

LINNEAN SOCIETY OF NEW SOUTH WALES

LINN S'O'C' NEWS

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INCLUDED WITH THIS ISSUE

Record of Annual General Meeting, 18 March 2015
 Form for donations to the Scientific Research Funds
 Registration form for Belubula Symposium

NEW MEMBERS: We welcome

Mr Kye R Adams, University of Wollongong. Fields of interest: marine biology, ecology, natural history, genetics.

Mrs Sophie Bratenkov, Macquarie University. Fields of interest: geochemistry, biostratigraphy, climate reconstruction.

Miss Kirilee Chaplin, Museum of Victoria. Fields of interest: conservation, population genetics, taxonomy, evolutionary ecology.

Ms Jodi M Fox, University of Tasmania. Fields of interest: geology, volcanology, fauna and ecology.

Miss Jessica Hacking, Flinders University. Fields of interest: conservation biology, molecular biology, herpetology.

Ms Melanie K Laird, University of Sydney. Field of interest: natural history, particularly

marsupials and monotremes.

Mr John Marchant. Field of interest: palaeontology.

Mrs Floret L Meredith, University of NSW. Fields of interest: biogeography, plant ecology, community ecology, botany.

Prof Angela T Moles, University of NSW. Fields of interest: plant ecology, biogeography.

Mr Harry A Moore, Deakin University. Fields of interest: conservation biology, applied ecology, general habitat preservation.

Mr Timothy Morris, University of NSW. Fields of interest: arid ecology, mammals, foraging behavior, grazing.

Ms May M Noble, Australian National University. Fields of interest: Freshwater ecology and biology

Ms Parisa Noorian, University of NSW. Fields of interest: effects of protozoan predation on pathogenicity of marine bacteria.

Mr Niels Rueegger, Southern Cross University. Field of interest: wildlife research.

DONATIONS TO THE SCIENTIFIC RESEARCH FUNDS

From Mrs Betty Jacobs

Mrs Betty Jacobs has made a donation of \$5,000 to the Joyce Vickery Scientific Research Fund in memory of the late Dr Surry Jacobs. Dr Jacobs was a grass specialist at the National Herbarium of New South Wales who demonstrated that the behaviour of plants in the field bore scant resemblance to carefully controlled experiments in the glasshouse. The Surry Jacobs Scientific Research Grant will be given for a fieldwork project in botany. We thank Mrs Jacobs for her generosity

From the Sisters of Saint Joseph

The Sisters of Saint Joseph, Victoria-Tasmania Region, has made a one-off donation of \$5,000 to the Society in celebration of the 125th year of the death of Julian E. Tenison-Woods, who with Sister Mary Mackillop, founded the Sisters of Saint Joseph. Tenison-Woods was President of the Linnean Society of NSW 1879-1881, Vice-President 1881-1889. Tenison Woods made a significant contribution to scientific discovery and exploration of Australia and South East Asia. Council decided to divide the \$5,000 donation into four \$1,250 grants. The grants will be in honour of Julian Tenison-Woods and one grant will be awarded each year 2016-2020 (inclusive). Applicants for the Betty Mayne and Joyce Vickery grants will also be considered for the Tenison-Woods grant and there will not be a separate application process for this grant. According to the wishes of the Sisters, the donation will be made available to young post-graduate research students who have a particular interest in scientific areas that interested and excited Julian Tenison Woods. The Sisters' generosity is much appreciated.

From Members

Members have also donated a total of \$766. We thank Mrs Sophia Bratenkov, Dr Martin Denny, Mr Ian Endersby, Dr Michael Englebretsen, Ms Jodi Fox, Miss Jessica Hacking, Dr Patricia Hutchings, Ms Rached Levin, Dr M.J. Littlejohn, Dr Daniel Lunney, Dr Graham McLean, Mrs Floret Meredith, Dr A.O. Nicholls, Mrs Mae Noble, Ms Parisa Noorian, Dr R.A.L. Osborne, Dr John Pickett, Mr Niels Rueegger, Prof L. Selwood, Dr Helen Smith, Dr B.V. Timms, Dr J.C. Turner, Dr Barry Webby, Mrs Karen Wilson, Dr Leigh Winsor, Dr Alec Wood, and Joseph Wright. Their generosity is much appreciated.

