

THE BULLETIN 458

THE ROYAL SOCIETY OF NEW SOUTH WALES

ABN 76 470 896 415

ISSN 1039-1843

December 2021

Best Wishes for the Festive Season

1299TH OGM AND OPEN LECTURE

Managing psychological distress in times of stress: the stress of COVID-19 and all that Wednesday, I December 2021, 6:30 PM



Professor Richard Bryant AC FASSA FAA FAHMS Scientia Professor of Psychology Director, Traumatic Stress Clinic, UNSW Sydney

Date/time: Wednesday, 1 December 2021, 6:30 PM AEDT

Venue: Zoom Webinar
Entry: No charge
Enquiries: via email

All are welcome.
See page 4 for more information



Patron of The Royal Society of NSW

Her Excellency The Honourable

Margaret Beazley AC QC

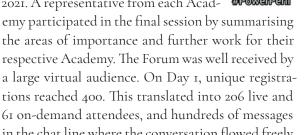
Governor of New South Wales

From the President

The Society's Annual Forum has been held since 2015 in partnership with Australia's Learned Academies. This year, we were joined by the now fifth Learned Academy, the Academy of Health and Medical Sciences. Each Forum is dedicated to the interdisciplinary examination of a contemporary challenge that spans the sciences and humanities. This year's Forum was no exception given its theme — Power and Peril of the Digital Age.



Our outstanding line up of speakers framed their observations around the life of a child born on 04 November 2021. A representative from each Acad-



tions reached 400. This translated into 206 live and 61 on-demand attendees, and hundreds of messages in the chat line where the conversation flowed freely. The average live duration of attendance per individual was 2.3 hours. The figures on Day 2 were similar. The actual number of individuals viewing the Forum was higher. For example, five Libraries across NSW streamed the video feed to a lecture theatre audience.

The Forum was not without its technical problems. The audio was delayed noticeably on Day 2 and the final wrap-up session froze when our virtual provider's platform developed a technical fault not encountered before. These faults will be corrected in the YouTube production. This year, the Society issued a Press Release the day before the Forum and actively tweeted and re-tweeted highlights using the Society's Twitter handle @royalsocnsw and the handle for the Forum itself. Some of the speakers were also active on Twitter.



It is impossible here to distil more than seven hours of intense, wide-ranging, and thoughtful discussion about the influence of the digital age on the life of a child born on the first day of the Forum. I summarise some high-level concepts that struck a chord with me: even though we are at the very early stages of artificial intelligence, it is beginning to revolutionise science, such as by predicting the three-dimensional structure of any protein from its amino acid sequence or estimating greenfield metal deposits with much greater success than traditional methods; data — not the algorithms that underpin artificial intelligence - raise the issues of ethics, security, privacy and trust that must be handled well to avoid a dystopian future; babies born today in Australia already have a digital footprint from data collected before and during pregnancy; we must be careful about how that child inadvertently generates data, e.g. through its internet-connected teddy bear or smart bottle; access to digital technologies and digital literacy will be vital to avoid a digital dark age and inequalities for smaller, poorer, or more isolated communities; concepts of trust and ethics must be embedded in the minds of everyone creating, distributing or using information; our own individual data are incredibly valuable and any missteps can be used against us and our career; in regard to security, the last 30 years have been almost a 'holiday from history' and there are many risks on the horizon that will influence the next century, including cyberwarfare; humanity has worked its way through many successive waves of technology, including the invention of

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writing and books; AI is not magic and not the first technology to touch our lives; we will succeed in our transition from the industrial to the information revolution by putting people at the centre of the transformation.

The recordings of each Session of the Forum will be uploaded onto the Society's YouTube channel soon. We are also planning to use the transcriptions of the audio, prepared using artificial intelligence, as the basis for papers in the Society's *Journal and Proceedings*. If any Society member has expertise and is interested to help with the editing process, please get in touch with me.

I express my gratitude and appreciation to all speakers, and everyone involved in staging the Forum, especially our moderator and rapporteur, Ian Opperman, other members of the Planning Committee — Robin King and Lindsay Botten — and

members of the Program Committee, each of whom represented their respective Academy. They are Tony Cunningham, Academy of Health and Medical Sciences, Anne Castles, Academy of Social Sciences in Australia, Richard Waterhouse, Australian Academy of the Humanities, Toby Walsh, Australian Academy of Science, and Annabelle Duncan, Australian Academy of Technology and Engineering.

