PULSE

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NEWS FROM THE LINNEAN SOCIETY OF LONDON – A FORUM FOR NATURAL HISTORY

Prawle, Pigs and Pipistrelles

The Linnean Field Trip 2019

This year's field trip, in association with the Field Studies Council (FSC), took place over several days in Slapton Ley, Devon. After an initial false start thanks to inclement weather, our tutor Andrew Mackay led us to East Prawle, an interesting village where the local café and pub all have pig themed names. (The story goes that a shipwreck nearby had left many pigs on the beach. Thinking them near death, the villagers left the pigs, only to find them miraculously alive the next day on the village green.)

From East Prawle we made our way down to the rocky shore, learning about the geomorphology on the way. We were also on the look-out for cirl bunting (*Emberiza cirlus*)—incidentally discovered by Fellow George Montagu (1753–1815)—a bird species related to the yellowhammer, which is mostly confined in the UK to south Devon. Once at the shore, Andrew took us through the different species to be found, including a plethora of different Fuci species. We learnt how to identify topshells and periwinkles—topshells have a round operculum and a mother-of-pearl coating on the inside of the lip of the shell, whereas periwinkles have a teardrop-shaped operculum and no mother-of-pearl coating. We also tasted pepper dulse (*Osmundea pinnatifida*), a red algae known to chefs as the 'truffle of the sea', which really did have a peppery taste.

We moved on to stunning Prawle Point, the southernmost point in Devon. ('Prawle' is derived from the old English, 'Praewhyll', meaning 'look out hill'.) We identified a buzzard and the Stonechat (*Saxicola rubicola*), so named because its call sounds like two stones being hit together. The evening meant a bat walk, and Slapton hosts 14 of the 18 bat species found in the UK. While we didn't see all 14, we definitely heard three species, located with our trusty bat detectors. The common pipistrelle (*Pipistrellus pipistrellus*), the lesser horseshoe (*Rhinolophus hipposideros*) and the common noctule (*Nyctalus noctula*). While on the hunt for bats we also spotted glow worms.

Our final day began by visiting Slapton Sands and looking at coastal vegetation, including the under-recorded sea rocket (*Cakile maritima*). Our trek into Slapton Ley nature reserve revealed strapwort (*Corrigiola litoralis*), a low-growing, endangered plant—Slapton Ley is the only UK habitat for this species—and butcher's broom (*Ruscus aculeatus*)—an indicator of an ancient wood.

The field trip showed the incredible biodiversity found not just in Devon, but more locally in Slapton Ley. We also found out more about the amazing conservation work being done by the FSC. **Don't miss out on our next fantastic field trip—look for details in our Spring–Summer 2020 brochure.**

Leanne Melbourne
Events & Communications Manager
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ABOVE: The 2019 Field Trip in Slapton Ley, Devon.
BELOW: View from Prawle Point.
Images © Leanne Melbourne.

ARTHUR HASSALL'S REMARKABLE ILLUSTRATIONS OF THE FLORA AND FAUNA OF LONDON WATERS

by John R. Dolan FLS

Arthur Hill Hassall FLS is perhaps best known for his work in the sphere of public health. However, microscopy and a keen interest in aquatic microorganisms characterised his career. His first major publication at age 28, was the two-volume *A History of the British Freshwater Algæ, Including Descriptions of the Desmideæ and Diatomaceæ* (1845), a classic monograph still regularly cited today. Only a year later appeared Hassall's *The Microscopic Anatomy of the Human Body in Health and Disease*, another large two-volume monograph; it was the first English-language book on microscopic human anatomy. It went through multiple printings, was published in both the UK and USA, and translated into German.

His 1850 study of drinking water supplied to Londoners brought him to public attention: *A Microscopic Examination of the Water supplied to the Inhabitants of London and the Suburban Districts, etc.* The book appeared during the cholera outbreaks in London amid suspicions, later confirmed, that contaminated water supplies played a role in such epidemics.

His sampling and analysis methods were simple and elegant. He filled a wine bottle with water, allowed material to settle (for an unspecified time) and microscopically examined a drop of the sedimented material. Hassall's striking and detailed illustrations showed an amazing variety of microorganisms crowded together in the circular field of the microscope.

