

## Celebrating National Science Week

7:00 pm, Monday August 15<sup>th</sup>, 2005  
Royal Society of WA Ordinary Meeting  
Kings Park Administration Building  
off Fraser Ave., Kings Park

**Dr Mark Lofts**

**“Our Sun”**



Fine structure of the Sun's corona visible during a total eclipse.

Our Sun is halfway through its 10 billion year lifetime. Its reliable and steady energy output – due to nuclear fusion – is attested by the evolution of complex life on Earth. Nevertheless, the interior workings of the Sun such as the 11-year sun spot cycle remain only partly understood despite new observational techniques such as helioseismology.

In his presentation, Dr Lofts, from the Astronomical Society of WA, will touch on many aspects of solar astronomy, describing and discussing the internal structure of the Sun, the Sun's rotation, and its mass distribution, and will provide an explanation of the perihelion shift of Mercury's orbit from a different perspective.

Members, guests and visitors welcome  
<http://www.ecu.edu.au/pa/rswa>

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## **RSWA AGM 2005: Medallist Address**

At the Annual General Meeting of the Royal Society of Western Australia held on July 18<sup>th</sup>, 2005 in the Jennifer Arnold Lecture Theatre Zoology Department, University of Western Australia, some 70 members and guests attended to see former RSWA President and RSWA Medal awardee, Dr Ken McNamara receive his Royal Society of Western Australia Medal and to hear his Medal lecture entitled "The star-crossed stone."



With a well illustrated presentation, Dr McNamara focused on one of his major interests – fossil urchins, and used archeological evidence to show how ancients from pre-historic times, including *Homo heidelbergensis*, *H. neanderthalensis*, as well as subrecent *H. sapiens*, also shared this fascination. While palaeontologists have been collecting fossil sea urchins and using them in studies of evolution, palaeoecology, biostratigraphy and biogeography for over 100 years, Dr McNamara showed that these fossils, often manifest as five-pointed stars on stones, are present in archaeological sites throughout Europe, northern Africa and the Near East, and that there have been pre-historic collections of these fossil urchins dating back to 400,000 years ago. Essentially, they have been part of human history for longer than European academic

interest in fossils. Some of the archaeological sites involved the star-cross stones accompanying the dead in graves, with one example showing a burial where a body was circled by the fossil urchins. Dr McNamara put forward the idea that understanding what the pre-historic peoples thought of these fossils can be ascertained from archaeology, mythology and folklore. Their archaeological association indicates that in many Neolithic, Bronze and Iron Age societies, fossil urchins were objects of profound spiritual significance and were probably associated with resurrection myths.

Dr McNamara outlined some of the variable names ascribed to these star-crossed stones, and some of the Recent folklore associated with them. Folk names, such as shepherd's crowns, fairy loaves and thunderstones, also provide insight into the myths that were associated with these fossils, particularly as to their presumed function in protecting their owner from evil or misfortune. On a final note, Dr McNamara argued that the society's fascination with five-pointed stars, as distinct from six-pointed stars, for at least 5,000 years has evolved from an earlier reverence for the fossil urchin star-crossed stones.

## **Meetings with the Minister for Science**

Starting in August 2005, some members of Council will meet on a monthly basis with the Minister for the Environment and Science, The Hon. Dr Judy Edwards MB BS MLA, to discuss matters of science in WA. If any member of the Society wishes to raise a topic related to the promotion of Science in WA for discussion with the Minister please contact Dr Alex Bevan: [bevana@museum.wa.gov.au](mailto:bevana@museum.wa.gov.au)

## June 2005 Meeting notes

### **Dr. Colin Raston: Green Chemistry and Sustainable Development**



Some 20 members and guests attended the Ordinary Meeting of the Royal Society of Western Australia at King Park on 20<sup>th</sup> June to hear Colin Raston, Professor of Chemistry at University of Western Australia, deliver his interesting and topical presentation on “Green chemistry and sustainable development”.

Professor Raston tracked the importance of engaging scientists and engineers to solve the problems of sustainability for the benefit of all sectors of the community. The key milestones in the history leading to Green Chemistry were the 1950s and 1960s, a time of rapid industrialization without regard to the environment, 1962 with the publishing of ‘Silent Spring’, by Rachel Carson, the 1960s and 1970s, with international attention on the environment, the 1970s and 1980s with a proliferation of environmental laws and regulations, and the late 1990s with the emergence of Green Chemistry. The proliferation of environmental laws and regulations has resulted in complexity in interactions between regulating bodies, existing laws, new laws, and industry, compliances, policies, training etc. The result, however, has been amelioration of environmental degradation and innovative technical solutions to waste management.

From the onset, Professor Raston outlined the current reasons behind the Global Crisis, listed as (1) Ecological stresses, (2) Biological diversity under threat, (3) Demands on resources, which per person is growing (these include energy, fossil fuels, mineral processing, nuclear energy, agriculture, and forests), (4) Climate change due to greenhouse gas emissions, and (5) Toxic waste build up. The answers to these problems lies partly in Green Chemistry, i.e., chemical processes that reduce or eliminate the use or generation of hazardous substances in the design, manufacture and use of chemical products. Green Chemistry is “benign by design” and is directed towards a Sustainable Trajectory. Professor Raston outlined the tasks required to achieve a Sustainable Civilization, i.e., (1) complete re-development of our energy systems, so that it is climate neutral, (2) a complete re-development of chemical, material and building technologies using 20<sup>th</sup> Century technologies and Biotechnology and nano-technology, (3) a complete re-development of industrial agriculture, (4) preservation of the world’s remaining species and ecosystems (loss of which would result in possible loss of cures for cancer, models for chemical production, farmable food sources), and (5) a zero waste society.

