Find the unexpected
A MESSAGE FROM OUR DIRECTOR

THE CHAU CHAK WING MUSEUM opened in November 2020 and visitor feedback has been overwhelmingly positive; this includes the Museum winning several awards from the Australian Museums and Galleries Association (AMaGA) earlier this year.

As we go to print however, the Museum, like all cultural institutions in Sydney, is closed due to the Covid-19 pandemic.

But our planning continues apace as we map out the next couple of years’ exhibition changeovers and audience programs.

The exhibition \textit{Gululu dhuwala djalkiri}, winner of Best Indigenous Project will be available to visit for a few weeks, whenever we are able to reopen, in the Ian Potter Gallery. After that, we will present \textit{Light & Darkness}, a major exhibition of works drawn largely from the University’s Power Collection of international art. These kinetic, op and pop art works explore luminosity, colour, movement, race and politics across the 1960s, 1970s and 1980s. The exhibition is accompanied by a comprehensive and beautifully illustrated book published by Power Publications.

The broad themes of light and darkness frame this issue of \textit{Muse}, and we delve into the nature of light and it’s opposite, how they are measured, and how they are used. That is the unique opportunity that the breadth of our collections and subjects presents – being able to interrogate an idea or subject in multiple ways, voices, and understandings, through the Museum’s collections.

In this issue, find out why moths are night insects and why butterflies evolved to be brightly coloured. Hear stories about eclipses and learn about the impact object-based-learning is having on our students.

We introduce a new exhibition of Pacific photography drawn from the Macleay historic photography collection and brought to life with songs, poems, and voices of Pacific Islander communities.

We also highlight the important contribution our donors made in 2020 providing much needed support to our programs and care of collections in what was a momentous year with the opening of the new Museum. A huge thank you to all those generous individuals who supported us.

DAVID ELLIS, Director
Chau Chak Wing Museum
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2021 MUSE
What's on

SARAH GOFFMAN: APPLIED ARTS
OPENING LATE 2021

Applied Arts is an immersive deep dive into the interdisciplinary art practice of Sarah Goffman. Intricate and playful, Goffman transforms recycled plastics into artworks referencing larger cultural histories. For her exhibition in the Penelope Gallery, Goffman has taken inspiration from the Museum’s collections, applying her detailed eye and wit to turn utilitarian vessels into objet d’art. By transforming and elevating waste, Goffman’s work invites us to think about consumerism in new and interesting ways.

PACIFIC VIEWS
OPENING LATE 2021

Stunning historical photographs of Papua New Guinea, Fiji, Tonga, Nauru and the Federated States of Micronesia are brought to life through the contemporary voices, songs and poetry of Pacific peoples. The images selected for this exhibition date back to the 1870s and reveal views of fragile, flourishing and diverse ecosystems nurtured by Pacific Islander peoples during a time of colonisation. Full of promise and purpose, these views are joined with Pacific Islander voices of our own time. The resonating voices and songs of Pacific peoples connect contemporary culture to the histories captured in these photographs.
Earlier this year we welcomed our new Museum Conservator to the Chau Chak Wing Museum team. Joining us from the National Museum of Ireland, Silvia Da Rocha has come home to Sydney to care for our collections. Specialising in the conservation of natural history specimens, Silvia’s experiences as an object conservator have seen her work on diverse collection items ranging from archaeology to fashion.

Behind the scenes

Registration Officer Aggie Lu affixing magnetic strips to dust covers, to be deployed in the Macleay Collections’ ‘wet store’, a collection area that holds specimens preserved in liquids.

One of our dedicated volunteers, Kati Johns, works on an audit of the bird specimens from the Macleay Collections.

AMBASSADORS

AMBASSADORS
ALL FLOORS

Ambassadors is our ongoing display of First Nations culture and heritage. Throughout the Museum, you will meet ambassadors from eight regions of Aboriginal Australia. Each has been curated within and informed by Aboriginal knowledge frameworks.

The objects can be understood as ancestors, and the collections as consultation tools.

Above: Bera (fishhooks), Eora Peoples, Sydney, Macleay Collections, ET2014.1871, ET2014.1872

Object/Art/Specimen

An introduction to our diverse collections through six evocative themes. Antiquities, artworks, scientific objects and cultural materials are united to create thought-provoking opportunities to understand the world.

Above: Skull and lower jaw, Thylacinus cynocephalus (Harris, 1808), thylacine, Tasmanian tiger, Macleay Collections, NHM.1000

The Human Calculator

Artworks by JW Power, an Australian artist whose geometry-inspired paintings saw him join the avant-garde scene in 1930s Paris.

Instrumental: collections from science

Instruments from the history of optics and light.

Above: Newton’s disc, 1900–50, Macleay Collections, SC2017.149

Student Conservator Camilla Norman assists Conservator Silvia Da Rocha measure a new acquisition, an 1819, Cox X-ray tube, one of the earliest examples of its type.

As well as documenting our public spaces, our photographer David James has also been working behind the scenes shooting the new storage spaces.

Conservator, Silvia Da Rocha, cleaning a portrait of Professor Alice Tat, painted by Jenny Sanda, before it goes on loan to the Art Gallery of New South Wales for the Archie 100: A Century of the Archibald Prize exhibition.

Collections. Specialising in the conservation of natural history specimens, Silvia’s experiences as an object conservator have seen her work on diverse collection items ranging from archaeology to fashion.

Student Conservator Camilla Norman repairing an Athenian horse from the Nicholson Collection.
The major new exhibition in our Ian Potter Gallery tracks art movements from the 1960s to the 1980s, via highlights from the Power Collection.

