



# THE BULLETIN 469

THE ROYAL SOCIETY OF NEW SOUTH WALES

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### Patron of The Royal Society of NSW

Her Excellency The Honourable  
Margaret Beazley AC KC  
Governor of New South Wales

IDEAS@THEHOUSE: MARCH 2023  
**Aristotle on life and thought in  
the sub-lunary sphere**  
2 March 2023



ROYAL  
NEW SOUTH WALES

**Date/time:** Thursday, 2 March 2023, 6:30 PM  
**Venue:** [Live streaming from Government House Sydney](#)

See [page 7](#) for more information

1311<sup>TH</sup> OGM AND OPEN LECTURE  
**Royal Society of NSW**  
**2022 Student Award Presentations**  
15 March 2023



**Date/time:** Wednesday, 15 March 2023, 6:30 PM  
**Venue:** [Zoom Webinar](#)

See [page 8](#) for more information

## From the President

I trust that you enjoyed a relaxing break with family and friends amidst the year-end celebrations. My plans to spend ten days exploring the upper reaches of the Upper Amazon were foiled at the last minute by the political tumult gripping Peru. [This article](#) in *The Conversation* provides some of the background to that crisis. A quick change of direction led to the Sea



of Cortez for a week on a small ship. We explored the desert islands with their unique flora and fauna, including scorpions spotted at night with UV light torches. Then, it was back on course to spend two weeks with

our daughter who lives in the beach-side town of Puerto Escondido with her partner and their new baby. Meeting members of our new extended family added to this unique immersion in authentic Mexican culture.

With batteries recharged, we can now look forward to the Society's 202<sup>nd</sup> year and its ongoing impact as we deliver on the Aims outlined in Rule 1 of our [Act of Incorporation and Rules](#). The year is off to a flying start.

You will have received one or more emails seeking renewal of your membership of the Society, the first arriving in early December. The fee remains unchanged from 2022. As a member, you are part of a vibrant and diverse community interested in evidence-based debate on matters of significance to humanity. If you are not amongst the nearly 400 members who have renewed thus far, please respond to the reminder emails. Please also encourage others who are interested in the benefits of membership to consider joining the Society. The brochure outlining these benefits is available [here](#).

About 70 people attended our first Open Lecture in Sydney for the year on Wednesday 1 February. This in-person event in the State Library of New South Wales featured an [Open Lecture](#) by Major General (Retd) Fergus McLachlan AO on the subject 'Drones, Smart Munitions, and Cyberspace: the 21<sup>st</sup> Century Defence of Ukraine and its implications for

Australia'. Colonel (Retd) Andrew Condon, Industry Professor for Veterans and their Families at the Australian Catholic University conducted the conversation after the McLachlan presentation. He is a former CEO of Legacy and Chair of RSL Lifecare Aged Care. He currently serves on the Federal Government's Aged Care Advisory Board.



McLachlan painted a devastating picture of the Russian invasion of Ukraine, describing it as having gone through three phases so far — Kyiv, fire and movement, and local counterattacks — and now engaged in a fourth, strategic counterattack by Ukraine as it seeks to evict the Russians. He projected that the conflict would continue throughout the rest of 2023 at least. He also profiled the technologies being deployed including electronic warfare, low earth orbit satellites and high mobility rockets. Andrew Condon's expertise ensured that the Q&A session was equally compelling. [The recording from the evening is now available](#) on the Society's YouTube channel, which continues to attract an increasing audience. Do watch it if you could not attend that evening. It certainly puts our day-to-day trials and tribulations into perspective.



On 1 February, Members received their invitation by email to the first [Ideas@theHouse](#) for 2023 at Government House on Thursday 2 March at 6:30 PM. Registration will be on a first-come, first-

served basis. Fellow of the Society and Director of the State Library of New South Wales, Dr John Vallance FRSN FAHA, has chosen the subject of '[Aristotle on life and thought in the sub-lunary sphere](#)', which he promises bears tips for living well and productively today. For those of you who are unable to attend the event at Government House, Dr Vallance's lecture will be [live-streamed via the link](#) in the event notice.

Our newest [Distinguished Fellow](#) and Australia's Chief Scientist, Dr Cathy Foley AO PSM, will be the second speaker in the 2023 Ideas@theHouse series later this year.

You will recall that I announced the winners of the [Society's 2022 Awards](#) at the last OGM for 2022 on 7 December. I thank the Society's [Awards Committee](#), led by Professor Philip Gale and Dr Jessica Milner Davis, for its exemplary work in attracting a very competitive field and selecting such admirable winners, young and old. Winners of our [2022 Scholarships](#) will be presenting their work to the Society online on Wednesday 15 March at 6:30 PM.

On 2 February, Members received their invitation by email to attend with their guests the [Society's Annual Dinner and Awards Presentations](#) to the 2022 winners. It will be held in Meers Hall in the new Sydney Modern building at the Art Gallery of New South Wales on 10 March. Our after-dinner speaker, Steven Miller, is Head of the National Archive and Capon Research Library at the Gallery. His latest book *The Exhibitionists: A history of Sydney's Art Gallery of New South Wales* was published in 2021 to mark the 150<sup>th</sup> anniversary of the Gallery.

We are anticipating a strong take up of the 250 tickets available for this event. Get in early to claim your seat.

Council is close to finalising the new structure for the Society's Awards to take effect this year. The existing awards portfolio, amongst the oldest in Australia, is prestigious and attracts nominees from amongst the best and brightest minds. The principles underpinning the foreshadowed changes relate to the Society's aim to be a learned institution that encompasses diverse groups of people and branches of knowledge, to encompass the full range of the sciences and humanities, and to recognise emerging as well as established talent and achievement while allowing for the impact of disability and disadvantage. Watch this space for further news.

