. His marriage to an heiress allowed him to concentrate on his research work. Following work in Frankfurt and Heidelberg, Alzheimer moved to the Munich University Psychiatric Clinic in 1903. In 1908 Alzheimer was appointed Associate Professor and Director of the clinic's Anatomical Pathology laboratory. In 1912 King Wilhelm II of Prussia signed the certificate of appointment of Dr. Alzheimer to a full Professorship of psychiatry at the University of Breslau (now Wroclaw, Poland). His health deteriorated and he died aged 51 as a result of cardiac failure on 15 December 1915.

Two important factors in Alzheimer's discovery of this disease were his friendship with Franz Nissl and the mentorship provided to him by Professor Emil Kraepelin. Nissl developed stains for thin sections of the brain so that structures in the brain could be observed under the microscope. Together they conducted an extensive investigation of the pathology of the nervous system, particularly the cerebral cortex.

The first case of Alzheimer's disease was a female, August Deter, who Alzheimer met in 1901 when she was admitted to the Institute in Frankfurt at the age of 51. She died in 1906 at the time Alzheimer was working in Munich. His former chief gave him access to both clinical records and the brain. Her symptoms of disorientation, impaired memory and difficulties reading and writing became more marked and there was a gradual loss of higher mental functions. His examination of the brain revealed thinned cerebral cortex and under the microscope neuritic plaques and neurofibrillary tangles. The second case was a 56 year old man, Johann F., who was admitted to the Munich clinic in 1907 and died in 1910. He showed cerebral changes similar to the first case. Emil Kraepelin named this illness Alzheimer's disease.

The recommendations from the recently convened panel of eminent geriatricians and psychogeriatricians led by Associate Professor Michael Woodward will be outlined. The panel surveyed the literature to identify dementia risk reduction strategies.

Dr. Bruce Warren M.B. B.S. D.Phil. D.Sc (Oxford) was head of the Department of Anatomical Pathology at Prince Henry Hospital and Professor of Pathology in the University of New South Wales from 1980-1997. In these roles he developed an interest in multi-infarct dementia (i.e. vascular dementia) and in Alzheimer's disease.

Meet your Council

Emeritus Professor Heinrich Hora

Heinrich Hora was born in 1931 in Bodenbach/Elbe, South of Dresden, and went to high schools in Aussig/Elbe and Altenburg/Thüringen. After studying Theoretical Physics at the University of Halle/Wittenberg and finishing his PhD at the University of Jena in 1959, he worked in South Germany until 1975. There he worked in several industry research centres (Zeiss, IBM, Westinghouse and Siemens) mostly on problems of solid state physics for transistors and optical detectors, and from 1962, on the theory of lasers and plasmas for fusion energy at the Max-Planck-Institute in Garching near Munich. From 1969-75 he was Adjunct Associate Professor at the Rensselaer Polytechnic Institute in Hartford CN and Troy NY where he set up the international conference "Laser Interaction and Related Plasma Phenomena".

In 1975 he was appointed Foundation Professor of Theoretical Physics and Head of the Department of Theoretical Physics at the University of New South Wales where he remained until becoming Professor Emeritus in 1992.

In conjunction with Cambridge University Press, he founded the Journal "Laser and Particle Beams" in 1982, serving as Editor-in-Chief until 1992. He held visiting professorships at the Universities of Rochester NY, Bern, Iowa, Giessen, Darmstadt and Osaka, as Attaché at CERN 1990-92, and full-time as Konrad-Zuse-Professor of Electrical Engineering in 1993-96 in Regensburg/Germany.

In all, Professor Hora has supervised 19 PhD students, published 9 books as sole author and 2 others as co-author. His department at UNSW, from 1975-1992, achieved outstanding results in publications and honours students (B.Sc. in Theoretical Physics), producing several University Medallists. He founded the Diracfund at the University of New South Wales to commemorate the visit of Paul Dirac to Australasia in 1975.