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



1299th OGM and Open Lecture

Managing psychological distress in times of stress: the stress of COVID-19 and all that

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Scientia Professor of Psychology & Director, Traumatic Stress Clinic, UNSW Sydney

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Summary

Australia has a long tradition of dealing with environmental challenges, including seasonal impacts of bushfires, floods, drought, and severe storms. These events can result in marked deterioration in the mental health of Australians. This pattern has been exacerbated by the COVID-19 pandemic, which has seen a significant increase in mental health problems across the nation. This has sparked calls both in Australia and globally for novel approaches to manage mental health problems in the wake of these mass events.

This review will describe a body of work that has mapped many of the key mechanisms that promote better mental health after adversity. It will also describe work that has harnessed this evidence to develop brief mental health programs that can be readily disseminated to people in times of need. Controlled trials will be reported that have evalu-



ated the extent to which these programs can improve mental health, and how this approach points to a re-think of how mental health is managed by governments.

About the speaker

Richard Bryant is a Scientia Professor of Psychology at the University of New South Wales, Sydney. Professor Bryant's research has focused on the nature and treatment of stress reactions. He has identified key genetic, neural, and psychological factors underpinning stress reactions and strategies to manage them. His assessment and treatment protocols have been translated into over 15 languages and used in many countries. Professor Bryant has written 6 books, 75 book chapters, and 670 journal articles. He has worked with the World Health Organization to develop programs to manage stress reactions and has adapted these to manage mental health problems during the pandemic. This program has been shown to reduce anxiety, depression, and anxiety, and is being evaluated across Australia, Europe, and India.

Report: Hunter Branch

by Steven Weller (Branch Secretary)

The Hunter Branch Committee is currently busy developing a full program of five (5) public events for 2022, eager to compensate for a pandemic-affected 2020–21. Membership of the Branch Committee

has recently expanded with the welcome addition of Professor Philip Bolton as a new member. Professor Steven Weller has assumed the role of Secretary of the Hunter Branch, with Professor Eugenie Lumbers having recently stepped aside from the role due to ill health.

From the Archives: The Society on Sydney Harbour

by Bruce Ramage (Secretary)

This is the sixth in a series of articles that highlights items from the Society's extensive archives, some of which are held in the State Library of NSW, the NSW State Archives and within the Society itself.

In reading Council minutes of the late 20th century, I have discovered that between 1882 and 1886, the Royal Society of NSW occupied a property at 31 Pacific Street, Watsons Bay. It had been built through the efforts of Nicholai Mikluho-Maklai (1846–1888) (a.k.a. Nicholas Maclay), a Russian scientist who was well-known in scientific circles throughout Europe.

Miklouho-Maclay was young, handsome, idealistic, and full of disturbing contradictions. He became best known for his fierce support of Indigenous peoples, for establishing a world-class scientific research station on Sydney Harbour and for having dissected



Miklouho-Maclay, ca. 1880 in Queensland. A typically posed shot from the period to emphasise the 'explorer' persona — note the Eucalyptus leaves and explorer 'tools'

his Polynesian servant after he died of disease, because he wanted to examine the brain of a 'dark skinned person'. Today in Australia, Miklouho-Maclay is almost completely forgotten. He remains, however, a hero in Russia. Leo Tolstoy, with whom he exchanged letters, wrote: 'You are the first to prove by experiment that man is man everywhere, a sociable being with whom one should communicate with kindness

and truth — and not with guns and vodka. You have proved this with a feat of true courage.'

When he arrived in Sydney in 1878 the enigmatic Russian was initially feted as an exotic, foreign aristocrat who had lived in wild places and could describe first-hand the imagined land of riches to the north. As was the case whichever country he was in, Miklouho-Maclay arrived penniless and borrowed to finance his research. One of his greatest supporters, Sir William John Macleay, politician, gentleman-naturalist and a member of the family that established the Macleay Museum at the University of Sydney, wrote in March 1879, 'Baron Maclay has been soliciting subscriptions today for a Zoological Station at Watsons Bay — a very foolish scheme.'

However, he convinced the NSW Government and the local scientific community in Sydney and Melbourne to set up the Marine Biological Station — only the second in the world. The Society gave £20, and members themselves a further £20 towards its construction. It was designed by prominent colonial architect John Kirkpatrick (Sydney Hotel, Carrington Hotel, Katoomba) and is recognised as the first biological research station in the Southern Hemisphere. He also married the daughter of John Robertson, the five times Premier of the colony, in the face of her father's opposition. Indeed, Robertson threatened to throw him over the Gap.