I end this column on the sad note of the passing of two Society Fellows: Past President Dr [Ragbir Bhatia](#) FRSN died on 30 November 2022, and Emeritus Professor [Chris Fell](#) AO FRSN FTSE died on 8 December 2022. The Society extends its sincere condolences to their respective families.

We continue to work for the Society and for NSW because we understand the need to enhance public discourse on a wide range of topics that are crucial to our future. Society members have excellent ideas to contribute. In that spirit, I look forward to hearing your ideas and suggested ways to bring them to fruition.

Dr Susan M Pond AM FRSN  
President, Royal Society of NSW

## Welcome to new members

The Royal Society of New South Wales warmly welcomes the following new members to the Society's ranks, effective from 23 November 2022.

### Members

- Professor Martina Doblin
- Dr Andrei Herdean
- Dr Agota Tuzesi

The following member joined the Society on 7 December 2022:

- Mr Bhavin Raval

## 2023 Annual Dinner and Presentation of Awards

**Location:** Meers Hall, North Building, Art Gallery of New South Wales, Art Gallery Road, Sydney

**Date:** Friday 10 March 2023

**Time:** 6:30 PM for pre-dinner drinks, 7:00 PM dinner commences

**Guest speaker:** Steven Miller, Head of the National Archive and Capon Research Library, Art Gallery of NSW

**Dress:** Black tie

**Parking:** Wilson Parking — Domain Car Park off St Mary's Road or meter parking on Mrs Macquaries Road

**Registration:** through Membes until 5:00 PM on 27 February

<https://members.royalsoc.org.au/eventdetails/17277/rsnsw-2023-annual-dinner-and-awards-presentation>

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## Vale Dr Ragbir Bhathal FRSN

The Society is saddened by the unexpected death of Past President Dr Ragbir Bhathal, a long-serving member and Councillor of the Society.

A member since 1982, Dr Bhathal passed away suddenly on 30 November 2022, aged 86. He was President in 1984 and Honorary Secretary from 1989 to 1991. He was elected a Fellow in 2015 and recently served as Honorary Librarian in which role he was responsible for the first modern valuation of the Society's library since 1936.

A well-known Australian astronomer, Dr Bhathal did his PhD in magnetism at the University of Queensland.

Prior to his arrival in Australia, Bhathal was a member of the academic staff of the University of Singapore. He was subsequently offered the role of Foundation Director of the Singapore Science Centre, one of the largest science centres in East Asia, and served as a member of the Board of Directors of the Association of Science and Technology Centres, Washington. He was a UNESCO consultant on science policy for the ASEAN group of nations.



As an adviser to the Federal Minister for Science in Australia, Dr Barry Jones, Dr Bhathal was a member of the committee set up to establish the National Science & Technology Centre (Questacon) in Canberra. He was also the Project Director for the million-dollar Sydney Observatory restoration building program and he became the Deputy Director of the Museum of Applied Arts and Sciences in Sydney.

Dr Bhathal subsequently spent 30 years on the staff of Western Sydney University teaching and researching. There he became a Distinguished Teaching Fellow in the School of Computing, Engineering and Mathematics. He published fifteen books, six on astronomy and two on Aboriginal astronomy. He researched and published a definitive oral history of 100 eminent Australian women scientists for the National Library of Australia. He is well known for his work on Optical Search for Extra-Terrestrial Intelligence (OSETI).

Dr Bhathal was awarded the Royal Society of NSW Medal in 1988 for services to science and research, as well as the CJ Dennis Award for excellence in natural history writing and the prestigious Nancy Keesing Fellowship by the State Library of NSW.

The Society extends its sincere condolences to his family.

## Vale Emeritus Professor Chris Fell AO FRSN FTSE

It is with heavy heart that the Royal Society of NSW records the sudden death of one of its Fellows, Emeritus Professor Christopher Fell AO FRSN FTSE, at the age of 82 on 8 December 2022.



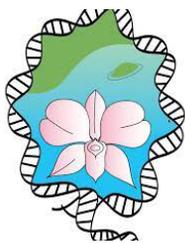
In addition to being Chair of the NCRIS Australian National Fabrication Facility (ANFF), and a member of the NSW Government Independent Planning Authority, Professor Fell was also active in technology and engineering in many professional networks. He was a former Dean of Engineering and Deputy Vice Chancellor (Research and International) at UNSW Sydney and is widely known for his pioneering research into the development of low-pressure membrane processes for water treatment and chemical handling.

Chris Fell was elected as a Fellow of the Academy of Technological Sciences and Engineering in 1988 and a Fellow of the Royal Society of New South Wales in 2015. He was recognised for his services to science and engineering through various Australian Honours, being made a Member of the Order of Australia (AM) in 2003, awarded the Centenary Medal in 2001, and most recently made an Officer of the Order of Australia (AO) in 2021 for distinguished service to science and engineering, particularly to nanotechnology research and fabrication, and to professional networks. He was a strong supporter of young researchers through his sponsorship of student research prizes.

The Society extends its sincere condolences to his family. We understand that a celebration of his well-lived life will be held in early 2023.

## Royal Society of Queensland Writing Prize 2023

The Royal Society of Queensland has just announced a new writing prize, with the theme of 'Improving public health in remote communities', commemorating the life of pharmacist, Geraldine Hall.



Geraldine Hall was educated at the University of Queensland and took up a position as a pharmacist at the public hospital on Norfolk Island in 1999, subsequently opening her own pharmacy business in the Island's commercial centre. She became a trusted member of the community and retired on the Island in April 2022, looking forward to contributing to the nascent preventative well-being initiative of

The Royal Society of Queensland. She passed away peacefully on Tuesday 10 January 2023 after giving informed consent to a prize made possible by donations from her friends.

The Geraldine Hall Memorial Prize, valued at \$1,000, is for the most meritorious on a subject of great personal interest to here, 'Improving Public Health in Remote Communities'. Submissions close on **31 May 2023**.

