

LINNEAN SOCIETY OF NEW SOUTH WALES

LINN S'O'C' NEWS

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DONATIONS TO THE RESEARCH FUNDS

A total of \$52,510 has been donated to the research funds. Our kind donors are Dr. Jennifer Anderson, two anonymous donors, Mr. Doug Benson, Mr. D.J. Cole, Dr. J.W. McGarity, Dr. A.O. Nicholls, the late John F. Noble, Dr. R.A.L. Osborne and W. Semple. This list includes the bequest of \$50,000 from the late John Noble.

We thank our most generous donors: their gifts are appreciated.

LINNEAN MACLEAY FELLOWSHIP

Applications are invited for the Linnean Macleay Fellowship for the year 2013. Applicants must be Members of the Society, reside in New South Wales, and have a degree in Science or Agricultural Science from the University of Sydney. Applicants are required to outline the proposed research and where it will be carried out. The Fellowship pays \$3,200 per annum,

and the Fellow must engage in full time research on the project. The regulations governing the Fellowship are available on request from the Secretary or the Society's web site. These regulations were stipulated in Sir William Macleay's will and the Society is obliged to adhere to them.

Applications close 14 November, 2012

SYMPOSIUM ON JENOLAN CAVES

Jenolan Caves have been reserved since 1867 and are internationally renowned. The Reserve is listed on the State Heritage Register and is part of the Greater Blue Mountains World Heritage Area. The symposium is sponsored by the Linnean Society of NSW and the Australian Speleological Federation Inc., and supported by the NSW Office of Environment and Heritage and the Jenolan Caves Reserve Trust.

The symposium will aim to present the accumulated scientific knowledge about all aspects of the karst and its caves, the environment and the flora and fauna of the region. Publications of scientific papers in journals and a guide book suitable for the general public, summarising the science of the caves will result from the symposium.

The symposium will be held on 23 and 24 May, 2013, at Caves House, Jenolan Caves. There will be short field trips in the early morning and evening. Accommodation will be needed, and accommodation to suit all budgets is available at Jenolan Caves reserve.

More information is available on the Society's web site and will be provided in the December Newsletter.

ONLINE PUBLICATIONS OF THE PROCEEDINGS

Articles and the papers from two symposia have been 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>

At the end of the year, Volume 134 will be finalised and single copies may be printed if ordered.

Articles

[Etymology of the Dragonflies \(Insecta: Odonata\) named by R.J. Tillyard, F.R.S.](#)

Ian D Endersby

[Etymology of the Dragonflies \(Insecta: Odonata\) named by R.J. Tillyard - Corrigendum](#)

Ian D. Endersby

[New Information on *Culmacanthus* \(Acanthodii: Diplacanthiformes\) from the ?Early–Middle Devonian of Southeastern Australia](#)

Carole J. Burrow, Gavin C Young

Symposium - Wildlife Conservancy's sanctuary at Scotia, far western New South Wales (13 July 2011)

[The Scotia Science Symposium 2011](#)

Matt W. Hayward, David A. Keith

[Are Native Dung Beetle Species Following Mammals in the Critical Weight Range towards Extinction?](#)

Nicole Coggan

Soil Disturbance by Invertebrates in a Semi-arid Eucalypt Woodland: Effects of Grazing Exclusion, Faunal Reintroductions, Landscape and Patch Characteristics

David J. Eldridge, Niki Huang, Jocelyn Bentley, Matthew W. Hayward

How Might Terrestrial Arthropod Assemblages Have Changed After the Dramatic Decline of Critical Weight Range (CWR) Mammals in Australia? Using Reintroductions at Scotia Sanctuary as a Model for Pre-European Ecosystems

Heloise Gibb

Reintroduction of Bridled Nailtail Wallabies Beyond Fences at Scotia Sanctuary – Phase 1

Matt W. Hayward

The Influence of Fire, Herbivores and Rainfall on Vegetation Dynamics in the Mallee: a Long-term Experiment

David A. Keith, Mark G. Tozer

The Pastoral History, Biological and Cultural Significance of the Scotia Country, far Western New South Wales

Martin Westbrooke

Symposium on Natural History of Royal National Park

Strong beginnings to a bright future: Natural history in the Royal National Park and the need to better integrate research into park management.

Michael B. Treanor

Royal National Park – Lessons for the Future from the Past

P. Adam

Soil erosion following wildfire in Royal National Park, NSW.