Why must we paint darkness? We have the most complete darkness when we shut our eyes, we do not need to wait for night; night is only relative, we can run before it, and stay always in brightness … But to praise brightness alone seems to me to be insufficient. I go to darkness itself, I pierce it with light, I make it transparent, I take its terror from it, I turn it into a volume of power with the breath of life …

— Otto Piene, Paths to Paradise, 1961

Late modernism and the Power Collection

THE EXHIBITION Light & Darkness is drawn from the Power Collection, a major legacy of the artist-benefactor, Dr. John Wardell (JW) Power, a medical graduate from the University of Sydney. His great bequest challenged the University “to bring the people of Australia in more direct touch with the latest art developments in other countries” and created the Fine Arts Department and the Power Institute. The collection was launched in the late 1960s, however only now does it have a permanent home at the Chau Chak Wing Museum. The Power Collection appears like a time-capsule, “buried” when acquisitions ceased in 1989, following the formation of the Museum of Contemporary Art.

The exhibition takes its cue from the ‘light works’ that were a major feature of the early Power acquisitions, tracing a thematic of light and darkness. Several key works by Australian artists have been included, drawn from the University’s other collections. The three decades that the exhibition spans – from 1960 to 1990 – marks the rise and fall of the Cold War and the end of the short twentieth century. Looking at late modernist art today is to recover the memory of a futurist dream of being new.
People at the time thought, and some people still seem to think, that they were paintings having to do with optical experiment ... really they were an attempt to say something about stabilities and instabilities, certainties and uncertainties.

— Bridget Riley, 1988

The 1960s

In 1968, the inaugural Power exhibition of luminous and kinetic artworks was installed in a darkened environment within Harry Seidler’s new Australia Square in Sydney. The international Op and Pop art had been selected by the first Power curator, Gordon Thomson in 1967. It had a Western European orientation, focused on British, German and Italian neo-avant-gardes, in addition to the Paris-based group GRAV. Highlights included paintings by Bridget Riley and Peter Sedgley. The following year, Power acquisitions were made by Bernard Smith who had arrived in Venice as the Giardini’s exhibition gardens were closed by students protesting about the “Biennale of capitalists.” The influential Swedish museum director, Pontus Hulten subsequently reflected: “There was a general sense of hope that the future could happen only via the necessary destruction of the past.”

The 1970s

As the utopian dreams of the 1960s collapsed, many artists turned to language in search of dialogue or a more collaborative space in which to work. At a time when so-called ‘international’ art came to be seen in terms of the ascendancy of New York, the newly appointed Power curator Elwyn Lynn included America on his biennial acquisition trips. Through the 1970s he selected late modernist painting alongside neo-Dada collage, assemblages, and multiples like Joseph Beuys’ Filzanzug (Felt Suit) edition which he described as more a “hair-shirt masquerading as a felt suit.”

If this world can provide us with aesthetic spectacles like the Empire State Building and TV relays from Mars, then is there any need for an art form restricted to similar macroscopic manoeuvres? ... Once one understands that art is not in objects but in the completeness of the artist’s concept of art, then the other functions can be eradicated and art can become more wholly art.

— Ian Burn, Conceptual art as art, 1970
Sarah Goffman: Applied Arts

An interview with the artist on her new exhibition in the Penelope Gallery, an installation of museum replicas handcrafted from waste materials.

Painting under the impact of Post-Modernism, pluralism, the perennial ‘death of painting’, the distrust and sometimes downright contempt of painting ... its association with ‘80s excess, etc. There was a lot for a young artist to worry about.

— Steig Persson, 2019

The 1980s

IN THE 1980s, melancholic post-modernists took on the cloak of darkness whether to symbolise the endgame of modernism or to signal once again the possibility of an iconic monochrome. This new generation, with many women artists prominent, drew upon a sophisticated mix of theory, whether psychoanalytic or photo-media critique. Outside the gallery system at the University of Sydney’s Tin Sheds, a dark, femo punk anti-aesthetic informed posters, which were amongst the final acquisitions of the Power Collection.

In 1983, the University announced a ‘joint curatorship’ for the Power Collection with the appointment of Bernice Murphy together with Leon Paroissien. Under their tutelage the collection assumed a strong regional character which included Australian, and in particular Aboriginal and Maori art. The decision to shift the Power Collection off-campus, as the basis for a new Museum of Contemporary Art (MCA) at Circular Quay was announced in November 1984 and the final Power acquisitions were made in 1989.

The Power Collection is part of a wider endeavour inspired and made possible by JW Power’s vision. The exhibition includes a range of documents, scrapbooks and posters which bear witness to the intellectual ferment and excitement that Power’s gift made possible, including the Power lectures that continue to this day at the Power Institute and the teaching and research in Art History and theory that have trained many curators, thinkers and artists.

Dr Ann Stephen is Senior Curator, University Art Collection, Chau Chak Wing Museum

New publication

Accompanying the exhibition is a major new book, Light & Darkness: Late Modernism and the JW Power Collection, co-published by the University of Sydney’s Power Publications and the Chau Chak Wing Museum. Edited by Senior Curator Dr Ann Stephen, the book features essays from prominent art historians and curators on every work included in the exhibition, including an illuminating introduction.

RRP $50

Available from the Chau Chak Wing Museum store, and online at www.powerpublications.com.au
Sometimes I begin with the object I want to copy, then I have to find or make the suitable form it can be transcribed upon. But other times, I find the material and it will designate its format.