His 1850 book was acerbically 'reviewed' in Punch: *"A book has been lately published by a Dr. Hassell (sic), who favours the world not only with his own views, but the views of an artist, on the water we drink; and these views, painted literally in water colours, show us in all their disgusting variety of tint and form, the specimens of animal and vegetable matter we take in with every drop of aqueous fluid we imbibe."*

His illustrations were also satirised in a cartoon with microorganisms replaced by dubious characters of London life.

Hassall later published more illustrations of organisms found in drinking water, as black and white sketches in his book "Food and its Adulterations" and as colour plates, engraved by the talented Tuffen West in an appendix to the 1855 Report on the Cholera-epidemic of 1854.

All of Hassall's works are now in the public domain and available in open repositories such as the Biodiversity Heritage Library (https://www.biodiversitylibrary.org/) or the Wellcome Library (https://wellcomelibrary.org/). However, obtaining the individual

illustrations can be cumbersome. One must download large volumes and extract the illustrations or search through the volumes online, find and then download individual pages of illustrations.

To facilitate usage of Hassall's illustrations I have created an image gallery of Hassall's illustrations. My hope is that Hassall's illustrations, if easily available, will be used and reach the wide audience they deserve: **http://gallery.obs-vlfr.fr/gallery2/v/Aquaparadox/LondonWater/**

TOP LEFT:
Plate 19 from Hassall's 1855 'Report of the microscopical examinations of different waters (principally those used in the metropolis) during the cholera-epidemic of 1845'. (Appendix VIII of 'Report of the Committee for Scientific Inquires in relation to the Cholera-Epidemic of 1854', 1855.)

TOP RIGHT:
Cartoon from Punch (1850, Vol 18, pg 188) parodying Hassall's illustrations.

LEFT:
Arthur Hill Hassall M.D. FLS
© Wellcome Collection no. 40471 Society of London

AT LONG LAST, LINNEAN SOCIETY CHRISTMAS CARDS!

Send a part of our collections to friends and family this Christmas with a Linnean Society Christmas card.

Each card is printed on sturdy stock, with a little information about the species shown and where the image came from on the reverse. With four clean, bright, festive designs to choose from, cards are sold separately or in assorted packs of eight. Check **www.linnean.org/christmascards** or email **info@linnean.org** for more details on how to purchase yours.

A BUFFET OF BOOKS

Botanical Illustration on Display

A merry band of botanists, curators, historians, bibliographers, students–and the odd librarian or two–descended on the Old Library at Magdalen College, Oxford for a one-day conference on the art of scientific illustration in the early-modern period, with a particular focus on botanical woodcuts and engravings.

A truly humbling number of rare and early-printed books had been prepared ahead of the event by our host, Librarian Daryl Green. Dr José Ramón Marcaida Lopez, Lecturer in Art History at the University of St Andrew's (who also supported the event financially), spoke a little on the importance of illustration in the intellectual milieu of 17th-century Spain, before setting us loose on the buffet of books on display.

The varied background of the attendees led to some lively and tangential conversations. I was struck by the many uses to which botanical illustrations were put during the early-modern period, from 15th-century herbals used as medicinal guides, to "improving" compendiums for a largely female audience, to prestige works of great beauty and expense. Particular highlights include an edition of Gerard's *Grete Herball* of 1597, a 1667 copy of Robert Hooke's *Micrographia*, and a copy of Francisco Hernández de Toledo's work on the flora and fauna of Mexico, *Noua plantarum, animalium et mineralium Mexicanorum historia* (1651). Dr Lopez was particularly engaging on this latter work, pointing out the eye-catching use of non-Western iconography by the indigenous artists who illustrated this monumental survey.

We were then treated to a private viewing of the College's exhibition, *The Botanist's Library*. Run as part of the University-wide *Thinking 3D* programme of events and exhibitions, Magdalen's exhibition showcases the life and library of John Goodyer (a 17th-century botanist and physician who bequeathed his handsome private library of some 134 volumes to the College on his death). The exhibition paints a portrait of an enthusiastic amateur botanist who did much to propagate botanical knowledge and understanding during his lifetime, creating botanical descriptions of many species (including the Jerusalem artichoke, memorably described as causing "a filthie loathsome stinking winde within the bodie") and assisting with the production of a new edition of Gerard's Herbal in 1633. A poor draughtsman (sometimes laughably so), Goodyer was nonetheless an inveterate creator of lists and indexes (in some ways he rather resembles our own Carl Linnaeus, whose passion for the organisation of information was not matched with the same level of artistic skill). Goodyer's meticulous notes record the price and purchase-date of new acquisitions; the result is a fantastic resource for the scholars of early-modern science, botany, and the book-trade.

