



The Royal Society of Victoria

Promoting science



PATRON: The Hon Alex Chernov AC QC
Governor of Victoria

PRESIDENT: Dr Bill Birch AM BSc (Hons) PhD

Headlines...

9th July: 7.00 pm

High Satiety: Why is it so hard to lose weight?

23rd July: 12.15 pm Lunch-time lecture

Radiation Safety of the Patient in Cancer Therapy

Young Scientist Research Prize applications close

31st July 2015

Advance notice...

13th August: Evening lecture with Professor Jenny
Marshall Graves AO FAA

Joint Lecture with Royal Historical Society of Victoria

**8th-9th October Symposium: Managing Biodiversity
under Climate Change** to be held at the University of
Melbourne.

July 2015 Newsletter

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July Meetings

HIGH SATIETY – WHY IS IT SO HARD TO LOSE WEIGHT?

The first July meeting will be held on **Thursday, 9th July 2015 at 7.00 pm.**



Speaker: **Professor Brian Oldfield**

President Australian & New Zealand Obesity Society
NHMRC Principal Research Fellow, Department of Physiology, Monash University

The commonly held and much repeated wisdom is that body weight is “energy in vs energy out” and we just have to modify these (with sufficient will power) to achieve perfect body weight.

But why do we have friends that don't seem to try as hard as we do and still stay slim? Why is it that these people are not often related to us, and never our identical twin?

What are the primitive drivers within our “psyche”, or more particularly the intricate circuits within our brain, that are defiant in the defence of a “set point” of body weight that limits our ability to maintain any weight loss over time? What are the mechanisms that, as eloquently described by Pacino, “keep dragging us back”.

This talk will describe research into the way that the brain defines our ideal body weight through modification of appetite, food intake and energy expenditure. It will also provide insights into the means through which bariatric surgeries help to reduce body weight in the obese and will touch on the concept that intake of highly palatable food is driven by “reward” circuits in the brain – these same circuits that may be deficient in anorexia nervosa.

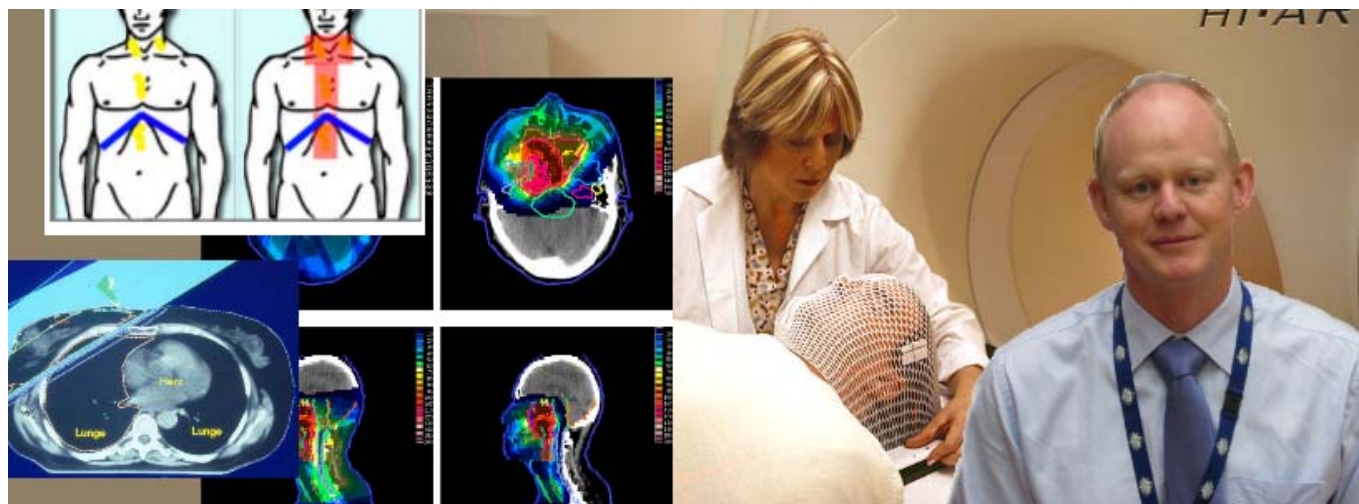
These insights will provide a more complete understanding of the detail of weight gain and the complexity of weight loss and may hopefully engender greater empathy for those individuals who find it difficult to maintain weight loss.