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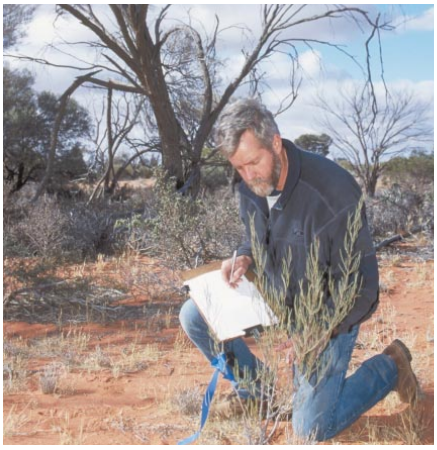
Rabbit impact on native plants and animals

A summary of the July lecture by Dr Brian Cooke



Dr Cooke with post RHD regeneration in the foreground. Unless the rabbit polulation can be suppressed the young plants may be lost and the ancient mulga (in the background) will die out.

Dr Brian Cooke gave an overview of the problems rabbits caused in Australia and the formal and informal studies that were carried out as a result of the introduction of Rabbit Haemorrhagic Disease (RHD), otherwise known as calcivirus.

One of the surprises to come from research was that at 0.5 rabbit per ha the native vegetation was able to regenerate, whereas at over 1 rabbit per ha the native vegetation decreased. At the higher population rates stripping of the lower branches of shrubs and regenerating trees was noticeable (up to 1 metre from the ground). In many cases it was noted that shrub and tree regeneration appeared to have occurred following the impact of the release of RHD in 1996.

Another surprise was that the long-tailed hopping mouse in the Broken Hill area is being reported for the first time ever following the reduction in the rabbit population and the recovery of native vegetation. It would appear that there is a possibility that the rabbit may be responsible for a very significant loss of native fauna and flora throughout Australia.

During questions, the issue of carbon sequestration was raised, and Dr Cooke informed the meeting that if the rabbit population could be removed, or at least held below 0.5 per ha, then that even on the most conservative estimates billions of tonnes of carbon could be locked up in regrowth of plant matter in the more arid areas of the Australian continent.

Dr Cooke stated that whilst there had been an emphasis on the traditional economic impact of the rabbit on the Australian economy, that this was by far too simple an approach to what appeared to be one of the most significant issues for Australia in the next few years.

Southern Highlands Branch

Report of the last meeting held on Thursday 17 July 2008 in the Drama Studio, Frensham School, Mittagong

Dr Amanda Sainsbury-Salis from the Garvin Institute of Medical Research, Sydney, held a workshop explaining how and why people struggle to lose weight. Dr Sainsbury-Salis leads a research team investigating how the brain controls appetite. She was introduced to the 55 participants and thanked by Mr Hubert Regtop, Vice Chair of the Society's Southern Highlands Branch.

Insights from the workshop – "People on a diet experience what is referred to as a Famine Reaction. You've lost a few kilos, you're feeling good, you're doing all the right things…when you suddenly stop losing weight and you start feeling really hungry. Research shows that eating to satisfy your hunger convinces your body there isn't any famine. Your Famine Reaction therefore switches off. Famine Reaction is a survival mechanism that protects you from wasting away and you can lose more weight with less effort.

The other groundbreaking scientific concept is your Fat Brake and how to use it to keep the weight off. Just as your body has a Famine Reaction to protect you from losing weight, it also has a Fat Brake that protects you from gaining weight. For instance, let's imagine you gain a kilo or two over the holidays. Your Fat Brake then revs up your metabolic rate and cuts your appetite. So if you simply follow your hunger signals you lose that excess weight automatically.

When you know how to tame your Famine Reaction and boost your Fat Brake you can lose weight and keep it off with less effort than ever before."

Hubert Regtop

SATURDAY AT THE SMSA:
Science: Our Appetite for Wonder

Saturday 2nd August 2008, 2pm to 4pm

Sydney Mechanics' School of Arts, Level 1, 280 Pitt St Sydney

Entry to this event is free and all are welcome. Afternoon tea provided.

An historical and contemporary exploration of science in Sydney.

Join speakers from The Royal Botanic Gardens, Sydney Observatory and the Powerhouse Museum for illustrated presentations on the history and vision of three of Sydney's cultural and scientific landmarks.