— Sarah Goffman

Can you talk about your process, how you go about changing a discarded utilitarian object? Is there a moment for you when its transcendence is complete?

Sarah Goffman: Applied Arts

S: Sometimes I begin with the object I want to copy, then I have to find or make the suitable form it can be transcribed upon. But other times, I find the material and it will designate its format. Finding the right container or material is a large part of the process and then cleaning it and taking it back to its initial design sometimes takes longer than the actual decorative process! There’s a fantastic moment when I’m in the studio where a piece I’m working on suddenly takes on the decorative elements and is transformed. It’s quite magic actually, and is often when colour has been applied. Often it isn’t until I install the work within vitrines that I can say it is ‘complete’.

I recently saw the work Seamless (1999/2018) by American artist Sarah Sze who talks about ‘marking time through objects’ which resonated with me when thinking about your practice, would you agree?

S: Absolutely! Each piece exists as a calendar. I may not recall anything about 2005 except when I read the lines on my CV. Art is a diary of my time on earth. French curator and critic Nicolas Bourriaud writes that ‘I am supposed to be what I read, what I listen to, what I look at’. It connects to French philosopher, anthropologist and sociologist Bruno Latour’s observation that ‘I am what I am attached to’.

Can you talk about your process, how you go about changing a discarded utilitarian object? Is there a moment for you when its transcendence is complete?

Sarah Goffman: Applied Arts

S: In 2005, I made a version of the Art Gallery of New South Wales’ Scholars table. I was so in love with it; it was the first time I made a direct and as accurate as possible rendition of something I adored. Except I’d heard that in the early days of the gallery the roof leaked terribly and the water would run down the walls, so I got a fish tank and installed the works in it, immersed in water. The works were mainly plastics, so I was highlighting their immiscibility in water.

In 2017 I made an exhibition, I am a 5-D Printer at Wollongong Art Gallery responding to their Mann-Tatlow (donated Asian art) collection, installed in the showcases the ‘real’ works are typically housed in. Taking the entire space, I got to realise a large simulation of what was traditionally exhibited there. The response seemed good; I remember someone telling me they’d been there while a father showed his child, but didn’t understand that what they were seeing were not the actual objects but copies of them. ‘This made me feel really good, not that I’d tricked them, but my objects were good enough to simulate the real!’

Can you talk about your previous exhibitions where you have incorporated museum collections? What was the response?

Sarah Goffman: Applied Arts is the second project in the Prinsep Gallery, the Chau Chak Wing Museum’s dedicated contemporary art project space.

Katherine Liberios is Assistant Curator, University Art Collection, Chau Chak Wing Museum
in 1922, the eyes of the scientific world were on Australia as the location where Einstein’s 1915 general theory of relativity could be proved. Einstein’s theory predicted that light from stars would bend when passing near the sun’s gravitational field. The way to test this theory was to photograph and measure the position of stars close to the sun, which could only be done during a total solar eclipse where the moon obscures the sun. A British 1919 total eclipse expedition had produced results that supported Einstein’s theory, but additional confirmation was required.

The next opportunity came on 21 September 1922, when a total solar eclipse tracked across the Australian continent from near Broome, across the centre, to the northern coast of New South Wales. Local and international eclipse expeditions were mounted to test the ‘Einstein effect’, and to study the phenomenon of a total eclipse.

An international party led by the Lick Observatory (California) set up camp at Wallal, in Western Australia, 300km south of Broome. Ten tons of telescopes and equipment were dropped off by sea and taken to the site by donkey train. In central Australia, at Cordillo Downs sheep station, the Adelaide Observatory group established their viewing camp. Pack camels transported the equipment 640km from the nearest rail siding.

Goondiwindi in Queensland was the location for the parties from the Melbourne Observatory, the Sydney Observatory and the University of Sydney. Free transport of equipment was provided by the New South Wales and Queensland governments. The university group set up its store and workshop at the back of an empty shop, with the other parties at the Goondiwindi recreation ground. Rehearsals were carried out so that everyone knew what they had to do during the three and a half minutes of totality.

Almost a century ago, scientists used an eclipse to try to prove one of Einstein’s key theories.

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The Sydney Observatory group under Professor William E. Cooke, Government Astronomer (and professor of astronomy at the University of Sydney) was to test for the ‘Einstein effect’ which it attempted to do using its massive star camera. The results were disappointing, too poor to measure the required deflection. The group also photographed, using a photobolograph, the sun’s corona, the outer atmosphere only visible during a total eclipse, seen as a glow of light around the sun’s disk. Cooke later said they were severely handicapped by their antiquated equipment.

The Melbourne Observatory group was privately sponsored by businessman Russell Grimwade, who travelled with the party and took photographs of the camp. With equipment issues, the expedition failed to take any precise photographs.

The University of Sydney party of physicists, astronomers and a mathematician, was led by acting professor of physics, Oscar Vonwiller. Its work was to photograph the sun’s corona and the ‘flash spectrum’, to obtain a spectrum of the corona and to measure its light intensity.

The University had taken its Cecil Darley telescope which, placed horizontally with light fed by a coelostat, served as a camera, with a further two cameras fixed to its mounting. Photographs were obtained, but no Einstein effect observations made. The work with two spectrosopes gave unsatisfactory results, with problems with settings and lack of preparation time.

None of the local expeditions were able to procure precision images. It was the Lick Observatory team at Wallal in Western Australia, with its experience in eclipse work and better equipment, who successfully made the observations that confirmed Einstein’s theory.