Professor Raston then went on to outline the principles underlying Green Chemistry, and pointed out that while Industry may feel that regulations are an imposition to them, Green Chemistry actually is a cost-benefit outcome for them. On a final note, Professor Raston outlined his vision of the future where the principles of Green Chemistry had been adopted –between the stakeholders (University, Industry, Government, and Community).

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## ***Terrestrial Fauna Survey Database Project***

In 2002 the RSWA convened a one-day workshop to assess the need for a database of information collected during terrestrial vertebrate fauna surveys. The outcome of this workshop was strong support for the development of a database that would be publicly accessible. RSWA Council members Dr Phil Withers and Dr Graham Thompson set about applying for funding, and in 2004, the RSWA received a *Lotterywest* grant to employ a Software Engineer to develop the software to get this database up and running. This initiative involves the RSWA, University of Western Australia, WAM, CALM and the EPA, and will affect anybody that undertakes terrestrial fauna surveys or collects or surveys Australian native fauna under a permit issued by CALM.

It is proposed that all returns to CALM (as per the regulation 17 License conditions) will be the primary data source. These returns will adhere to a standard format to enable importation and compilation into the database. Researchers, students, consultants, and field naturalists that are involved in the collection of data on Western Australian native fauna will be affected but will also benefit by what is proposed. The development of the database is well advanced, but there is still time to incorporate valuable feedback.

In this context, the RSWA is planning a half-day workshop to discuss the progress of this system and demonstrate its primary components. This workshop provides an excellent opportunity to see the database in operation, and to ask questions of the key designers and on intended government custodians of the system.



### Draft Schedule - Second Workshop of the Terrestrial Fauna Survey Database project

Date: Friday 26<sup>th</sup> August 2005

Time: 1 pm-5 pm

Place: Jennifer Arnold Lecture Theatre, UWA Zoology Building

Parking: Zoology car park, Hackett Entrance 4 (parking cost 40<sup>c</sup> /hr

Australia II drive, 60<sup>c</sup> /hr paid parking

**Part 1 - 1:30 – 3:30 pm** Presentation / Demonstration

**Afternoon tea: 3:30 – 4:00 pm**

**Part 2 - 4:00 – 5:00 pm** “Have a go” hands-on demonstration - Feedback session

If you would wish to be involved in this workshop, will you please email: [fauna@cyllene.uwa.edu.au](mailto:fauna@cyllene.uwa.edu.au) placing the words ‘Survey database workshop’ in the subject line.

In the body of the email would you provide the following information:

Your name.....

Your professional affiliation.....

Your role .....

Contact phone.....

Contact email.....

If you know of other people that may be interested in attending this workshop, please ask them to e-mail [fauna@cyllene.uwa.edu.au](mailto:fauna@cyllene.uwa.edu.au)

## National Science Week Event:

### *The Hitchhiker's Guide to Astronomy in Western Australia*



**Date:** Wednesday, 17<sup>th</sup> of August

**Time:** 7 pm

**Place:** Horizon the Planetarium  
Cnr Sutherland St and Railway Ave  
West Perth

**Cost:** Free

**Age Group:** upper primary - adult

**Bookings\*:**

Tickets at the door, however, to avoid disappointment, reserve your seats at:  
Horizon - Ph 94868246

RSWA Group Bookings:

[rswa@iinet.net.au](mailto:rswa@iinet.net.au)

\* NOTE: people not present at 6.45 pm will have their seat(s) reallocated.

Opened by the Minister for Science the Hon Dr Judy Edwards, hosted by the Royal Society of WA, the Astronomical Society of WA and Horizon the Planetarium, the program is as follows:

Guest speakers-5-15 minutes duration  
**Hon Dr Judy Edwards** Minister for Science, who will open the evening.

**Dr Alex Bevan** RSWA President  
"Blasts from the Past – a Tale of Asteroidal or Cometary Impacts"

**Mr Michael Allman** Astronomical Society of WA

"How the Ancient Greeks measured the circumference of the Earth 200 years BPE.

**Dr Jamie Biggs** Perth Observatory

"Past achievements and present activities of the State's observatory"

**Mr Alan Brien** CEO SciTech

Following a refreshment break, and display viewing -

**The Horizon Planetarium show will commence at approx 8:30 pm:**

*The Search for Life: are we alone?*

This is hour long show is billed by Horizon the Planetarium as "A breathtaking show narrated by Academy Award - nominated actor Harrison Ford. An exhilarating journey from the depths of Earth's oceans and onward to planets outside our solar system. The Search for Life depicts how scientists are searching, as never before, for signs of life beyond our world.

### RSWA Events Calendar

<i>Date</i>	<i>Time</i>	<i>Venue</i>	<i>Event</i>
August 15 <sup>th</sup>	7 pm	Kings Park	Dr Mark Lofis "Our Sun"
August 17 <sup>th</sup>	7 pm	Horizon Planetarium	RSWA/ASWA Science Week Event
August 26 <sup>th</sup>	1-5 pm	Zoology Dept UWA	Terrestrial Fauna Survey Database Project Workshop
September 19 <sup>th</sup>	7 pm	Kings Park	TBA
October 17 <sup>th</sup>	7 pm	Kings Park	Salinity in WA
November 21 <sup>st</sup>	7 pm	Kings Park	Dr D Groves
December TBA	TBA	Xmas Function	TBA