Book online now at <http://ow.ly/OEYkE> or call or email the RSV office to secure your place: 9663 5259, rsv@sciencevictoria.org.au Our lectures are free with an optional gold coin donation to our science programs.

RADIATION SAFETY OF THE PATIENT IN CANCER THERAPY

The second July meeting will be held on **Thursday, 23rd July at 12.15 pm.** as a **lunch-time meeting.** Members and guests are welcome to join us for lunch in the Burke & Wills Room after the lecture at 1.15 pm (**bookings essential**). See details below.



Speaker: Associate Professor Ivan Williams
Director, Australian Clinical Dosimetry Service

Over 50,000 Australians receive radiation treatment for cancer every year. Treatment success, patient safety and clinical trials all depend upon the correct amount of radiation, or dose, being delivered to the patient. Over the last two decades, overseas accidents have resulted in inappropriate treatment of thousands of patients, sometimes with fatal consequences. Within Australia comparatively minor incidents, with no discernable clinical impact, have occurred, but have nonetheless involved hundreds of patients.

In 2010 Australia setup a pilot national dosimetry program, the Australian Clinical Dosimetry Service, ACDS. Funded by the Federal Department of Health, the pilot was free and voluntary to all radiotherapy providers in Australia. Within six months of the ACDS' launch, every radiotherapy provider within the country had agreed to participate in the audit pilot.

The ACDS' success is due to a combination of scientific rigour, engagement with clinical professions, and building a climate of trust and legitimacy with all stakeholders.

The presentation will cover the audit design and its proven clinical impact across Australia. Responses to audit findings and recommendations that have led to practice changes in a number of clinics will be reviewed. The presentation will discuss the social pressures which exist within the professional environment and their effect on the ACDS' operations, and will conclude with a view of the ACDS' future.

Eventbrite

Book online now at <http://ow.ly/OI0Ve> or call or email the RSV office to secure your place: 9663 5259, rsv@sciencevictoria.org.au Our lectures are free with an optional gold coin donation to our science programs.

Pre and Post-Lecture Gatherings

If you plan to join us for refreshments prior to the lecture on 9th July (6:15pm) or post lecture on 23rd July (1.15pm), please register your attendance so we can arrange appropriate catering.

Register for any of our events at <http://ow.ly/OEY92>, or phone 9663 5259, or email rsv@sciencevictoria.org.au

Nominations for RSV Membership

Nominations for membership of the Society have been received on behalf of:

Ehsan ATAZADEH, PhD Student

Byron HOLDAWAY, Retired Chemical Engineer

Md Rashedul ISLAM, PhD Student

Dr Bram Derek MASON, CEO Dahl Trust

Hosna TASHAKKORI, PhD Student

Unless Members request a ballot, they will be considered for election at the Council meeting on 9th July and if elected, will be announced at the Ordinary Meeting of the Royal Society of Victoria held that evening.

Recently elected members who have not yet signed the Society's membership book nor received their certificate are invited to attend the 9th July meeting to be formally welcomed as members.

SA ROYAL COMMISSION INTO NUCLEAR FUEL CYCLE

Following last month's Q&A Nuclear Energy Panel discussion, members may be interested to know that South Australia is conducting a Commission into nuclear fuel. Many RSV members are highly qualified to make authoritative comment and contribute to the material under consideration. Any individual is able to make a submission, whether they live in SA or not.

Further information is available at <http://nuclearrc.sa.gov.au>

Submissions made to the Commission are required to be accompanied by a completed Cover-sheet. The Cover-sheet requires an oath or affirmation to be made and witnessed by a suitable person, such as a Justice of the Peace, a solicitor or a proclaimed police officer.

The issues set out in the Commission's terms of reference are of great importance to the future of Australia.

ADVANCE NOTICE

Symposium: Managing Biodiversity Under Climate Change

8th- 9th October, 2015 to be held at the University of Melbourne.