Submissions that meet the specified standard can be published in a Special Issue of the *Proceedings of The Royal Society of Queensland* dedicated to the preconditions of well-being, giving the work international exposure. Applicants should consult the [Guidelines with application template](#) for further information.

## Recent events now on YouTube: February 2023

Most face-to-face events and all online events conducted by the Royal Society of NSW are recorded and made available for subsequent viewing on [our YouTube channel](#).

The recording of the first presentation of 2023 (1 February) to the Royal Society of New South Wales, on the theme of 'Drones, Smart Munitions and Cyberspace: 21st century defence of Ukraine and implications for Australia', delivered by Major General (Retd) Fergus (Gus) McLachlan AO FRSN and Colonel (Retd) Andrew Condon CSC, is [now available on YouTube](#).

This is a not-to-be-missed talk in which two expert practitioners discuss the 21<sup>st</sup>-century defence of Ukraine, the role that modern technology that includes drones, smart munitions, and cyber warfare play in this, and the implications for Australian defence planning.

New YouTube Recordings

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[youtube.com/royalsocnsw](https://youtube.com/royalsocnsw)

## RSNSW 1310th OGM: February 2023

The Society's 1310<sup>th</sup> Ordinary General Meeting, and the first meeting of 2023, was held in the Gallery Room of the State Library of NSW on 1 February. An audience of approximately sixty people heard an enlightening and thought-provoking talk on 'Drones, Smart Munitions, and Cyberspace: the 21<sup>st</sup> Century Defence of Ukraine and its implications for Australia', delivered by Major General (Retd) Fergus McLachlan AO (right). The talk was followed by a fascinating discussion between Fergus McLachlan and Colonel

(Retd) Andrew Condon (left) who mediated the audience Q&A.

Some images from that occasion are [available at this link](#) for viewing and downloading. [A recording of the presentation and the subsequent discussion](#) is now available on the Society's YouTube channel.



## Call for *Bulletin* Editor

The Society is seeking a new Editor for the *Bulletin*. Previous experience in the compilation and editing of a regular membership-based newsletter is desirable. Expertise in InDesign (or another similar typesetting program) will be highly valued. An ability to regularly

commit significant time to the production of each issue is required. Non-members of the Society are welcome to express interest. Please email expressions of interest to [John Hardie](#), the Society's Librarian, by COB 10 March 2023.



IDEAS@THEHOUSE

PRESENTED BY

HER EXCELLENCY THE HONOURABLE  
MARGARET BEAZLEY AC KC, GOVERNOR OF NSW

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## 'Aristotle on life and thought in the sub-lunary sphere'

Dr John Vallance FRSN FAHA  
*State Librarian of NSW*

**Date:** Thursday, 2 March 2023, 6:30 PM AEDT

**Venue:** Live Streaming from Government House  
Sydney: <https://livestream.com/blive/ideas-at-the-house>

*Society Members and Fellows, and members of the public are welcome.*

### Summary

Early in the sixteenth century, Raphael imagined the pantheon of ancient philosophers in a famous picture called 'The School of Athens'. Aristotle appears there as a relatively young man amongst the bearded savants, and this lecture aims to show that his vigorous intellectual presence is still very much felt today, especially in the biological sciences, jurisprudence, ethics, political theory and literary criticism.

Aristotle's thought is notoriously complex and difficult to grasp — even in general terms. Dr Vallance will attempt an exposition of the structure and purpose behind Aristotelian philosophy accessible to the non-philosopher, and will throw in some Aristotelian tips for living well and productively along the way.

### About the speaker

Dr John Vallance (BA Sydney, MA, PhD Cambridge) FRSN FAHA is the NSW State Librarian. The first part of his career was spent as a Fellow of Gonville and Caius College Cambridge, where he taught Greek, Latin and ancient philosophy. Then he served as Headmaster of Sydney Grammar School between 1999 and 2017. He has published widely in the field of ancient philosophy and medicine — including a large number of articles intended for the non-specialist reader, in the Oxford Classical Dictionary.



## Royal Society of NSW 2022 Student Award Presentations

Shankar Dutt  
ANU

Clara Chung Ming Liu  
UTS

Thomas Mesaglio  
UNSW Sydney

Anyang Zhao  
ANU



**Date:** Wednesday, 15 March 2023, 6:30 PM

**Venue:** [Zoom Webinar](#)

**Entry:** No charge

*All are welcome.*

### Summary

The evening's program comprises four short talks presented by PhD Candidates who have been awarded the Society's Jak Kelly Award and the Royal Society of NSW Scholarships for 2022.

### Presentation summaries and brief biographies of the presenters

**SENSING ONE MOLECULE AT A TIME: A PATHWAY TO PERSONALIZED HEALTHCARE AND EARLY DETECTION OF ALZHEIMER'S AND MS**

*Mr Shankar Dutt, Jak Kelly Award winner, PhD Candidate, Australian National University*



Nearly one in twenty people worldwide suffer from neurological diseases. Early detection is crucial for these diseases because timely intervention can halt the progression of the condition and stop it from worsening. Early detection, however, relies on ultra-sensitive biomarker detection, which is not possible with conventional diagnostic techniques. Neurodegenerative diseases can be detected by the presence or elevated levels of specific biomarkers in blood. The

ability to identify single molecules reliably, swiftly, quantitatively, and affordably would thus offer up exciting new opportunities for a variety of biomedical applications. We are investigating a unique nanopore-based sensing platform allowing reliable and highly sensitive detection and identification of different biomolecules in complex solutions. This platform employs scalable and controllable methods to fabricate silicon nitride membranes with effective thickness down to ~1.5 nm. Ultra-stable nanopores exhibiting high lifetime are fabricated in these membranes using controlled breakdown technique and track-etch technology. By adjusting the membrane composition as well as the nanopore structure, the translocation kinetics of the biomolecules can be tailored. Using this platform, we have demonstrated the detection of a number of isolated analytes, including DNA, proteins, and antibodies. We combine the novel nanopore sensor with artificial intelligence-based single-molecule identification algorithms with an aim to use the platform for the early diagnosis of neurodegenerative disorders. Artificial intelligence and on-the-fly data processing integrated with our novel nanopore platform may allow for the precise identification and measurement of the many biomarkers present in blood serum as well as 'real-time' diagnosis of Alzheimer's and Multiple Sclerosis.