The former Marine Biological Station at Camp Cove, circa 1881 (middle distance), State Library of NSW

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While it was being built, he worked in Sydney museums and collected evidence for his campaign against the exploitation of 'natives'. The laboratory was completed in October 1881. He returned to Russia in 1882 but returned to Sydney in 1883 to find many of his records and collections had been destroyed nine months earlier in the Exhibition Building fire. He lived and worked at the station until 1886 when he returned to Russia with his family and twenty-two boxes of specimens. He intended to return to Sydney but died of an undiagnosed brain tumour at the age of 41 on 2 April 1888 — he had not yet written the major book he had planned, based on his research in New Guinea.

After Miklouho-Maclay's departure from Australia, the station was acquired by the military and, from 1886, for around 100 years, was used as a residence for married Army Officers. The property was transferred from the military to the Commonwealth in 1908 for £600.

Today, the Marine Biological Station sits within a resplendent garden of native vegetation and distinctive coral trees. It is now leased as private residence, but is managed by the Harbour Trust, which periodically opens this fascinating landmark for public tours.

How the Society became involved in the first place, and why the offer to take over the building by the Department of Defence in 1997 was declined, involves more delving into the archives.

Report: Events Committee

by Christina Slade (Chair, Events Committee) and Lindsay Botten (Webmaster)

As reported elsewhere in this Bulletin, the highly successful Forum was the major event for the Society in November.

Professor Stan Grant gave the inaugural lecture of the Western NSW Branch of the Royal Society of NSW on the topic of his new book 'On the Falling of the Dusk' on 19 October at 1 PM. This presentation is now available on the Society's YouTube channel.

The 1299th Ordinary General Meeting (OGM) will be held on Wednesday 1 December at 6:30 PM when Professor Richard Bryant, AC FASSA FAA FAHMS will talk about '<u>Managing Psychological Distress in</u> <u>Times of Stress: Handling the Stress of COVID-19</u>' and discuss the issues with Professor Elizabeth Deane.

The Events Committee is in the process of finalising a program for 2022. Our theme is post-pandemic life, ranging from science through international relations to the arts. We have decided on a hybrid model for the OGMs, with six OGMs for the year held face-to-face and recorded for later viewing, and four OGMs online. As is traditional, the OGMs will take place on the first Wednesday of the month, excluding January and also November, when

the Forum is the major event. The formats vary from the full lecture through shorter lectures and a discussion. The Events Committee and the entire society is grateful to the work of Stuart Midgley in presenting our Zoom meetings and Professor Lindsay Botten for editing them with such elegance.

Judith Wheeldon is arranging, together with Government House, three Ideas@theHouse-themed events next year. Professor Elizabeth Deane has been organising the named lectures, traditionally hosted by the home universities of the awardees. Over the course of this year, these have been delayed, rescheduled, and ultimately cancelled due to the lockdown. The 2020 named lectures will therefore take place, we trust, in 2022; and we will endeavour to catch up with the 2021 awards.

Dr Adi Patterson serves as the liaison between the Events Committee and the new Community Engagement Committee. The new committee is tasked with revitalising our offerings and has some exciting ideas. The draft OGM and lecture programme provided by the Events Committee provides a framework into which we will incorporate events planned by the Branches and by the Community Engagement Committee.

Report: Southern Highlands Branch November Lecture

by Anne Wood (Branch Secretary)

Interrupted by Fire: Making Ceramics in the Southern Highlands

Dr Stephen Harrison

When Dr Stephen Harrison last spoke to the Southern Highlands Branch of the Royal Society two years ago, he was



not to know that very soon after that evening, he would almost lose his life, as well as his life's work,



when raging bushfires swept through his tiny hamlet of Balmoral. Due to his heroic efforts which made headlines all around the world, he was able to quickly construct a

ceramic 'coffin' and then miraculously survive as the firestorm swept over him. It is astonishing to realise that this was the second time that he had faced cata-



strophic fiery destruction in Australian bushfires. In 1983, his workshops were completely destroyed by fire, his records and precious samples van-

ishing in the flames.

Stephen has presented in many international conferences throughout Europe and Asia, including



at the Royal College of Art in London. He has published over 70 research papers and written 6 books, 3 of which have been translated into other languages. Stephen has researched and created ceramics around the world for a very long time.

Throughout his extended studies into the origins of single-stone native porcelain, he has gone to each of the places where sericite is to be found and collected samples, but also, wherever possible, has sat down

and created work from these remarkable mineral mixtures. In this lecture he presented some of the works that he has made over the fifteen years of his



travels in many countries. Much to the surprise of many attending this wonderful lecture, some of his creations had been made from samples which he discovered and identified here at Mittagong in the

Southern Highlands, only metres from the lovely Carrington Room of the Mittagong RSL in which the lecture was presented.