In conjunction with the Victorian National Parks Association and the University of Melbourne, the RSV will be contributing to this Symposium which will examine the anticipated problems under a defined climate change scenario and how these might be managed. The Symposium will be co-sponsored by the Department of Environment, Land, Water and Planning, the Victorian National Parks Association and Parks Victoria.

Further details will be provided in subsequent newsletters. Members are encouraged to attend.

- **Professor Lynne Selwood**

Donations

Council thanks all Members who have continued to support the Society; particularly those who have renewed their membership for the 2015 year promptly.

Members are reminded that donations made to the Royal Society of Victoria are tax deductible and we are particularly grateful to Members who have already donated to support the annual Young Scientist Research Prizes and to renew facilities in our heritage building. Please consider doing the same when renewing your membership.

Donations are very welcome and can be made at any time.

Young Scientists' Research Prizes

The Royal Society of Victoria has established four prestigious competitive prizes open to postgraduate doctoral students in all areas of the Biological Sciences (Non-human), Biomedical & Health Sciences, Earth Sciences and Physical Sciences. The Biological Sciences (Non-human) prize and Earth Sciences prize are supported by donations from the families of previous Royal Society Presidents Edmund D. Gill and Neil Archbold respectively.

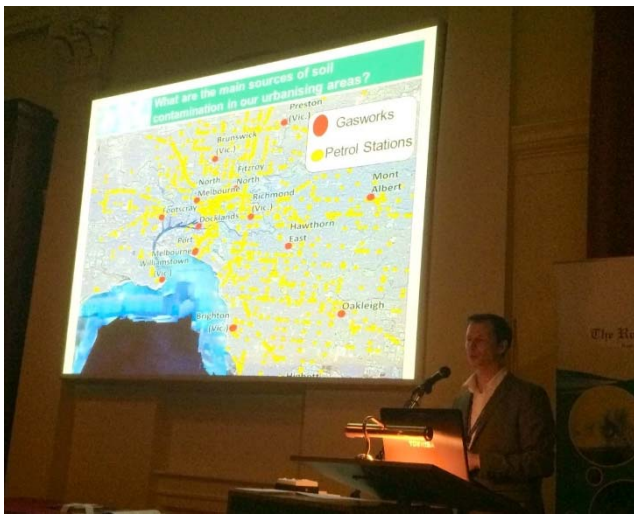
Applications are open to candidates in the third or fourth year of their doctoral candidature in Universities in the State of Victoria at the time of application and who are members of the Royal Society of Victoria. Applicants who are not already members are required to join the Society (via an accelerated process). **Applications close on 31st July 2015** and must include an extended abstract of the candidate's research work. Detailed information is available on the Awards page of the website at <http://www.royalsocietyvictoria.org.au/awardsand-prizes>

RECENT LECTURES

Beneath the Surface: Living with our Industrial Legacy through Urban Renewal

14 May, 2015

We had a large, diverse crowd for Golder Associates' Principal Scientist, Christian Wallis, addressing our industrial legacy, urban renewal and the status of our soils for our [International Year of Soils](#) event.



An auditor who assesses and remediates large industrial sites, Wallis considers the state of our soils in urban areas as a legacy of cities being founded on or near productive, arable land. In the 1950s, over 90 square kilometres of productive land was located within Melbourne's urban boundary. Now there is less than two.

There are hundreds of new industrial chemicals registered every year, but any substance in the wrong place at the wrong concentration is considered a contaminant. Most consider heavy industries and petrochemical sites to be the main culprits for soil contamination, but few realise the weathering of the family home is also a major contributor.

Wallis shared some sobering facts, demonstrating the distribution of contaminants with a map of petrol station and gasworks across metropolitan Melbourne in the 1970s and a backyard soil evaluation across metropolitan Sydney demonstrating that concentrations of lead across the city were "unacceptably high" - and right "where hipsters want to grow vegetables!"

While goodwill, community organisation and corporate governance are important, Wallis

argued the only real response to soil contamination is a **strong regulatory environment**. As with so much else, prevention is the key - a range of measures can be undertaken to remediate a contaminated site, but it is extraordinarily hard to bring a site all the way back to food production suitability - indeed, he's never seen it succeed.