**Shankar Dutt** is a doctoral student at the Research School of Physics, Australian National University. His research interests are focussed on the fabrication and applications of extremely small nanopores of controllable shape and size in a variety of materials. Combining his technology with 2D materials and ultra-thin film deposition enables the fabrication of nanopore membranes with desired functions that can be used in medical and biological sensors, ultrafiltration, and lab-on-a-chip applications. He also has strong expertise in material modification through high-energy ion beams and characterisation using synchrotron-based small-angle X-ray scattering. Shankar received his B.Sc. and M.Sc. in Physics from India, where he was awarded University gold medals for both courses. During his undergraduate degree, he also worked at the ENSTA-Ecole Polytechnique in

France. He was awarded an Australian Government Research Training Program Scholarship as well as the AINSE Postgraduate Research Award for his doctoral studies at the ANU. Shankar has published several articles in world-leading journals and has applied for two patents. He has obtained funding from NVIDIA, Google, DAAD, ANSTO and ANU Connect Ventures, including a Discovery Translation Fund to explore commercialisation activities based on his inventions.

#### A NOVEL HOPE FOR HEART FAILURE PATIENTS USING BIOENGINEERED HEART TISSUES

*Miss Clara Cung Ming Liu, RSNW Scholarship winner, PhD Candidate, University of Technology Sydney*



Cardiovascular disease (CVD) is the leading cause of death worldwide. Our lab has developed new ways to 3D bioengineer human heart tissues using patient-derived stem cells, which we called 'cardiac spheroids'. Cardiac spheroids better mimic the human heart microenvironment compared to pre-existing ones and replicate the human heart pathophysiology, in what we call the 'heart attack-in-a-Petri-dish', as well as cardiac fibrosis and drug-induced myocardial damage. Thanks to our studies using cardiac spheroids, we have identified a potential new way to treat a damaged heart. In my main project, I study the regenerative effects of acetylcholine (a neurochemical present in the human body) on the damaged heart following either a heart attack or the drug-induced myocardial damage. So far, I have demonstrated that acetylcholine attenuates cell death, the reduction in contractility, as well as changes in molecules that characterise a failing heart. These studies would not be possible without the use of the cardiac spheroids we have developed. Current and future studies are focussing on translating these novel findings from the bench to the bedside to help patients that present a damaged heart with their recovery, as well as to prevent serious complications, including death. More recently, my research has focused also on the effects of Sars-CoV-2 on human heart pathophysiology, as well as the bioengineering of pre-eclampsia-induced heart failure using patient-derived stem cells. We are reprogramming their blood cells to stem cells and then to cardiac cells, to look at how preeclampsia

can lead to CVD as current in vivo models can't fully replicate preeclampsia.

Clara Liu Chung Ming is a PhD candidate in the School of Biomedical Engineering at the University of Technology Sydney (UTS) under the supervision of Dr Carmine Gentile. Clara undertook her Bachelor studies at The University of Melbourne majoring in Neuroscience (2018) and her Master of Philosophy in Medical Biotechnology at UTS in 2020. Her current research focusses on the bioengineering of advanced 3D in vitro models of human heart pathophysiology, including 'the-heart attack-in-a-Petri-dish' and heart failure using patient derived-stem cells. Thanks to her technology, Clara has demonstrated that acetylcholine (a natural compound produced by our body) can protect against myocardial infarction (heart attack) and drug-induced heart failure. She is now working on translating her laboratory studies to the clinic in collaboration with other scientists and clinicians at the University of Sydney, Charles Perkins Centre, Sydney Heart Bank, Royal Prince Alfred Hospital and Baker Heart and Diabetes Institute and Monash University. Despite her early career, Clara has already received several previous awards for her novel studies, including: i) Australian Government Research Training Program Stipend (2021), ii) UTS FEIT HDR Women in Engineering and IT awards (2021), iii) ASBTE Rapid Fire Presentation Award (2022); and iv) NSW Education Waratah Scholarship (2022).

#### 'SAY CHEESE-TREE!' EXPLORING AUSTRALIA'S VASCULAR PLANT PHOTOGRAPHIC RECORD

*Mr Thomas Mesaglio, RSNW Scholarship winner, PhD Candidate, UNSW Sydney*



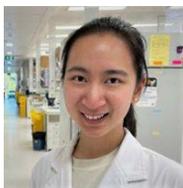
In the world of biodiversity data, physical specimens remain the gold standard, allowing for microscopic examination and DNA extraction among many benefits. However, there is increasing recognition of the value of photographs for documenting difficult-to-collect taxa, such as tall trees or spiny plants. Photographs also offer a wealth of information that is absent or lost from physical specimens, such as flower colour or growth habit, and are valuable tools for identification keys, field guides, conservation, and research. Based on a comprehensive survey of 33 major online photographic

databases, almost 18% of Australia's ~21,000 native vascular plant species do not have an easily accessible field photograph. Southeastern Australia is relatively well-documented, whilst Western Australia, the Northern Territory and Queensland have thousands of unphotographed plants. A complex mix of factors relating to taxonomy, geography and morphology drive these patterns.