Vonwiller reported to the University of Sydney Senate in October 1922 that “Generally I think that the results obtained will justify the expedition’s existence. I feel now that we undertook too much in view of the shortness of time of preparation.” He thought it was good experience, however, for the future.

Jan Brazier is Curator, History, Macleay Collections, Chau Chak Wing Museum

The Melbourne Observatory party checking their heliostat and telescope in preparation for photographing the total solar eclipse of 1922 at Goondiwindi, Queensland, copy print, Roy Allen Photography Album, School of Physics, The University of Sydney

Cecil Darley, NSW engineer in-chief for harbours and rivers (1889–95) donated the telescope to the University in 1901. It is now on display in the Physics Building foyer.

The solar eclipse camera and camels. Cordillo Downs, 1922, Geology Department Lantern Slide Collection, Macleay Collections, HPID 28 055

Cokebolats reflect light from the sun into a fixed telescope, using a flat mirror turned by a motor. This instrument was made by the Sydney Technical College for use in photographing the 1922 eclipse at Goondiwindi.

‘Path of Moon’s Shadow’ Argus, 22 September 1922

While the torch relay that precedes the Olympic Games is a modern invention, fire torches blazed throughout many rituals of the ancient Hellenic world.
The torch relay is a modern invention, not a part of the Ancient Olympic tradition. Based on the idea of the hearth of the Temple of Hera of Olympia being alight for the duration of the competition, it was added in 1936 to bring the ‘Olympic flame’ to the host city. Even though this development was part of the Nazi’s widespread misappropriation of ancient symbolism to legitimise themselves and their ideologies, it was adopted in subsequent years as part of the Games’ opening festivities.

While the Olympic torch relay might be a modern invention, torches were used as part of civic and religious life in antiquity. Torch races, where individuals or relay teams were required to transport a flame, were popular in Classical Athens and were held in other Greek city-states such as Corinth, but interestingly not Olympia. The races were called lampadedromia or lampas and were part of religious festivals that honoured specific deities including Prometheus, who is said to have given fire to humanity, and Hephaistos (right), the god of fire and blacksmiths.

The Panathenaea was a city-wide festival held every year in Athens, with a Greater Athens games held in conjunction every 4 years. The festivities included a city-wide procession, immortalised in the sculptural frieze of the Parthenon, a variety of competitions from athletics to poetry and a torch relay. The winning tribe was rewarded with an ox, and individual competitors received a hydria (cosmetics pot) worth 50 drachmai – a laudable sum.

The most unusual torch race in Greek antiquity was held in honour of the Thracian goddess Bendis. Often associated with the hunting Goddess Artemis, Bendis was the first foreign deity to be worshipped in Athens. Her cult, established by the late 5th century BC, was based at the port of Piraeus where her temple and altar were built. Her festival, the Bendieia, was one of the most important for the state of Athens. Historical accounts note that the income from the sale of oxides was the third largest across the Greek city states, amounting in 545 BC to 457 drachmai. Some scholars suggest it even incorporated a hecatomb – the sacrifice of 100 oxen at the goddess’ temple.

One of the primary events of the Bendieia was the torch race on horseback, unlike any other relay. The most significant source for information about this event comes from Plato’s work, The Republic. Socrates, having watched the procession of the inaugural Bendieia, went to leave, remarking that there was nothing left to see. Adeimantus (Plato’s brother) exclaimed “Do you mean to say that you haven’t heard that there is to be a torchlight race this evening on horseback in honour of the Goddess?” Socrates replied “On horseback? That is a new idea. Will they carry torches and pass them along to one another as they race with the horses, or how do you mean?” “That’s the way of it.”

Archaeological evidence also shows the structure of the race and the number of competitors involved. The Nicholson Collection’s plaster cast of a relief sculpture in the British Museum (opposite) depicts a team of torch-racers approaching the larger-than-life goddess who wears her trademark Phrygian cap, animal skin cloak and long boots. The first two men are bearded and wear himatia (wrapped cloaks). The rest are naked (but with headbands) and beardless, indicating their youthfulness. Scholars had previously suggested that the bearded men could be the sponsors or trainers of the naked athletes. Recent research by Nichola Sekunda proposes that the two figures were commanders of the Athenian cavalry, or the tribal regiment of the cavalry the team were from. The first man holds a torch, a long thick staff with a handguard. The scene is significant as it confirms Plato’s account of the Bendieia torch relay race.

Torches appear elsewhere in Hellenic art, although they look very different to those held by athletes. Vase painters often used torches to show the action of a scene occurring at night, or in an other-worldly space. These torches do not have handguards and are often much longer than their counterparts used in competitions. Scenes such as the one on a bell krater by the Dijon Painter from Apulia (page 19) show long torches, held in both hands by a Maenad running towards an altar, made by tying together bundles of sticks. The torches have horizontal bands along the shafts which indicate ties. A similar bundled torch is carried over the shoulder of an actor dressed as a komast (drunken reveeller) on an oinochoe by the Compagnie Painter (above).

Differences in torches are significant as they tell us about the different ways in which light and flame were used in the ancient Hellenic world. Torches with handguards were specifically designed for races, whereas the festival and civic use of torches was a very different affair.

Candace Richards is Assistant Curator, Nicholson Collection, Chau Chak Wing Museum.
Casting light in *Pacific Views*

The upcoming exhibition in our photography gallery explores the Pacific in new light, through historic photographs, and the voices and songs of Pacific peoples. *Pacific Views* reveals the fragile, flourishing, and diverse ecosystems nurtured by Pacific Islanders during a time of colonisation and missionisation. Music and language are central to Indigenous Pacific peoples’ identity so it was essential to us that visitors to the exhibition could hear from Pacific Islanders through audio recordings, oration and poetry. These resonating voices and songs of Pacific peoples connect contemporary culture to the histories captured in the photographic images.