Himself an avid vegetable gardener, Wallis provided examples of using commercial soils that were still unacceptably high in contaminants on testing. Indeed, it seems to be so difficult to 'fix' contaminated soil that it begs the question: why do we not protect soils as we do water catchments? **We must protect what remains intact, fiercely**. Building human settlements on top of contaminated sites is far preferable to extending beyond the urban fringe to claim increasingly precious arable land.

Insightful questions and statements from the audience included commentary from Jane Monk, Director of Inner City planning from the Office of the Victorian Government Architect. Jane expounded on plans for Fisherman's Bend in Melbourne, a site subject to years of industrial activity and the silt build-up from the Coode Island facility. By necessity, the site must be a "tough, high density area" built upon deep piles into the soils and silts that simply cannot be remediated. It simply cannot be a garden site if it is to safely support a human population.

A worthwhile lesson in valuing our soils, which are developed over many millions of years to sustain biodiversity and are lost so easily through thoughtless, poorly planned human activity.

Victoria's Gemstones: Much More than Just History

28 May, 2015

A capacity crowd crammed in (and then some) to the Ellery Theatre to hear RSV President William Birch AM deliver his presentation on Victoria's Gemstones for the 2015 A W Howitt Lecture, a joint presentation with the Geological Society of Australia Victoria Division. Part history, part geological survey, Bill took us on a journey from the 1865 exhibition of gemstones here at the RSV Hall conducted by then President and mineralogist the Reverend John Ignatius Bleasdale, one of Bill's "geological heroes" who, despite a lifelong involvement and promotion of local Victorian gems (and South Australian wines), died a poor man in San Francisco, his

grave later disturbed by the subsequent earthquake of 1906 and his reburial place now sadly unknown.



Diamond finds in Victoria are very rare, with only 60 known specimens preserved - as with the somewhat more abundant sapphires, there has never been an attempt to commercially mine them here. However, Bill kindly showed us where they were all found and, along with other precious gems, gave us a fascinating insight to the chemical properties of Victorian gemstones from the various fields across the state. Zircon was found in relative abundance during the gold rush and, like rare earth phosphate monazite, retains traces of uranium and thorium that assist in carbon dating the age of the gems and their surrounding strata.

Of particular interest was the geological history of Victoria that has made its gemstones so elusive and difficult to predict in location. Essentially, it seems local gems were created through subduction, or tectonic forces, rather than the stable pressures applied to the gem fields in Western Australia. The volcanic forces that created the Great Dividing Range forced gems to the surface, often encased in basalt, then distributed and redistributed through the sluicing forces of erosion from one surface to another, down from the Mesozoic era to the creek beds and basins of the present day.

Following questions on chemical properties that distinguish a ruby from a sapphire (essentially the same chemical - aluminium oxide - with different trace elements), and a ruby and a garnet (similar colours, completely different chemical compositions/structures), Bill invited the audience downstairs to sample some tasty reds from the Bleasdale Vineyards of South Australia, proposing a toast "to gemstones and wine!" Great night.

Nuclear Energy: Should it be Included in the Mix?

11 June, 2015

A long-anticipated foray into panel discussion and audience Q & A attracted another capacity crowd to the Ellery Theatre. Representing a plurality of political and scientific positions on nuclear energy, our panellists each briefly outlined their case before session chair Professor Douglas MacFarlane moved to the audience for questions and input.



Many had anticipated a fiery discussion, but the atmosphere was far more subdued and severe – there was a feeling the subject matter had been explored exhaustively over many years by panellists Jim Green, Martin Sevier, Graeme Weber and Gavin Mudd, all of whom were weighing heavy issues; uranium cycle proponent Weber viewed the benefits of the energy source were desperately required in the face of runaway climate change and carbon emissions, while detractors Gavin Mudd and Jim Green remained convinced the uranium cycle is “a failed environmental activity” that lacks real assessment of environmental impacts and can only add to the damage wrought by the carbon cycle.