Glenn Atkinson

The Aboriginal Prehistory and Archaeology of Royal National Park and Environs: A Review

Val Attenbrow

The Holocene History of the Vegetation and the Environment of Jibbon Swamp, Royal National Park, New South Wales

Jane M. Chalson, Helene A. Martin

Developing an Interactive Plant Identification Tool for the Royal National Park

Rhonda Daniels

Population Ecology of Waratahs, *Telopea speciosissima* (Proteaceae): Implications for Management of Fire-prone Habitats

Andrew J. Denham, Tony D. Auld

Visitor Attitudes and Erosional Impacts on the Coast Walk, Royal National Park

Deirdre Dragovich, Sunil Bajpai

What Role Does Ecological Research Play in Managing Biodiversity in Protected Areas? Australia's Oldest National Park as a Case Study

Ross L. Goldingay

Visitors' Knowledge of the Broad-headed Snake in Royal National Park

Ian F. Hayes

Spatial Analysis of Risks Posed by Root Rot Pathogen, *Phytophthora cinnamomi*: Implications for Disease Management

David A. Keith, Keith L. McDougall, Christopher C. Simpson, Julian L. Walsh

Vegetation Dynamics in Coastal Heathlands of the Sydney Basin

David A. Keith, Mark G. Tozer

First Record of *Hemiboeckella searli* Sars, 1912 (Calanoida: Centropagidae) in New South Wales

Tsuyoshi Kobayashi, Ian A. E. Bayly, Simon J. Hunter, Stephen J. Jacobs, Michael B.

Traynor

Is an Island Reserve Enough? The Decline and Fall of the White-fronted Chat (Aves: Meliphagidae) in Southern Sydney

Richard E. Major, J. L. T. Sladek

Vertebrate Fauna: a Survey of Australia's Oldest National Park and Adjoining Reserves

Martin Schulz, Elizabeth Magarey

Population Dynamics of *Xanthorrhoea resinosa* Pers. Over Two Decades: Implications for Fire Management

Mark G. Tozer, David A. Keith

BOOK REVIEW

Frozen in Time: Prehistoric Life in Antarctica, by Jeffery A. Stillwell and John A. Long
CSIRO Publishing, Collingwood Vic., October 2011.

Hardback, 248 pages, AU \$69.95

ISBN: 9780643096356

In 1897 an exasperated John Campbell, Duke of Argyll, declared in London, a 'very large area of the surface of our small planet is still almost unknown to us. That it should be so seems almost a reproach to our civilisation.' Atlases at the turn of the century only hinted at what lay at the southern end of the world. Almost everything south of 50° was described as an Unexplored Region and the vast space left embarrassingly empty. Since this time there has been an incredible expansion in knowledge. What was once thought to be white space has now been shown to be a great continent.

Antarctica is on a scale hard to grasp: at over fourteen million square kilometres, it is second only to Russia in coverage of the Earth's surface and bigger than all the countries of Europe combined. It is the world's highest continent, with an average altitude of 2300 metres. It contains more than seventy per cent of the world's freshwater, locked up as thirty million cubic kilometres of snow and ice—which, if melted, would raise the planet's seas by an estimated sixty-five metres. The bitterly cold air on its upper surface contains virtually no moisture, making the Antarctic interior the world's largest desert, while the wildlife along its fringes is some of the most diverse on the planet. Crucially though, rocks that make up the rest of the continent – most of it buried under ancient snowfall – span almost the entire age of the Earth. And it's what lies within these rocks that forms the focus of *Frozen in Time: Prehistoric Life in Antarctica*.

The authors Jeffrey Stilwell and John Long had done a magnificent job bringing together a vast amount of information from widely disparate sources to tell the fascinating story of the evolutionary history of Antarctica and its global importance. The authors have a wealth of experience working in the Antarctic, scientifically exploring this great continent. Lavishly illustrated in colour, *Frozen in Time* starts with a summary of the history and scientific discovery of the south and then takes the reader through the different geological eras, commencing with the origins of life during the Cambrian some 540 million years ago through to the ecosystems found there today. Through the fossils that have been unearthed in different formations, we learn of a landscape that has experienced sweeping changes: from almost tropical, balmy conditions through to the glacial conditions of today. Over time, Antarctica's biodiversity has waxed and waned as the continent migrated across the planet's surface, experiencing widely changing carbon dioxide levels and climate. What comes across so clearly

is just how much more remains to be discovered. It's an incredibly exciting time to be working in Antarctica.

Frozen in Time admirably captures the latest thinking of Antarctica's role in the evolutionary history of the world and explains it all in an admirably accessible manner, managing to successfully negotiate the competing demands of lay readers, students and academics. The book is fully referenced and yet the authors have managed to skillfully integrate key citations into the text without breaking the flow. The book is very well written and beautifully presented, making it wonderfully accessible. An impressive blend of the history of scientific exploration in Antarctica coupled with recent discoveries makes Frozen in Time a tremendously desirable book. I can't recommend it highly enough for anyone interested in the evolutionary history of Antarctica and the scientific work undertaken in this most extreme of environments.

Chris Turney

Editor's note: Last year, Professor Chris Turney gave us a talk entitled '1912: The Year the World Discovered Antarctica'. The story of the politics and rivalry of the race to be the first to reach the South Pole was highly entertaining. He also discussed the important scientific discoveries. His book of the same name, '1912: The Year The World Discovered Antarctica' has now been published (Text Publishing, Melbourne, ISBN: 978192ng 1922725).