**Thomas Mesaglio** is a PhD candidate at UNSW Sydney working on our understanding of Australian plants and how to improve this knowledge. He is a curator and forum moderator on the global biodiversity citizen science platform iNaturalist, and has contributed more than 237,000 identifications and 40,000 observations to the site. Although much of his research involves analyses of citizen science data, Thomas has published research across a wide range of disciplines, including marine forensics, bushfire recovery and invertebrate ecology. As part of the Environment Recovery Project team, Thomas received the Department of Industry, Science and Resources' 2022 Eureka Prize for Innovation in Citizen Science.

#### THE MOLECULAR MECHANISM OF *LISTERIA IVANOVII*-INDUCED INFLAMMASOME ACTIVATION

Ms Anyang Zhao, RSNSW Scholarship winner, PhD Candidate, Australian National University



*Listeria ivanovii* is a pathogenic gram-positive bacterium that causes listeriosis, a type of gastroenteritis that can lead to abortion and sepsis in humans and animals. However, the interaction between *L. ivanovii* and the host immune defence system is under-studied, making it known as one of the neglected pathogens. I have identified *L. ivanovii* as a novel activator of the inflammasome, which is a cytosolic innate immune signalling complex that induces inflammation and mediates the killing of bacteria. In addition, I have shown that *L. ivanovii* specifically activates the DNA-sensing AIM2 inflammasome in mouse macrophages. Mechanistically, *L. ivanovii* requires phagocytosis to mediate entry into macrophages, followed by their escape from the phagosome into the cytoplasm to induce inflammasome activation.

Lastly, I found that AIM2 inflammasome activation promotes *L. ivanovii*-induced lethality in mice.

My findings provide insights into the molecular mechanisms by which *L. ivanovii* infection is recognised by the AIM2 inflammasome. These findings also suggest the potential physiological role of AIM2 inflammasome in the host defence against *L. ivanovii* infection in vivo. My study further adds to the fundamental knowledge of host-pathogen interactions between a neglected human and animal pathogen and the mammalian immune system. The understanding of how the innate immune system recognises pathogens may potentially contribute to the development of immunotherapy and vaccines against emerging and neglected pathogens.

**Anyang Zhao** graduated with the Bachelor of Philosophy — Science degree at the Australian National University with a GPA of 6.815 out of 7. In 2021, she completed her Honours Research year in the John Curtin School of Medical Research with an Honours mark of 93 out of 100, and achieved the top mark for her Honours cohort. Her excellent academic scores led her to win the Fenner Merit Scholarship in Medical Sciences, which is awarded to the highest-ranked international student applicant intending to pursue postgraduate research studies at the John Curtin School of Medical Research. Despite her early career stage, Anyang has already published a preview article in *Cell Host & Microbe* (2022) as a co-first author and has further co-authored two primary research articles published in *Science Immunology* (2022) and *Nature Communications* (2022), all during the first year of her PhD studies. Anyang's achievements were further recognised by The Gretel and Gordon Bootes Medical Research Foundation, where she received funding worth \$11,578 as a co-investigator. In addition, Anyang is passionate about sharing her research with the wider community and has participated in several public speaking activities. She recently won the second prize in the 2022 Canberra Hospital Foundation Award for the Canberra Health Annual Research Meeting (CHARM) 3-Minute Thesis Competition. This illustrates her ability to communicate her research with the general public — an incredibly important skill for medical researchers.

### **‘From floods to drought? What might this year bring and what is causing these extremes’**

Dr Danielle Verdon-Kidd

*University of Newcastle*

**Date:** Thursday, 16 March 2023, 5:00 for 5:15 PM

**Venue:** [Registration through Membes](#) is required by 5:00 PM on Tuesday 14 March 2023. Max: 50 people

**Venue:** 40 Newcomen Street, Newcastle NSW 2300

**Entry:** Society members, \$15; Non-members, \$25; Students, \$5

**Enquiries:** Via [email to RSNSW Hunter Branch Secretary \(Prof. Philip Bolton\)](#)

*Society Members, Fellows, and members of the public are welcome.*

### **Summary**

In this Royal Society of New South Wales lecture, renowned climate-related disaster researcher Associate Professor Danielle Verdon-Kidd will look at the evolving features of climate and its impact on climate-related events. During the lecture, Danielle will explore the drivers of climate extremes across Australia, highlighting case studies of recent events such as the 2020 bushfires and north coast floods. Danielle will discuss the implications of a possible El Niño developing in 2023 after a series of La Niña events and talk about how extremes may evolve in the future.

### **About the speaker**

Associate Professor Danielle Verdon-Kidd investigates the causes of climate-related disasters and how to best mitigate the effects of significant climatic events such as droughts, bushfires, heatwaves, and storms. Her work involves integrating research in the disciplines of climate science, hydrology, and paleoclimatology. She is particularly interested in large-scale climatic events and how they inform us to predict, prepare and lessen future climate-related catastrophes in Australia.



## From the Archives: Where there's a will

by Bruce Ramage (Secretary)

Inez Isabel Bensusan, the daughter of mining agent, Samuel Levy Bensusan, was born in Paddington, Sydney into a wealthy Jewish family on 11 September 1871. The family was prominent in colonial Sydney society and was familiar with its commercial and intellectual developments. Inez was uniquely exposed to political, social and cultural life as a wealthy Sydneysider. For example, she was keenly aware that, for women, domestic service was the biggest employer, although factory work was preferred for its perceived better pay and conditions. In reality, factory work involved long hours, unhealthy conditions and the exploitation of child labour. When Bensusan was a teenager, Sydney factory girls earned as little as five shillings a week while men were earning an average of two pounds. The 'Woman Question' was popularly debated mostly through newspapers and journals, and sowed the seeds for her later work. Inez not only took notice but devoted her life to the emancipation of women.