Many questions from the audience focussed on the economic arguments for and against the use of 3rd generation reactors and uranium fuel. Sevier asserted the embodied energy/footprint of a reactor was similar to that of a wind farm, including the decommissioning process. Mudd surfaced the paradox of not being able to safely store plutonium for 10,000 years because “it hasn’t been done yet.” Green pointed to the vigorous subsidies for 3rd Generation reactors in the United States, but Weber countered with still more generous subsidies for the renewables sector – twice the rate in fact.

Discussion ranged across Australia’s energy infrastructure, the rights and needs of Indigenous communities, the straight-forward weaponisation of nuclear fuel and the viability of renewables in providing baseload energy to the grid. At the end of the session it seemed there were so many questions left unasked and still more unanswered, highlighting this is an area of immense scientific, political and moral complexity that could warrant a full symposium. Discussion scarcely touched “4th Generation” technology and alternative fuels such as thorium, and left many hungry for more. A heavy, serious discussion from our excellent panellists and incisive audience members that we should perhaps revisit in the program very soon.

Publish in The Proceedings: Invitation to Members

To broaden the scope of our journal *The Proceedings of the Royal Society of Victoria* at the international level, we are inviting members to submit a paper as sole author or in collaboration with colleagues. In addition, we urge you to encourage your research students to submit a research article or review. We seek contributions in all areas of science.

This year we have a very healthy rate of contribution for both editions of the 2015 volume, which is now entirely published and distributed online through CSIRO publishing.

Copies will be accessible through the Royal Society of Victoria’s website once the first electronic edition is released later this month.

Open House Melbourne: Volunteers Required



This year the Royal Society of Victoria will once again open its heritage building to tours by members of the public on **Saturday, 25th July**.

We are seeking members with an interest and expertise in the rich history of the Society, its rooms, the provenance of the various objects on display, and the biographical details of its prominent historical figures to guide small groups around the building. Melbourne Open House is a wonderful opportunity to engage those curious yet apprehensive members of the community who may not otherwise make an approach.

If you are interested and available to take on a morning or afternoon shift, please contact the office at rsv@sciencevictoria.org.au or on 9663 5259.

Former Bureau of Meteorology Site



The “BOM” site has been the subject of some welcome media interest over the past few weeks, with extensive local [radio](#), [newspaper](#) and television coverage.

The Society has established an information page at <http://ow.ly/OEYZO> to outline the context of the site and its various constraints.

Thus far the public interest has been very interesting, with a number of serious commercial

proposals in the mix, along with some suggestions for use as a research and community space. Bearing in mind **the Society will need to collect some revenue from the site** to fund its activities, it is likely we will consider a commercial purpose that incorporates some of the broader desires of the Melbourne community, such as trees, artwork, science information, research activity, general utility and food production.

The Society intends to guide the process through appointment of a Steering Committee comprising representatives from our Council, our Trustees, Heritage Victoria, the City of Melbourne, a heritage architect firm and an appropriate community representative.

GoGet on Site @ RSV



We are very pleased to announce the community car share scheme [GoGet](#) has leased the six designated spaces in the Society's carpark for use as 'pods.'

To accommodate our commercial parking leases, **please avoid parking in the numbered bays** adjacent to the building. We are working with GoGet to provide suitable signage.

While this welcome development will enable the Society to honour its commitments to the RSV Science Foundation, it will also limit the number of available spaces to members and tenants. Charging fees for same also obliges the Society to pay the City of Melbourne's expensive congestion levy, which outweighs our revenue. Accordingly, **we will no longer charge members for parking**, providing more benefits to your membership and recognising the limitations of available space.

Please note parking is **not available on Tuesday evenings** due to bookings for the entire building.

Vale

The Council of the Royal Society of Victoria extends condolences to the family of **John Melvin Swan** who passed away peacefully at his home in South Yarra on Monday, 15 June. A long standing RSV members since 1968.

Queen's Birthday Honours

Hearty congratulations to the following RSV members recognised for their contribution to public life and their fields of endeavour:

Dr Phillip Stephen Bachelor OAM

For service to the community, to the environment, and to cemetery management.

Dr Susan Q White OAM

For service to science, particularly to speleology, and to youth.