When we first worked to locate Pacific landscape images in the historic photography collection for the exhibition, we expected only images of sepia, greys, and black and white albums, but there were also images we found that transported us to a brightly colourful world through black and white images that had been individually hand coloured. These images were lantern slides, made for an old form of image projection. Lantern slides are made from two pieces of glass, one with the photographic positive, the other a protective glass ‘cover’, which were sandwiched together for use in a projector. Images were shown by casting light through the glass slide and enlargement lenses onto a wall or sheet. This technology was originally developed for hand-drawn images but quickly converted for photographic projections from the 1850s.

Immensely popular, lantern slide shows were part of popular entertainment, travelogue-style documentaries, and education. It was through lantern slides that many Pacific peoples were introduced to the Europeans’ places of origin, their biblical stories, and humour. Pioneer anthropologist Alfred Haddon used lantern slides in his visits to Torres Strait and New Guinea, writing: “When a group of children were thrown on the screen, I asked if any of them were there present and I got a lad and a lass to come before the screen and stand by the side of their portraits taken 10 years before [1888]. There was a photographic interlude and I gave another lantern show of... decorative art and native animals.”

At the same time, students at the University of Sydney were learning about foreign places in the same way, with slides showing geographic and geological features, everyday life, buildings and places of prestige. It is these images employed for University students from the 1870s through to the 1970s that are used in *Pacific Views*.

Many visitors will see in the images parts of their own family histories, as these images directly connect with colonial administration, missionary endeavour, tourism and economic opportunity. Sensational events of the past were captured, such as the 1937 volcanic eruptions of Kalamanagunan, on the emerging colonial centre of Rabaul, pictured long before Kalamanagunan changed the view physically and personally.

Captured too are images pregnant with future events – such as the opening image of the exhibition, a peaceful coconut tree against the bright moon at Pearl Harbour. This place is now synonymous with North American involvement in the Pacific campaigns of World War Two.

This sense of future is the pathway for visitors: we welcomed to follow in *Pacific Views* through photographic prints, albums and reproduced images, accompanied by the voices of poets from across the region. Through QR code links, visitors can listen to songs, thanks to a partnership with PARADISEC, the international sound archive based at the Conservatorium of Music. *Pacific Views* brings to life the historic landscape images, voices, songs and poetry of Pacific peoples, evoking emotional and exciting rediscoveries of the past, and capturing contemporary perspectives on history and culture.

Pacific Views, co-curated by Steven Gagau and Jude Philp, will open in late 2021.
Evolutionary biologists believe that around 100 million years ago, the earliest butterflies evolved from moths. This was driven by opportunities to capitalise on a new food source: nectar from flowering plants, which first emerged 30 million years earlier. In switching to a diurnal lifestyle (being active in the day), major adaptations to butterfly eyes were the enhanced perception of colour and resolution. Ultraviolet (UV) vision helps them detect ‘nectar guides’ on flowers as well as UV markings on some species’ wings for conspecific recognition. Unsurprisingly, their brilliant colours evolved as a response to mate attraction, where females prefer males bearing brighter or more exaggerated colours. This in turn makes butterflies our most beloved of all insects.

How did moths and butterflies adapt to life in the presence and absence of light?

Matt Huan

The collective noun for a group of moths is an eclipse - evoking a sense of mystery, darkness and gloom. They are often considered as the dull counterparts to butterflies, though not without good reason. When they are active at night (nocturnal), visual perception is drastically reduced. Resources that would have gone into colour development are better used to improve survivability: thick furry bodies that conserve heat, heightened sensitivity of their other senses, and the development of superposition eyes. With these, moths can see images up to 1000 times brighter than butterfly eyes, though with lower resolution. This enables them to detect dim, faraway light from the moon and stars which they use as compasses to find their way via a sophisticated system of celestial navigation.

Matt Huan is Collections Officer, Macleay Collections, Chau Chak Wing Museum.

Bright Oakblue Butterfly

Arhopala meander

Macleay Collections, NHEN.61859

The iridescent violet of the Bright Oakblue is due to the arrangement of photonic crystals on its wing scales, rather than from pigments. This is a form of ‘structural coloration’. Such bright colours evolved due to sexual selection, where females prefer males bearing brighter or more exaggerated colours.
A recent scientific instrument acquisition reveals how tests for colour blindness were developed in the late 19th century.

AMONG THE scientific instruments of the Macleay Collections is this dome-shaped, black-painted lantern – a recent acquisition from the University’s Discipline of Physiology. A clue as to its use and significance is provided by an engraved copper plate on the base, reading ‘Edridge Green Colour Perception Lantern’.

Frederick William Edridge-Green (1862-1953) was an English physician. He earned his Doctor of Medicine in 1889 and was awarded a gold medal for his thesis on colour vision and colour blindness. Colour vision deficiency had become a subject of increasing interest in the 19th century following a rise in transportation accidents. Researchers theorised certain incidents could be explained by colour-blind workers misinterpreting coloured signal lights. When Swedish physiologist Frithiof Holmgren developed a test for colour blindness in the 1870s (requiring examinees to match coloured samples of wool), it quickly became a standard examination for employees and recruits in the railway and shipping industries. Edridge-Green’s thesis and subsequent publications strongly criticised the use of the Holmgren Wool Test. In a series of experiments, he found a number of ‘dangerously’ colour-blind people were still able to pass the test. Further, he argued, to best determine a worker’s capacity to safely perform a job, colour-blindness tests should better represent what employees were expected to do in the field. As a result, he recommended an alternative test of his own design – the Edridge-Green Colour Perception Lantern.