Speakers: Deryl Mason, Friends of the Gardens, Royal Botanic Gardens Sydney; Geoff Wyatt, Observatory Manager, Sydney Observatory; Matthew Connell, Curator, Powerhouse Museum

For more information contact: Colleen Woods, 02 9262 7300 or 0410 325 913, outreach@sydneymsa.com.au, www.sydneymsa.com.au

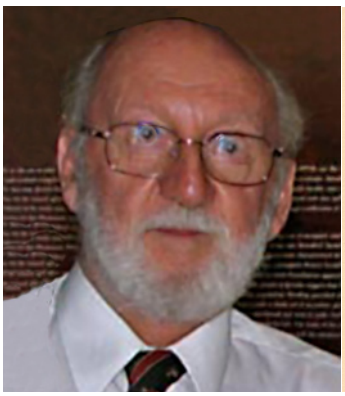
continued from previous page

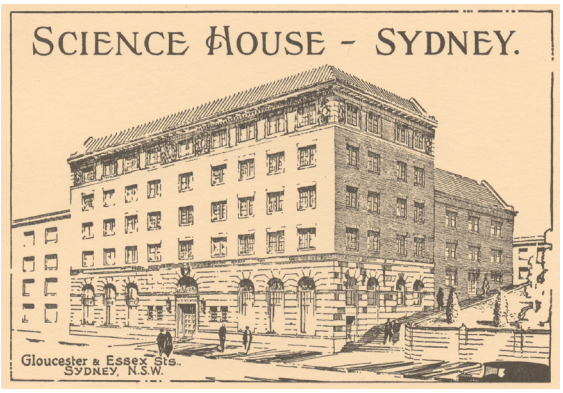
Professor Hora is still involved in international research projects in association with conferences and other consultancies. His more than 500 publications and 58 granted patents (12 in the USA) received more than 3000 citations.

Among his achievements, Professor Hora lists his discovery of the anomalous vector effect of photoemission, the first theory on the modulation of electron beams by lasers (the Schwarz-Hora effect), the correspondence principle for electromagnetic interaction, the first quantum theory of surface tension in metals, the derivation of magic numbers of nuclei from astrophysics and low energy nuclear reaction measurements, and a new laser fusion scheme with block ignition.

Professor Hora was awarded a Doctor of Science from the University of New South Wales in 1981. He is a Fellow of the Australian Institute of Physics and of the Institute of Physics (London) and received the Ritter von Gerstner Medal, the Edward Teller Medal, the Dirac Medal and the Ernst Mach Medal. He was also awarded the German Sports Gold Medal. His hobbies are: playing piano, swimming and golf. He has 6 children and 16 grandchildren.

HISTORY WEEK PROGRAM EVENT
presented by the Society
Science then and now - what 100 years have done for science





Professor Jak Kelly, a well-respected physicist, will repeat the delivery of an important scientific paper, which was actually delivered to a meeting of the Royal Society of NSW at about the turn of the 20th century - just as it would have been to the original meeting. An equally eminent scientist of the modern era will deliver an equivalent address on the same topic noting the advances we have made in that field over the intervening century. Professor Kelly will both act and dress for the role. Other historical touches will be made, such as the use of authentic meeting paraphernalia of the period, and copies of the original paper will be made available to all participants.

2 – 4pm Saturday 6 September

Science House 157 Gloucester Street (corner of Essex and Gloucester Sts) in the city.

From the President

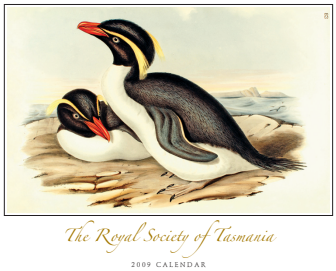
It seems to be the season for change at the moment. There have been some changes in the Society's office with the arrival of Graham Taylor who is helping Val and Irene, particularly with the work of the Southern Highlands Branch. The Bulletin is being managed by Bruce Welch who has stepped in with Robyn Stutchbury away overseas for the moment. And indeed our Chief Patron, the Governor-General, Major-General Michael Jeffery, is bidding us farewell as his term of office draws to a close. I was fortunate in being able to attend a recent farewell function at the invitation of the Premier where I was able to convey a personal message to His Excellency on your behalf about how much we have valued his interest in the Society and to thank him for his support.

I was also pleased to be able to represent the Society at the farewell ceremony for the outgoing Vice-Chancellor of Sydney University, Professor Gavin Brown, held in the Great Hall and MacLaurin Hall at the University on 20 June. It was pleasing to see the strength of feeling towards him and his achievements with the large numbers of well-wishers present at the event. I took the opportunity to pass on your good wishes to him for every success with his new role at the Royal Institution (Australia). I know that we in the Society will certainly be in contact with him when he takes up his new position in August.