Perhaps the strongest influence in Bensusan's life was her father, whose success in life provided a role model for the virtues of intellectual thinking with hard work. A member of the Royal Society of New South Wales from 1869, Samuel Bensusan, informed by his own professional experiences, gave and published various speeches on Australia's future, including in the *Transactions and Proceedings of the Royal Society of NSW*. He advocated that progress would be made possible by private enterprise, and hoped Australians were prepared to take risks in order to achieve more and develop industries of importance.<sup>1</sup> It is unclear whether or not she agreed with her father's views but it is clear that Inez embraced his entrepreneurial spirit in her own work. She later cared for him until his death in the home they shared in London.

After studying at the University of Sydney, Inez moved to England in 1894. In 1898 Inez returned to



Cecil William Rea Portrait of Inez Bensusan (1924)

Sydney for an extended visit to attend one of her brothers' wedding. She had always been interested in the theatre and had studied acting in London. She made her first professional appearance on the Sydney stage in April 1898, performing at the Lyceum Theatre, and continued her Australian career into the new century. By 1902 Bensusan was contracted with the Charles Arnold Company at the Palace Theatre, at the termination of which she returned to the London stage, travelling via New York. Before departing Sydney, 50 friends presented her with an illuminated scroll designed by Thea Proctor, which is now held in the State Library of NSW.

On her arrival in London Inez joined an acting troupe. Over the following years, she performed in plays around the world, in England, the USA and Australia. Between 1906 until 1938, she would go on to appear in more than fifty plays in the West End.

Inez combined her acting career with her passion for women's rights. She became a member of the [Women's Social and Political Union](#) and in 1908 she

<sup>1</sup> Facts in American Mining *The Transactions and Proceedings of the Royal Society of NSW*, no 9, 1875, pp 73–85.

joined with other actresses, including Ellen Terry, Sybil Thorndike and Lily Langtry, to establish the [Actresses' Franchise League](#), which was open to anyone involved in the theatrical profession with its aim to work for women's enfranchisement by educational methods, selling suffrage literature and staging propaganda plays.

Inez also wrote several plays of her own. Her first, [The Apple](#), was performed as part of a weekend protest against the census in April 1911. The following year she wrote *The Womanhood*, in which she played the principal character. Bensusan was also the author of *Nobody's Sweetheart* (1911) and the suffrage film *True Womanhood* (1911).

In 1912 she helped form the [Jewish League for Woman Suffrage](#) whose main objective was 'to demand the Parliamentary Franchise for women, on the same terms as it is, or may be, granted to men'. In December 1913 she established the [Women's Theatre Company](#) which she took overseas to entertain the

troops in World War I. She stayed in Germany for three and half years, appearing in fifty plays for the British Rhine Army Dramatic Company. She also appeared in two films, *The Grit of a Jew* (1917) and *Adam Bede* (1918).

Bensusan remained actively involved with the Actresses' Franchise League and after the war co-founded the House of Arts in Chiswick to encourage local theatre, music, and art and appeared in a House of Arts drama circle triple bill in Chiswick Town Hall in 1951.

She died in Surrey on 10 October 1967 aged 96. In her will she bequeathed two portraits to institutions in NSW: one of her by the English painter Sir Cecil Rea (1860–1935) to the Art Gallery of NSW, and one of her father by George Washington Lambert to the Royal Society of New South Wales. The whereabouts of the Lambert painting is currently unknown. Watch this space.

## Found: Three early C20 designs for RSNWS headquarters

by Davina Jackson

RSNSW archives at the State Library include architectural drawings for three elegant office premises that were designed for the Society between 1911 and 1928. Conceived by several of Sydney's top architects, these were intended to cement the Society as the arbiter of scientific culture in the Antipodes.

The first concept, designed by the distinguished firm of Mansfield and Son in 1911, was for a four-storey plus basement building on Phillip Street (number not known). A watercolour sketch of the façade showed British Arts and Crafts styling, with five bays of red brick walls fenestrated by double banks of white-framed windows. The brickwork was highlighted by horizontal bands of sandstone; creating a red-and-cream striped effect that historians later linked to the First World War with the epithet: 'blood and bandages'.

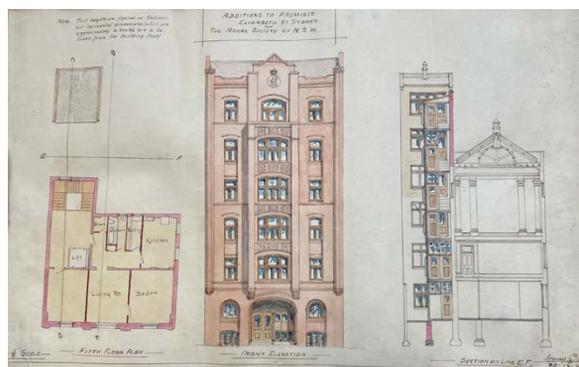


Pencil plans of this Phillip Street building show a large, open basement illuminated by lightwells on three sides; a lecture hall, cloakroom, office and secretary's room on the ground floor; a library, office and lecture hall on the first floor; and warrens of 12 smaller offices on each of the second and third floors. All floors were linked by staircases and a lift (which was a new-fangled import to Australia then).

The façade sketch showed 'The Royal Society of New South Wales' as a prominent sign above a

central entrance with a Baroque (curved) pediment. According to early 20<sup>th</sup> century construction methods for multi-storey office blocks, this edifice would have been assembled with columns and floorplates of iron-reinforced concrete. The façade would have been a curtain wall of brickwork that was attached to the framework but did not carry the roof load.

The second set of drawings, signed in 1920 by prominent architect Harry Chambers Kent, showed alterations and additions to the Society's chambers at 5 (previously numbered 37) Elizabeth Street, which bounded a lane just south of Hunter Street. These plans clarified how to expand the Society's small existing building — two storeys plus a basement — by enlarging the existing floors (eastwards to the footpath) and adding several new levels above.