Edridge-Green first described his lantern test in 1891. The updated version seen here was likely made after 1920. It is fitted with an electric lamp and features five rotatable discs, each with an operating handle. The discs are variously fitted with coloured filters, used to represent the signal lights encountered by railway and ship workers; clear, ground and ribbed glass filters, simulate weather conditions like rain, fog, and clear skies; and differently sized apertures imitate how signal lights would appear from a distance. A scale on the reverse indicates which options have been selected. To successfully pass the test, candidates had to accurately name each coloured light produced alone, and in combination with the modifying glass filters and apertures. Edridge-Green’s work attracted much attention, but his criticisms of the widely accepted Holmgren Wool Test surrounded him with controversy. His research and Colour Perception Lantern were both rejected, even after he was made a member of the International Code of Signals committee in 1892. That same year, after being presented Edridge-Green’s work, The Royal Society voted to continue recommending the Holmgren test for assessing ship and railway workers.

Despite these setbacks, Edridge-Green continued to campaign for the acceptance of his lantern test and over the years, professional opinion gradually shifted. Researchers began validating Edridge-Green’s work and also noted faults with the Holmgren test. Finally, in 1915, the Board of Trade chose to cease use of the Holmgren test and instead adopted a lantern test based on Edridge-Green’s design. The Royal Navy and the railways soon followed suit and in 1956, he was awarded the Thomas Gray Memorial Prize for his invention. Edridge-Green maintained an interest in colour vision throughout his lifetime and regularly visited the manufacturing facilities of his Colour Perception Lantern right up until his death in 1953. His obituary in The Lancet (25 April 1953, p.856) described him as “…the inventor of the first efficient test for colourblindness”. Today, several transport industries still utilise lantern tests for colour blindness.

Kelsey McMorrow is Curatorial Assistant, Macleay Collections, Chau Chak Wing Museum.
Shifting attitudes in the nuclear age are illuminated through objects in our collections.

No Nukes!

CHRIS JONES

The flash of an atomic explosion emits enormous amounts of thermal radiation as visible, infrared, and ultraviolet light. An initial reaction of awe and curiosity at the power of an atomic bomb, at the same time questioning Japanese claims of ongoing effects of radiation caused by the explosion. However, after Operation Crossroads, the name given to the atomic bomb tests at Bikini Atoll in 1946, the dangers of radioactive fallout became clear – the atoll became uninhabitable.

Although anti-nuclear protests started as early as 1946, after the Daigo Fukuryū Maru (Lucky Dragon 5) incident where a Japanese fishing boat crew were contaminated by the nuclear fallout from a test at Bikini Atoll on 1 March 1954, protests started to gain momentum. The incident, that caused the fishermen suffering and death, was widely reported in newspapers around the world, as early as 1946, after the Daigo Fukuryū Maru (Lucky Dragon 5) incident where a Japanese fishing boat crew were contaminated by the nuclear fallout from a test at Bikini Atoll on 1 March 1954, protests started to gain momentum. The incident, that caused the fishermen suffering and death, was widely reported in newspapers around the world, including Australia.

In 1954, Professor Harry Messel established the Nuclear Research Foundation at the University, now known as the Physics Foundation. Its purpose was to raise funds to develop and support research within the School of Physics. One of the floats in the Commemoration Day procession in May that year featured students demonstrating against Messel's plans. Their banner read 'Atomic age/ misguided Messels'.

Uranium, a fuel for nuclear power plants, was discovered in Australia as early as 1906, and was being mined and exported by 1954. Large deposits of uranium discovered in 1969 increased the scale of mining activity. Uranium mining became the focus of protests in the mid-1970s. While in opposition, the Australian Labor Party passed a motion at their 1977 National Conference in favour of an indefinite moratorium on uranium mining. The Earthworks poster collective produced a poster protesting uranium mining in the same year. The artists, Chips Mackinolty and Colin Little, parody The Sun newspaper to highlight concerns about the use and effects of uranium.

Nuclear testing in the Pacific started in 1946, by the United States, at Bikini Atoll in the Marshall Islands. Between 1966 and 1996, France conducted 195 atmospheric and underground nuclear tests at Mururoa and Fangataufa atolls in French Polynesia. The Nuclear Free and Independent Pacific (NFIP) group grew out of the first regional Nuclear Free Pacific Conference in Fiji in 1975. The NFIP brought together two strands of political activism: opposition to nuclear weapons (and the nuclear industry generally) and opposition to colonialism. Several posters in the collection promote the message of the NFIP. One example is a poster by the Melbourne based collective Redletter Press. Designed by Wendy Black in 1985 the poster uses the three languages of Vanuatu (Bislama, French and English) and images from Gauguin paintings of Tahitian women. The NFIP 1985 conference was held in Vanuatu.

The Chau Chak Wing collections document a long history of resistance to nuclear weapons and nuclear power generation. They provide a useful window on political and social movements illustrating the thoughts of those that were horrified by the power of nuclear technology. Although plans for a nuclear power plant in Australia have been halted several times, uranium is still mined and exported to this day.

Chris Jones is Collections Manager, Chau Chak Wing Museum.
WE ARE often asked by the school students visiting the Museum as part of our education program about our favourite artefacts in the collection. My answer always includes the clay oil lamps from around the Mediterranean, with their sooty nozzles so evocative of their past use.