REGISTRATION FOR SYMPOSIUM,

Natural History of the Belubula River Valley and the adjacent area of central western New South Wales, Bathurst NSW, 7-10 September 2015

The registration form and information about the symposium is included with this newsletter. Expressions of interested in presenting a spoken or poster paper should be send to Mike Augee as soon as possible.

M.L. Augee

fossil@well-com.net.au

89 Caves Road

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Deadline for submission of abstracts from prospective speakers, 1st July, 2015

Deadline for registration of all participants of the symposium, 1st August, 2015

PAPERS IN VOLUME 136 (2014) OF THE PROCEEDINGS

Section 1 Papers arising from a symposium held by the Linnean Society of NSW at Jenolan Caves 22-23 May 2013

R. E. Pogson, R.A.L. Osborne, D. M. Colchester: Minerals of Jenolan Caves, New South Wales, Australia: Geological and Biological Interactions.

Andrew C. Baker: The Jenolan Environmental Monitoring Program.

Stefan M. Eberhard, Graeme B. Smith, Michael M. Gibian, Helen M. Smith, Michael R. Gray: Invertebrate Cave Fauna of Jenolan.

Kath Bellamy, Craig Barnes: Jenolan Show Caves: Origin of Cave and Feature Names.

R. Armstrong L. Osborne: Understanding the Origin and Evolution of Jenolan Caves: The Next Steps.

David F Branagan, John Pickett, Ian G. Percival: Geology and Geomorphology of Jenolan Caves and the Surrounding Region.

Articles

Helene A. Martin: A review of the Cenozoic palynostratigraphy of the River Valleys in Central and Western New South Wales.

Daniel Lunney: Integrating History and Ecological Thinking: Royal National Park in Historical Perspective.

Graham McLean: A Comparative Study of the Australian Fossil Shark Egg-Case *Palaeoxyris duni*, with Comments on Affinities and Structure.

Rumeida Mat Piah, Daniel J Bucher: Reproductive Biology of Estuarine Pufferfish, *Marilyna pleurosticta* and *Tetractenos hamiltoni* (Teleostei: Tetraodontidae) in Northern NSW: Implications for Biomonitoring.

Carmen Booyens, Anita Chalmers, Douglas Beckers: The Effect of Disturbance Regime on *Darwinia glaucophylla* (Myrtaceae) and its Habitat.

The *Proceedings* is published on line and may be accessed free of charge by anyone at the website <http://ojs-prod.library.usyd.edu.au/index.php/LIN>

POMPEIS OF THE PACIFIC: CATASTROPHES, EVOLUTION AND CREATIVITY IN NEW BRITAIN, PAPUA NEW GUINEA: a talk given by Dr Robin Torrence.

Dr Torrence is interested in the impacts of natural disasters that cause destruction and collapse of the communities in the region. People live in regions subjected to catastrophic events such as volcanic eruptions, tsunamis, cyclones etc. that cause collapse of living conditions, yet they come back, knowing that the same event will happen again at some time in the future. How do they cope? Dr Torrence works in New Guinea, on the Willaumez Peninsula of New Britain that has Rabaul on the end of this peninsula. The area is volcanic, with the type of volcanoes that blow their top and spew out ash, as did Pompeii.

The chosen study area is at the isthmus of the peninsula, some 50 km to the south of the Dakataua volcano that is close to Rabaul. It is some 50-60 km west of Witori, another active volcano. In this position, the eruptions would not have killed the people, but the ash fallout would have killed off the vegetation and gardens, making the area uninhabitable.

Pits were put down at random over the area to find out if there was any archaeology there. Artefacts were found almost everywhere. A long profile on an exposure on the side of a hill dated back to the Pleistocene, almost 40,000 years ago. There was a series of about 10 bands formed by the tephra or ash layers. Artefacts were found above each ash layer, but the sequence was too weathered to work with, hence a younger site on Garua Island, half way along the peninsula and to the east, was chosen for study. Five ash layers from eruptions of the Dakataua and Witori volcanoes over the last 6,000 years could be identified.