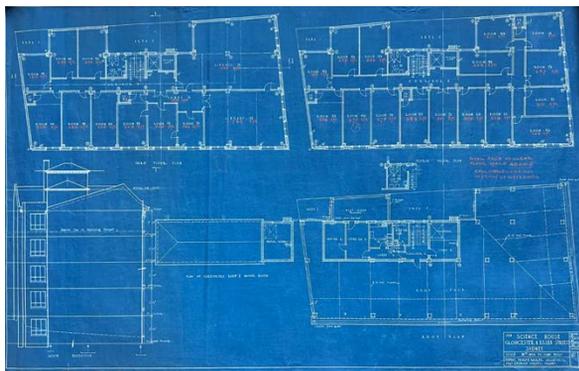


The additions were to include an imposing lecture hall on the top two floors of the original building, a library in the basement and a small caretaker's flat on the roof (facing north between two gables). Offices and committee rooms were shown on the ground and higher floors.

Kent's watercolour sketch for the proposed façade showed conservative styling for its time. Four pilasters, defining three bays plastered in a terracotta tint, created a strongly vertical effect that gestured slightly towards the proportions of American skyscrapers. But the design also included nostalgic English features: a Tudoresque parapet, shallow-arched windows and portal details, and panels of herringbone brickwork above large windows on the four main upper floors. All floors were connected by a 'lift' and a spiral staircase.

Neither of these two architectural concepts were built. Some reasons were clarified in a sheaf of letters typed to the Society from its consulting engineers and lawyers. Dated 1912, these showed that the Society was concerned that its Elizabeth Street building — occupied since 1875 and purchased in 1878 — was too small for its needs and key rooms would lose daylight from a new office building that was being constructed on a neighbouring site. The Society considered selling its Elizabeth Street property and building larger new premises in Phillip Street. After this idea was abandoned (before or during the First World War), the RSNSW commissioned the 1920 plans to expand its existing premises — but that idea was also abandoned.

The third set of drawings includes floor plans for Science House, a five-storey masonry building which occupies a sloping site on the corner of Gloucester and Essex Streets in The Rocks. It was built between 1929 and 1931 on land granted by the State Government to the three owner organisations which had formed a consortium to do so: the Royal Society of NSW; the Institution of Engineers Australia; and the Linnaean Society of NSW. It was officially opened in May 1931 by the Governor of NSW, Sir Philip Game, and immediately occupied by six other scientific and professional organisations, in addition to the owners.



A landmark near today's southern approach to the Sydney Harbour Bridge, its architecture is a fine inter-war example of the 'stretched palazzo' style that was inspired by three-storey Early Renaissance townhouses in Florence and updated to lend an aura of stature and stability to multi-storey government and financial buildings.

Science House was designed by Peddle Thorp & Walker, a firm founded in the 1890s by English architect James Peddle. It won a design competition conducted by the Royal Australian Institute of Architects in 1927 and its completed building later won the NSW RAIAs Sulman Medal.

PTW's floor diagrams (including some overlaid with electric lighting layouts in red pen) complement a fine exterior perspective illustration that is held in the Society's archive at the University of Sydney.

Like many Australian banks, Science House has two streetfront façades that are divided into three horizontal bands punctured by banks of evenly spaced windows. It has an imposing base of tall arches framed by rusticated sandstone blocks; three middle floors of plain, red brickwork and a top floor of smooth sandstone between projecting eaves and stringcourses.

The floor plans show a high-ceilinged lecture hall on the ground and first floors, a library on the first and second floors, and banks of offices on upper levels, with a one-bedroom caretaker's apartment in the roof zone.

In 1927, the Society sold its Elizabeth Street building to the Adult Deaf and Dumb Society, which occupied the first floor until the RSNSW moved into Science House in 1931. It remained there until 1978, when the government replaced the science groups with its Department of Sport and Recreation.

## List of proposed events for 2023

Kindly note that this is a provisional list and will be updated frequently as the program evolves. Updates will be reflected in future issues of the Bulletin and on [our website](#).

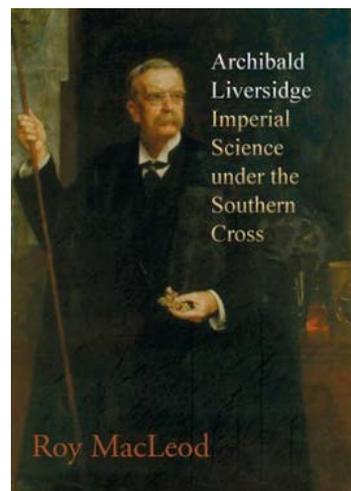
Date	Event
Thursday, 2 March  6.30 PM AEDT	<b>Ideas@theHouse March 2022</b> Venue: Government House, Sydney (by formal invitation) and Live Streaming <b>Topic: Aristotle on life and thought in the sub-lunary sphere</b> Speaker: Dr John Vallance FRSN FAHA
Wednesday, 15 March  6.30 PM AEDT	<b>RSNSW Open Lecture 2023-1</b> <b>1311<sup>th</sup> OGM and Open Lecture</b> Venue: Zoom Webinar Speakers: Shankar Dutt (ANU), Clara Chung Ming Liu (UTS), Thomas Mesaglio (UNSW Sydney), Amyang Zhao (ANU)
Thursday, 16 March  5.15 PM AEDT	<b>Hunter Branch Meeting 2023-1</b> Venue: 40 Newcomen Street, Newcastle <b>Topic: From floods to drought? What might this year bring and what is causing these extremes</b> Speaker: Associate Professor Danielle Vernon-Kidd
Wednesday, 5 April  6.30 PM AEST	<b>156<sup>th</sup> Annual General Meeting</b> <b>1312<sup>th</sup> OGM and Open Lecture</b> Venue: Gallery Room, State Library of NSW, Shakespeare Place, Sydney <b>Topic: Reconstructing ancient oceans, sea-level fluctuations, the deep carbon cycle, and biodiversity</b> Speaker: Professor Dietmar Müller FAA FAGU
Wednesday, 3 May  6.30 PM AEST	<b>RSNSW Open Lecture 2023-1</b> Venue: Zoom Webinar <b>Topic: TBA</b> Speaker: Dr Catherine Bell
Wednesday, 7 June  6.30 PM AEST	<b>1313<sup>th</sup> OGM and Open Lecture</b> Venue: Gallery Room, State Library of NSW, Shakespeare Place, Sydney <b>Topic: TBA</b> Speaker: Emeritus Professor Ros Croucher AM FAAL
Wednesday, 14 June  6.30 PM AEST	<b>Ideas@theHouse: June 2023</b> Venue: Government House Sydney (by formal invitation) and Live Streaming <b>Topic: TBA</b> Speaker: Dr Cathy Foley AO PSM DistFRSN FAA FTSE
Tuesday, 27 June  Time: TBA	<b>Bicentennial Oration 2023</b> Venue: TBA <b>Topic: TBA</b> Speaker: TBA