This saucer lamp was found during the 1952–58 excavations of the so-called Fosse Temple at Tell ed-Duweir and dated by the excavators to the Late Bronze Age. The site was a fortified city near Jerusalem, destroyed and rebuilt a number of times from the Middle Bronze Age through to the Iron Age. The sponsors of the excavation hoped to prove that Tell ed-Duweir was the site of the Biblical city of Lachish, and to link the destruction levels with events recorded in the Bible as well as on triumphal reliefs carved on the walls of Sennacherib’s palace at Nineveh (now in the British Museum). Unfortunately, the excavations of the 1950s came to an end when the director of the project, J. Starkey, was murdered on the road between the site and Jerusalem. Veronica Seton Williams, a pioneering Australian archaeologist, recorded the effect on the team in her memoirs: “without Starkey’s drive, energy and enthusiasm all hope of clearing the great mound vanished.” Excavations at the site resumed in the 1960s and then the 1970s, with sponsors including the Australian Institute of Archaeology, and continue today.

This lamp is wheel-made of unslipped reddish clay with some fine limestone inclusions, and has a rounded base scraped smooth. It has a sharply pinched nozzle to hold a linen or woollen wick out of the saucer filled with olive oil which would have burned with a bright clear flame. Lamps have been found at Lachish in temples, tombs and houses, but the expense of fuelling the several lamps required to light even a small room must have made their use something of a luxury. The collection of lamps piled in a niche next to the altar in the Fosse Temple, near where this lamp was found, suggests their importance as part of cultic ritual. Also of interest is their provenance in cultural heritage artefacts and museum collection materials, has driven investigations out of dedicated analytical laboratories and into gallery conservation labs and public spaces.

One such area of advancement is in Infrared Reflectography (IRR). The technique is commonly used to look through layers of paint and reveal underdrawings that can sometimes reveal changes in an artist’s composition, hidden marks and signatures, and other clues that may support the authentication or provenance of a work of art. This is possible because longer infrared wavelengths can transmit through the layers of paint and reveal the making of an artwork to light. While the technique has been around for nearly a century, recent improvements in digital camera technology have enabled affordable and accessible opportunities to noninvasively experiment with collection materials and to test the potential of a technique historically aimed at old master paintings.

Collaborative efforts have been turned on Pacific barkcloth objects with startling effect. The organic paint or coating material that provides a rich red-brown colour to the tapa appears transparent to infrared wavelengths, and the drawing material below appears in stark contrast to the natural fibre substrate. The resulting images beautifully illustrate details of the repeated geometric designs and clarify points of draughtsmanship that lend a new view into production methods and design.

Taking advantage of a revolution in scientific technology, a formal collaboration between the Chau Chak Wing Museum (CCWM) and Sydney Analytical, one of the University of Sydney’s Core Research Facilities, began in 2018. Advances in the portability, sensitivity and affordability of scientific instrumentation, used to probe questions of materiality, craftsmanship and provenance in cultural heritage artefacts and museum collection materials, has driven investigations out of dedicated analytical laboratories and into gallery conservation labs and public spaces.

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Thérèse Harrison is Professional Officer, Museums Analyses, Sydney Analytical and David James, CCWM.

Infrared Reflectography can be used to reveal hidden details and designs.

Long wavelengths

Thérèse Harrison

SUSAN WHIGLEY

Lamplight

30

31
The chance to handle museum objects brings study to life for students across University disciplines.

RENÉE COLES

Museum as classroom

WHEN SIR CHARLES NICHOLSON created Australia’s first university museum, it was his vision that it would allow students to develop a material understanding of history and culture through getting up close to artefacts and artworks. As the University’s collections grew, the scope for hands-on learning broadened to include more diverse cultures and disciplines. The Chau Chak Wing Museum was designed to take this to the next level, with three purpose-built teaching spaces and a new, wide-reaching program.

Facilitated by Academic Engagement Curators, Dr Eve Gaery and Jane Thogersen, the object-based learning program launched in semester one this year, with classes from across the entire University. Students are given hands-on access to collection items connected to their course or research topic. For example, art students went beyond looking at works; they handled and examined sculptures, prints, paintings and much more, to analyse how they were made or discover hidden notes on the back of a canvas.

A particular highlight from the first semester of this new program was a series of twelve interdisciplinary workshops for staff and students hosted in partnership with the Sydney Southeast Asia Centre (SSEAC). With the goal of activating transdisciplinary skills and perspectives, participants were presented with diverse objects and activities exploring histories, concepts and issues relating to Southeast Asia. “This collaboration with SSEAC allowed undergraduate students to engage with their peers from all across campus,” Eve said, “and the transdisciplinary and multicultural perspectives provoked by the collection items were rich and enthralling.”

This semester, the University of Sydney Business School introduced over 2000 postgraduate students, both online and on-site, to the Museum’s collections, to explore creative and analytical mindsets. Anatomy students from the Faculty of Medicine and Health examined mummmified human remains and the medical imaging technology featured in The Mummy Room. Most schools within the Faculty of Arts and Social Sciences worked with the Museum, with classes including languages, education, archaeology, social justice, and history, spending time in the object-based learning studios and examining the collections online. Semester two will welcome new cohorts to the Museum as the program continues to grow.

Tim Allender, Professor and Chair of History and Curriculum, Faculty of Arts and Social Sciences, said “the preparation and careful distilling of the craft of the museum was superb. Our students were full of beans after this experience and even keener to get into their respective classrooms in a few weeks’ time. What more could we ask for?”