The artefacts found between ash layers changed with time. Obsidian (volcanic glass) stemmed tool artefacts survived the W-K1 eruption (about 6,000 years ago) but disappear after the W-K2 eruption (about 3,000 years ago). The source of the obsidian can be traced by its chemical nature and the obsidian artefacts come from different sources, suggesting that they were traded. Following the W-K2 event, Lapita pottery appeared in the record, but it disappears after the W-K3 eruption (about 1,500 years ago). Stone axes appear rather late, about 500 years ago. These changes in the artefacts found indicate cultural changes.

The obsidian-stemmed tools were made in two stages: the head first with the stem added later. The head was made in one village and the stem added in a second village. They were high status implements and were exchanged amongst the high status individuals. Any one village could have made the entire artefact, but by dividing the making between villages, it became an opportunity for trade. There were three sources of obsidian in the area, and each source had a distinctive chemical signature. Sites close to one source had obsidian artefacts from the other sources, showing that there must have been exchange.

As well as durable artefacts that persist in the archaeological record, objects made of perishable materials, e.g., baskets, wooden implements could also all be made in one village, but today, the villages specialise and then exchange goods. In this way, a network of friends is built up and this network could support them at times of catastrophes. The Lapita pottery was not traded, but was made locally, each village with its own distinctive variations. The Lapita expansion happened very rapidly and ideas and styles were exchanged.

After an eruption, when everyone had been forced to leave and become refugees, when do they return and what do they find? Leave it long enough, and the forest would regrow, but if they came back earlier in the grass stage of regeneration, there would be no need to clear the forest and making gardens would be much easier. This may be why stone axes appear very late in the record: they would not be needed to clear the forest. The population was quite low, judging by the density of artefacts, probably because of the need to leave then return and build up the system all over again. Language is no barrier. New Guinea has the highest number of languages in the world, but everyone speaks at least six languages.

LINNEAN SOCIETY OF NEW SOUTH WALES

For Security reasons, there is now a locked gate between the carpark and the Classroom. If it is locked when you come to a lecture, just wait and someone will come and let you in.

PROGRAMME

**Wednesday 22 April, at 6 pm, in the Classroom, Royal Botanic Gardens.
Enter through the gate to the Herbarium Carpark, on Mrs. Macquaries Rd.**

DR JOHN PICKETT

A GEOLOGICAL TOUR OF ICELAND

Iceland, by virtue of its position athwart the Mid-Atlantic Ridge, offers a unique opportunity to observe a young continent in the making, and the beginnings of crustal differentiation from primeval basaltic lavas. The fact that Iceland (about 1½ times the size of Tasmania) lies above the ocean means that we can observe at first hand the processes and landforms associated with the zone of rifting between separating continental plates. Almost all areas of plate divergence lie beneath the oceans, so that the opportunity that Iceland offers to observe these phenomena is all but unique. As well as that, the country lies over a mantle hotspot, which is responsible for most of the cataclysmic volcanism for which the country is known. Further, the entire country plus its continental shelf was submerged under ice at the peak of the last glaciation, at about 15,000 years ago. This has resulted in a range of landforms, some of a kind rarely seen elsewhere. We can see the conveyor belt of continental separation in action, and watch the evolution of the country and its young landforms. Through a series of fine photographs we can learn what lies behind the unusual landscapes of this singular country.

**Wednesday 20 May, at 6 pm, in the Classroom, Royal Botanic Gardens.
Enter through the gate to the Herbarium Carpark, on Mrs. Macquaries Rd.**

Prof MARTIN J. VAN KRANENDONK

School of Biological, Earth and Environmental Sciences UNSW

EARLY LIFE ON EARTH: EVIDENCE FOR A DIVERSE BIOSPHERE 3.5 BILLION YEARS AGO

New evidence from the very old rock record of the Pilbara Craton, Western Australia, suggests that life was already diverse and occupied different niches 3.5-3.4 billion years ago. This evidence comes from both morphological variation of stromatolites (the preserved rock structures built by living microbial communities), and from analysis of the geological habitats in which they are found.

Shallow coastal marine environments (shallow shelf and lagoonal settings) contain laminated microbial mats and coniform stromatolites, whereas deposits from hot springs contain more variable morphologies, as well as evidence for the utilisation of different available chemical energies (Fe, S), and large, unusual microfossils. In this presentation, I will present a picture of early life on Earth and show how it appears to have adapted to different environments, using different metabolisms, suggesting that life started on Earth as soon as it could, and diversified early.

Drinks will be served from 5.30 pm

EVERYONE WELCOMED