The audience was

delighted to hear that since the 2019 fires, the Art Gallery of NSW has approached him to add some of his wonderful pieces to their collection. It was inspiring to realize that the man speaking to them

had overcome such dramatic episodes of adversity to bring his scientific analyses of selected minerals, and the beautiful creations made from them to all Australians. Dr Ste-



phen Harrison has given his permission for some of these images to be included in this report. Enjoy!

Society Fellow, Veena Sahajwalla, named as 2022 NSW Australian of the Year

Society Fellow and UNSW Sydney Scientia Professor Veena Sahajwalla FRSN FAA FTSE was named as the 2022 NSW Australian of the Year at a ceremony held at Luna Park, Sydney on the evening of 15 November 2021. Professor Sahajwalla is a distinguished waste research engineer who is the founding director of the UNSW Centre for Sustainable Materials Research and Technology (SMaRT), a former Australian Research Council (ARC) Laureate Fellow, and the leader of a new ARC Microrecycling Research Hub.

Professor Sahajwalla is recognised as the inventor of 'green steel' manufacturing — an environmentally-friendly process for using recycled rubber tyres in steel, for which she received the Eureka Prize for Scientific Research in 2005 and the Environmental Technology Award from the Association of Iron and Steel Technology in the United States in 2006. Since then, she has launched Australia's first e-waste micro-factory in 2012 and a plastics recycling micro-factory a year later. Most recently, she has turned her attention to the development of 'green ceramics', fabricated from recycled glass and second-hand clothes, that have a stylish, designer appearance and which are being used in flooring, walling, and furniture applications.

Professor Sahajwalla's life's work in the recycling of waste, which is now revolutionising manufacturing, was the subject of an ABC TV *Australian Story* documentary earlier this year — a story that is referenced in a February 2021 <u>RSNSW news</u>



article that links to the Australian Story documentary and various other resources on recycling. Earlier this month (November 2021), during the COP26 meeting in Glasgow, she authored a Sydney Morning Herald opinion piece, 'There's something easy we can all do to protect the earth', urging the world to recover critical and valuable materials from waste in order to ease the pressure on key materials, sourced from mining but in finite supply and of increasing cost, that are required in the increasing electrification of our world from renewable energy sources.

The Royal Society of NSW extends its warmest congratulations to Veena Sahajwalla, a true pioneer in this vital area of research and development, on the rare distinction of being named as the NSW Australian of the Year.

Society Fellows elected as 2021 Fellows of the ASSA

The Royal Society of NSW is delighted to learn of the recognition of four of its Fellows as new Fellows of the



Academy of Social Sciences in Australia, elected in November 2021. They are: Professor Bernard Balleine FRSN FASSA of UNSW (Sydney); Professor Catherine Coleborne FRSN FASSA of the University of Newcastle; Emeritus Professor Andrew Jakubowicz FRSN FASSA of the University of Technology Sydney; and Professor Frans Verstraten FRSN FASSA of the University of Sydney.

Professor Bernard Balleine is a psychologist, behavioural neuroscientist, and head of one of the leading laboratories in the world in the study of the neural bases of decision-making. He and



his team have discovered important features of these forms of action control at various levels of analysis, from the psychological and neural systems mediating specific functional capacities to the cellular circuits and intracellular signalling processes involved in specific neuronal plasticity and the cellular changes that support them. His laboratory was the first to

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reveal the importance of the cortical-basal ganglia network, involving medial prefrontal cortex and its connections with the dorsomedial striatum, in the acquisition and updating of goal-directed actions. The approach and procedures pioneered by him have had a profound influence within psychology and neuroscience as well as on computational theories of adaptive behaviour, research programs involving neuroimaging in humans, and models of human psychopathology and addiction.

Professor Catharine Coleborne is Australia's leading historian of psychiatry whose work has

transformed our understanding of the past and present of mental illness and the asylum. Her research has been consistent in creating new knowledge through histories of mental health and



institutions, including advancing fresh ideas about approaches to the study of mental breakdown in the past and present. Her scholarship has focused on the institutional populations of nineteenth-century psychiatric hospitals in Australia and New Zealand and has touched on the themes of law, medicine, welfare, migration, mobility, and colonialism. These institutions were shaped by the processes of colonialism and reflected colonial society's anxieties and preoccupations. Over time, her scholarship has been drawn increasingly into more contemporary projects about mental health, such as museums, collections and exhibitions; or examining lived experiences of 'madness' in a critical disability studies framework.