Renée Coles is Marketing Communications Officer, Chau Chak Wing Museum
A walk in the sun

Our new Conservator on why light is of such interest in her field of expertise.

**TO QUOTE** a well-loved poetess of pop (Cyndi Lauper):

Some boys take a beautiful girl
And hide her away from the rest of the world.
I want to be the one to walk in the sun...

And so it is with conservators and museum objects. Conservation is principally a Material Science with a basis in chemistry, biology, and physics. We use these keystones to help us understand how objects act in certain environments, over a period of time. The end game – which we concede may be a little impossible – is to make things last forever. One important lesson we learn quickly as newborn conservators is both practical and poetic. We save things so that the public can continue to see them. But this very act of seeing encourages a process of slow irreversible, inevitable damage.

Light is a wave of energy projected from sun or lightbulbs. These waves of energy fall on and bounce off surfaces, exciting molecules. Our eyes perceive this process as visible light and colour. But this perpetual excitation of molecules is ultimately harmful to matter. The more that molecules excitedly dance under light wavelengths, the more they start to physically change. We see this change as a fading of dyes, the cracking of varnish, or the deterioration of plastic. Ultraviolet (UV) rays, which are invisible to our human eyes, are even more harmful. We try to avoid this damage by minimising direct sunlight, and making sure our bulbs don’t emit UV rays. We understand that an artwork’s time in the sun is finite, so we measure the light and the time it can be out, and we move them into darkness when we feel like it’s time to reserve their beauty for the next generation. This is why we ‘rest’ objects.

In our new major exhibition *Light & Darkness*, we have many artworks that flirt with and use this tension for startling visual effect. In Bruno Contenotte’s *Translumen east*, UV light’s ability to cause fluorescence here creates a swirling blue, red and purple shimmering psychedelic vision, best experienced in the dark. In this case, we will allow the usually unwelcome UV light into the room to do its visual magic. When it has spent its time in the light, or in this case the blacklight, this artwork and others from the exhibition will be put back into their dark and protective crates, to await their next time in the sun.

Silvia Da Rocha is Conservator, Chau Chak Wing Museum.
Some of the most brightly coloured of all fishes can be found in the darkest depths of the deep sea.

TONY GILL

Tails from the Twilight Zone

COLOURS DROP out as you descend into water, beginning with low-energy, long wavelength red and ending with violet at the other end of the spectrum, eventually leading to complete darkness in the deep sea. Much of my research in recent years has been on anthiadine basslets, a group of fishes that is most diverse in reefs within the mesophotic or twilight zone, where very little visible light penetrates, and most things appear in shades of grey. These depths are beyond the range of conventional SCUBA, and mesophotic reefs are among the most poorly studied ecosystems in the world.

The research is aimed at improving our understanding of the diversity, classification and distribution of anthiadine basslets, many of which are very rare or new to science. Some of the new species have turned up on my own doorstep, off the central coast of NSW. Despite appearing grey and drab in their poorly lit natural environment, basslets are among the most brightly coloured of all fishes, variously dressed in vivid hues of red, orange, yellow and violet.

My studies are based on existing museum collections, such as specimens housed in Australia’s state and national fish collections. These specimens have accumulated over the past few decades from exploratory trawl surveys around Australia. The studies seek to describe and differentiate each species and involve carefully counting and measuring structures on the specimens. One of the major challenges is in determining the live colorations of the now-brown preserved specimens. In some cases, specimens were photographed prior to preservation, but even then, the photos are often inadequate for addressing sexual and other colour variation in the species. To make things more difficult, most anthiadines are protogynous hermaphrodites, beginning life as females and later changing sex to become males. An understanding of coloration is important to allow field identification of anthiadines and other mesophotic fishes, such as when viewed from unmanned submarines (Remote Operated Vehicles or ROVs). These in turn provide critical insight into the secret lives of these hidden gems, and to our understanding of mesophotic reef ecosystems.

Dr Tony Gill is Natural History Curator, Macleay Collections, Chau Chak Wing Museum

One of only four known museum specimens of Dactylanthias aplodactylus, a very rare but widely distributed Indo-Pacific anthiadine species. The photo is of the specimen, from Nauru, when it was freshly dead, taken by JJ Pigram. © CSIRO Australian National Fish Collection

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One of four known museum specimens of Dactylanthias aplodactylus, a very rare but widely distributed Indo-Pacific anthiadine species. The photo is of the specimen, from Nauru, when it was freshly dead, taken by JJ Pigram. © CSIRO Australian National Fish Collection

Mari Enzo, Struttura no 725 (Structure no 725), 1962, Power Collection, PW1968.33

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Building visual literacy

The power to see more deeply thanks to a generous donation from Penelope Seidler.

GEORGE DODD

AS IMAGES begin to rival words as tools for conveying information, there is a growing need to understand what that shift means. A generous donation to the University of Sydney will allow students to improve their image literacy and researchers to understand the benefits and pitfalls of this image revolution.

While we might contemplate the meaning and effects of infamous or iconic images, what about the huge number of images that bombard us every day? What do they mean? How do they affect us? How can we know if they’re truthful or misleading? And experts decoding widely distributed images from memes and advertisements. ‘Thanks to this generous gift,’ says Ledbury, ‘we can show how the training, skills and knowledge of people in the arts apply more widely to society.’

George Dodd is Alumni and Donor Content Specialist, the Advancement Portfolio, University of Sydney.

To find out more about this story or to help support the Chau Chak Wing Museum, please call Holly Vale on +61 2 8627 8818 or email development.funds@sydney.edu.au

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