SOUTH AMERICA – THE GEOLOGY AND MUCH MORE.... A talk by Dr. Paul Lennox

Dr. Lennox and his wife made a trip to South America combining geology with tourism. To give us a better appreciation of the South American countries, he compared them with Australia: they are also relatively young. Only Brazil is larger and Peru, Bolivia, Chile and Argentina are considerably smaller. Australia has the highest gross national income (GNI) per person and Peru has almost as much, but Bolivia, Chile and Argentina have considerably less. Bolivia, the poorest, has about one-eighth the GNI of Australia. They are all staunchly Catholic countries and there are frequent festivals and carnivals.

The whole of the west coast of South America is a subduction zone where the South American Plate over-rides oceanic plates and the tectonics are fast. There are four areas of volcanoes down the length of the Andes, and this is related to the manner of subduction. If the oceanic plate goes down steeply, then volcanoes are produced, but if the plate goes down at a shallow angle, then there are no volcanoes. There are thus sections of the Andes where there are many volcanoes and other sections where there are few or none. Earthquakes are common, both at shallow and deeper depths. All this tectonic activity makes the Andes sound like a dangerous place, but it is the reason why the region is so rich in mineral resources.

The tourist highlights also provided much geological interest. Colca Canyon in Peru is four km deep and the world's deepest canyon. The Incas terraced and irrigated the slopes for crops. Thick young sediments accumulated from the uplift of the Andes are now being eroded. Cuzco was the Inca capital and is the starting place for a trip to Machu Picchu. The buildings were built from granite quarried on the site and the fit of the blocks is amazing. If there has been any failure, it is because of soil subsidence, not poor workmanship. The buildings have withstood 500 years of earthquakes. Layered soil/sand/gravel under the main site controlled groundwater flow. There are Inca buildings in towns all around the area and not just at Machu Picchu. The Incas terraced the slopes below the site to grow crops.

The Uyuni Salt Lake in Bolivia has a salt crust up to 10 m thick that sits on a lake of brine rich in lithium. The salt is harvested and the lithium, a valuable mineral is being extracted from the brine. Volcanic cones poke through the salt crust, forming islands that support cactus vegetation that grows at the rate of 1 cm per year. There is even a hotel built of salt blocks. The Atacama Desert is the driest place in the world and has salt lakes where flamingos breed and volcanic landscapes that look more like the Moon, aptly named the Valley of the Moon. It is rich in resources, especially nitrates and copper and there are numerous abandoned holes and old mining towns. Further south, on the coast, Valparaiso was the port for the gold rush days in the 1800's. Continuing south of Santiago, there is a string of volcanoes that erupt every few years. In one eruption of the Villarrica volcano in 1971, a lava flow 4 km wide cooked everything in its path. These eruptions usually spew out ash that blankets the surrounding countryside, increasing soil fertility. There is a very real threat of tsunamis along the coast and evacuation routes are posted in the streets of the nearby towns.

The easterly movement of the Antarctic plate has bent the southern-most end of the Andes sideways, giving the end of South America its characteristic curve. A dome-shaped intrusion uplifted the Torres del Paine region in Patagonia. Torres del Paine has been shaped by glacial erosion of the Patagonian ice sheet of the last ice age. Today, it has spectacular peaks, spires, glaciers and brilliantly coloured lakes. When attempting to leave Patagonia, they were caught up in some political unrest and the airport was closed. It was soon re-opened to get out the foreign tourists. The Lennox's were relieved to leave, having no wish to be caught in what looked like the start of a South American revolution.

Dr. Lennox sees a bright future for all the countries. The people are resilient and energetic and the countries are resource rich and developing rapidly. He sees Brazil as comparable to Russia, India and China in the years to come.

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PROGRAMME

SECURITY HAS BEEN INCREASED at the Botanic Gardens: there is now a locked gate between the carpark and the Classroom. If the gate is closed when you come to a lecture, just wait and someone will come and let you in

**Wednesday 24 October, at 6 pm, in the Classroom, Royal Botanic Gardens.
Enter through the gate to the Herbarium Carpark, on Mrs. Macquaries Rd**

Mr. DAVID EDWARDS

School of Biological, Environmental and Earth Sciences University of NSW

MUCKING ABOUT IN BOATS OR MUCKING UP THE RIVER?**Bank erosion and boat wakes on the lower Hawkesbury River**

A variety of research has clearly demonstrated the impact of boat wakes from large commercial vessels on bank erosion. However the erosive role of wakes from recreational vessels is much more ambiguous. Studies from the 1960's and 70's suggested that wakes from recreational boating activity were less important than natural wind waves, but recent changes in styles of boating activity and overall boating numbers suggests that boat wakes may now represent a significant cause of bank erosion.

This seminar outlines research over several years that has investigated the impact of boat wakes on estuarine reaches of the Hawkesbury River as well as the potential issues and conflicts between various user groups on the river. A range of potential mitigation and management measures that may be utilised are also discussed

Wine and cheese will be served from 5.30 pm

EVERYONE WELCOME