Date	Event
Wednesday, 5 July  6.30 PM AEST	<b>RSNSW Open Lecture 2023-2</b> Venue: Zoom Webinar Topic: TBA Speaker: TBA
Wednesday, 2 August  6.30 PM AEST	<b>1314<sup>th</sup> OGM and Open Lecture</b> Venue: Gallery Room, State Library of NSW, Shakespeare Place, Sydney Topic: TBA Speaker: TBA
Thursday, 10 August  6.30 PM AEST	<b>Ideas@theHouse: August 2023</b> Venue: Government House Sydney (by formal invitation) and Live Streaming Topic: TBA Speaker: TBA
Wednesday, 6 September  6.30 PM AEST	<b>RSNSW Open Lecture 2023-3</b> Venue: Zoom Webinar Topic: TBA Speaker: TBA
Wednesday, 4 October  6.30 PM AEDT	<b>1315<sup>th</sup> OGM and Open Lecture</b> Venue: Gallery Room, State Library of NSW, Shakespeare Place, Sydney Topic: TBA Speaker: TBA
Thursday, 2 November  9.00 PM AEDT	<b>Royal Society of NSW and Learned Societies Annual Forum 2023</b> Venue: Government House, Sydney (by formal invitation) and Live Streaming Topic: TBA Speaker: TBA
Wednesday, 6 December 6:30 PM AEDT	<b>1316<sup>th</sup> OGM and Open Lecture</b> Venue: Gallery Room, State Library of NSW, Shakespeare Place, Sydney Topic: TBA Speaker: TBA

## Archibald Liversidge: Imperial Science under the Southern Cross

When Archibald Liversidge first arrived at Sydney University in 1872 as reader in geology and assistant in the laboratory, he had about ten students and two rooms in the main building. In 1874, he became professor of geology and mineralogy; by 1879, he had persuaded the senate to open a faculty of science. He became its first dean in 1882. In 1880, he visited Europe as a trustee of the Australian Museum and his report helped to establish the Industrial, Technological and Sanitary Museum which formed the basis of the present Powerhouse Museum's collection. Liversidge also played a major role in the setting up of the Australasian Association for the Advancement of Science which held its first congress in 1888.

One of his greatest contributions was to science education. He worked tirelessly to secure proper recognition of science in both secondary and tertiary education. In the preface of his book, Professor MacLeod comments: 'Liversidge remained confident that Australia's path would follow the route of the "moving metropolis", strengthened by the bonds that tied Australia to its British heritage. In that heritage lay his life, and through that heritage, flowed the genius of imperial science in New South Wales'. To order your copy, please complete the [MacLeod: Liversidge order form](#) and return it to:



The Royal Society of NSW (Liversidge book)  
PO Box 576  
Crows Nest NSW 1585  
Australia

or contact the Society:  
Phone: +61 2 9431 8691  
Email: [info@royalsoc.org.au](mailto:info@royalsoc.org.au)

## The Society and social media

The Society's presence on social media platforms is slowly but surely growing. Our [Facebook page](#), [LinkedIn channel](#), [Twitter feed](#) and [YouTube channel](#) continue to attract and engage followers and viewers, and we continue to build a repository of online events conducted recently on YouTube. Our YouTube channel now has in excess of 500 subscribers, and more than 100 videos online.

The icons on the right will take the reader to the platforms' respective pages, from where they can follow and subscribe to the Society, and be notified of new content.



## Current Council and Office-Bearers

The current Council and office-bearers of the Society are:

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President	<a href="#">Dr Susan Pond AM FRSN</a>
Vice-President	<a href="#">Ms Judith Wheeldon AM FRSN</a>
Secretary	<a href="#">Mr Bruce Ramage MRSN</a>
Treasurer	<a href="#">Mr John Cameron MRSN</a>
Librarian	<a href="#">Mr John Hardie AM FRSN</a>
Webmaster	<a href="#">Emeritus Professor Lindsay Botten FRSN</a>
Councillors	<a href="#">Professor Katherine Belov AO FRSN</a> <a href="#">Professor Sean Brawley FRSN</a> <a href="#">Dr Jessica Milner Davis FRSN</a> <a href="#">Professor Philip Gale FRSN</a> <a href="#">Ms Pamela Griffith FRSN</a> <a href="#">Dr Davina Jackson FRSN</a> <a href="#">Emeritus Professor Robert Marks FRSN</a> <a href="#">Emerita Professor Christina Slade FRSN</a>
Hunter Branch Representative	<a href="#">Professor George Willis FRSN</a>
Southern Highlands Branch Representative	<a href="#">Mr Mike Jonas MRSN</a>
Western NSW Branch Representative	<a href="#">Professor Mark Evans FRSN</a>

Editor: [Jason Antony MRSN](#)

THE VIEWS EXPRESSED IN THIS PUBLICATION DO NOT NECESSARILY REFLECT THOSE OF THE SOCIETY.