Professor Andrew Jakubowicz is recognised nationally and internationally as a leading schol-

ar on multiculturalism and associated social issues, while being an innovator in the use of non-traditional media to communicate the insights and findings of sociological research. His research has



focused on the relationships between power and culture, in particular, between key social institutions (including the state, education, media) and culturally diverse populations in Australia. As a public intellectual, he has been committed to communicating sociology (through online blogs, television documentaries, submissions to parliamentary inquiries, and participation in government advisory bodies) as well as providing sustained public leadership and advocacy roles, contributing to policy debates and proposals for legislative innovation.

Professor Frans Verstraten is an experimental psychologist who is widely recognised for the highly

successful integration of psychological research into a multi-disciplinary enterprise with fields of medicine. Over the past two decades, Professor Verstraten has also contributed significantly to



making psychology more accessible to a general audience, through participation in a nationally-broadcast television series and the writing of popular books. In recent years, his interests have extended to the applied aspects of experimental psychology, including clinical applications.

The Council of the Royal Society of NSW extends its warmest congratulations to Professors Balleine, Coleborne, Jakubowicz, and Verstraten on this recognition by the Social Sciences Academy for their achievements.

Society Fellows awarded 2021 Prime Minister's Science Prizes

The Council of the Royal Society of NSW is delighted to learn that two of its Fellows have been recognised with the two highest awards in the 2021 Prime Minister's Science Prizes in an online ceremony on 3 November 2021.



THE PRIME MINISTER'S PRIZES FOR SCIENCE

They are Professor Edward Holmes FRSN FAA FRS, of the University of Sydney, who has won the 2021 Prime Minister's Prize for Science, and Professor Anthony Weiss AM FRSN FTSE, also from the University of Sydney, who has received the 2021 Prime Minister's Prize for Innovation.

The Prime Minister's Prize for Science (\$250,000) recognises a significant advancement of knowledge through science, while the Prime Minister's Prize for Innovation (\$250,000) recognises the innovative translation of scientific knowledge into a commercially viable product, service, or process that has led to economic, social and, where relevant, environmental benefits.

Professor Holmes is a global authority on the evolution of viruses. For almost thirty years, he has

pioneered the study of how viruses evolve and jump between species to spread and cause disease, including humans. Using genome sequence data, he has transformed our understanding of



diseases that have affected major populations such as HIV, Ebola, and SARS. Most recently, Professor Holmes has played a transformative role in the scientific response to COVID-19, becoming the first person in the world, in early 2020, to publicly release the virus's genome sequence. This sharing of the data was critical in helping the global response to the pandemic. It fast-tracked research efforts around the

world and enabled the design of vaccines within days, saving countless lives. He is now at the forefront of research about the origins and ongoing evolution of COVID-19. The work of Professor Holmes will continue to help protect Australia from existing and undiscovered infections, leading our country and the rest of the world into a new age in biosecurity.

Professor Weiss is the world's leading authority on tropoelastin, the protein building block that gives

human tissue its elasticity. For the past two decades, he has pioneered global research into tropoelastin and elastin fibres, which are found in human tissues ranging from the skin to the lungs



and arteries. Elastin fibres play a significant role in the repair of the human body, and this research led our recipient to the creation of synthetic tropoelastin-based biomaterials, to accelerate and improve the repair of human tissue. In 2008, he founded the company Elastagen to commercialise his research and inventions. The company raised \$35 million in venture capital and grant funding, completed clinical trials, and scaled-up production. The inventions of Professor Weiss have generated an incredible 163 granted patents in 21 patent families around the world. Ten years later, Elastagen was sold to one of the world's largest biopharmaceutical companies.

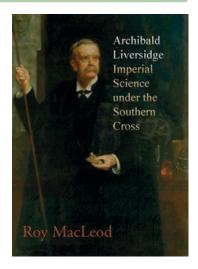
The Council of the Royal Society of NSW extends its warmest congratulations to Professor Holmes and Weiss on the highly-deserved recognition of the outstanding research achievements and impact.

For further information and background, please see the <u>article on the Department of Industry website</u> that also includes a video of the online presentation ceremony.

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 <u>MacLeod: Liversidge order form</u> 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

The Society and social media

The Society's presence on social media platforms is slowly but surely growing. Our <u>Facebook page</u>, <u>Twitter feed</u> and <u>YouTube channel</u> continue to attract and engage followers and viewers, and we continue to build a repository of online events conducted recently on YouTube. 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.



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

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