We have secured a place in History Week this year, and this will be an opportunity for all members to have a first-hand look at Science House in the Rocks to see what all the fuss is about. I would encourage as many members as possible to attend this important event on Saturday 6 September. Details are given elsewhere in this issue of the Bulletin.

John Hardie

The Royal Society of Tasmania 2009 CALENDAR



Featuring a series of superb Australian bird prints by John and Elizabeth Gould. The artworks are from the Royal Society of Tasmania collection, which is housed within the Tasmanian Museum and Art Gallery and the University of Tasmania Library. Retail price: $19.95 Calendar size: 220 mm high x 320 mm wide. Calendars can be ordered by post for $20.00 per copy (including postage and handling) from: The Royal Society of Tasmania GPO Box 1166, Hobart TAS 7001. Please send cheque or money order. Sorry, we cannot accept credit cards.

Linnean Society of NSW

Wednesday 17 September

Native vegetation: an overview of broad-scale patterns and processes

Dr David Keith,
Senior Principal Research Scientist, Vegetation Dynamics NPWS
6pm in the classroom, Royal Botanic Gardens (enter through gate to the Herbarium Carpark, on Mrs Macquaries Road.

Acting editor, this issue, Bruce Welch

One Hundred Years Ago ...

On the 1st July 1908 at the meeting of the Society two papers were read. One was a quite lengthy paper "Records of Australian Botanists" by J.H. Maiden, Government Botanist and Director of the Botanic Gardens, Sydney and the other paper was "On the Elastic Substance Occurring on the Shoots and Young Leaves of Eucalyptus Corymbosa and Some Species of Angophora" by Henry G. Smith, F.C.S., Assistant Curator, Technological Museum, Sydney.

"Records of Australian Botanists" by J.H. Maiden This 72 page talk is a detailed list of "botanists" of NSW i.e. collectors of note, whether they described their finds or not, and notable horticulturists. Only deceased botanists are included in this list. The list details the years of their birth and death, occupation, important aspects of their life and lists of species named after them. The species lists were compiled by Miss A.M. Jenner, assistant to J.H. Maiden, by "searching the seven volumes of the Flora Australiensis, from beginning to end." The list begins with James Backhouse (1794-1869) and Joseph Banks (1743-1820) and ends with William Woolls (1814-1893). Other notable persons listed are Ferdinand Mueller, Daniel Solander and Tenison Woods.

J.H. Maiden also made a plea in his talk for "the collection of portraits of any kind, no matter how crude, of Australian men of science. Are collections of portraits of medical men, engineers, chemists, zoologists, geologists etc., in existence ?" He ended with "But specific institutions or societies should make it their business to gather together the portraits of the men most interesting to them, and the sooner that effort takes place the better, since every day the links with the past become fewer."

"On the Elastic Substance Occurring on the Shoots and Young Leaves of Eucalyptus Corymbosa and Some Species of Angophora" by Henry G. Smith "When the buds and very young leaves of E. corymbosa are in active growth they are covered with an elastic substance, which, under favourable conditions, can be stretched to a considerable extent." ... "In the beginning of March of this year (1908) there was quite a marked and vigorous growth in the Eucalypts growing around Sydney, evidently due to the rainfall the previous month. At this time the elastic substance on the shoots of both E. corymbosa and A. lanceolata was most pronounced." ... "As this appeared to be a very good opportunity to obtain sufficient material to carry out the investigation, a large quantity of the fresh shoots and very young leaves of both these plants was collected. The trees were growing together on the hills beyond Cook's River, near Sydney."

Mr Smith then performed a number of extractions using various solvents, temperatures and procedures which are well described. He showed that the physical and chemical analysis of the material indicated that it is a good form of caoutchouc. He concluded his talk with:

"If Eucalyptus caoutchouc could be obtained in quantity it seems reasonable to suppose that it would have considerable commercial value."

[caoutchouc (noun) - an elastic material obtained from the latex sap of trees (esp. trees of the genera Ficus & Hevea) which can be vulcanised and then processed into a variety of products.]

Michael Lake

Contact your office bearers

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