Later the group were led on a tour of the Oxford Botanic Garden to see the recently-installed "taxonomic" beds. Chris Thorogood, Deputy Director and Head of Science at the Gardens, explained the rationale behind the physical arrangement of plants into taxa, and the challenges of growing such a diverse range of plant species in the rather damp environs of Oxford. Some of the beds were at a very early stage of the development, but the first to greet visitors (the angiosperms) was a riot of variety and colour.

All in all, the botanical workshop at Magdalen was a wonderful opportunity to interact with scholars and students, united by a shared interest in botany, illustration, and knowledge-transmission in the early-modern period. I would like to thank Daryl Green and Magdalen College Library & Archives; Chris Thorogood and the Oxford Botanic Garden; and the other attendees.

Will Beharrell
Librarian
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Images courtesy Daryl Green

Murder Most Florid

BOTANY AND THE CRIME SCENE

by Dr Mark A. Spencer FLS

ABOVE:
Rubus fruticosus from the herbarium of James Edward Smith.
© The Linnean Society of London

BELOW:
Spores, like those found in ferns, are often useful markers when linking people to places in crime scenes.
© P Kyriakos/ Shutterstock.com

In 1923, Dr Arthur Koehler from the Forest Products Laboratory, Wisconsin gave evidence at the murder trial of a farmer John Magnuson. Magnuson, who was by then known as the 'Yule Bomber', had been involved in a disagreement with the local authorities over plans to dig drainage ditches across his land. On top of this, they planned to tax him to pay for the work. As the dispute escalated, a dredging machine loaded with 200 gallons of gasoline and diesel blew up. Many in the community suspected it was not an accident and blamed Magnuson. Shortly afterwards and two days after Christmas, a pipe bomb disguised in a parcel was sent to the home of James Chapman, a county commissioner and enemy of Magnuson. The bomb severely wounded Chapman and killed his wife, Clementine. At Magnuson's trial, Koehler was able to demonstrate using microscopy that the white elm (*Ulmus americana*) wood box used to contain the bomb was the same as wood shavings taken from Magnuson's work bench. Over a decade later, Koehler became world famous for his role in the 'trial of the century'; the trial of Bruno Hauptman, for the kidnapping and murder of renowned aviator Charles Lindbergh's infant child. Koehler's role in the successful prosecution of Hauptman is seen as pivotal in the acceptance of botanical forensics in the courtroom.

Seventy years on, I started my journey into the world of forensic botany and crime scenes. Ever since, using my understanding of our landscape and vegetation, I have endeavoured to assist the police and forensic service providers in their work. Wherever we go, we interact with the environment, picking up traces of vegetation, pollen, spores (like those found on ferns or fungi), hair, soil and DNA, all of which can be used as trace evidence to link a suspect to a crime scene or a victim. We also leave our own mark on the landscape, especially in death. If we die, or are disposed of, in the landscape, our bodies are soon host to a diverse ecology and engulfed by vegetation.

For example, all too often on an autumnal walk, we trip up; our feet have been snagged by a bramble stem (*Rubus fruticosus*). After some cursing and perhaps even the attempted removal of the offending briar from the path, we return home. For many of us, that is as far as our relationship with the plant goes, with exception of picking blackberries for our apple and blackberry pie. (As a side note, it's an oddity of the English language that when we don't like them, we call them 'brambles' and when they give us pleasure, they are 'blackberries'.)

Yet I am rather fond of brambles. Of course as a botanist, I'm keen on all plants; there isn't a wild plant that I can't admire. But the main reason I am enthused by brambles is because I often encounter them at crime scenes, and they are frequently of assistance to me in my role as a forensic botanist. Brambles can be thought of as vegetable calendars. They can help in estimating how long a person's remains have been at the location they're in. The police will need to pursue various avenues of investigation in order to establish a victim's identity, and one of the most important questions will be 'How long has this person been here?'. In some cases, brambles may be able to help provide an answer. Despite appearing chaotic and messy to us, a bramble thicket is not disordered, it is an elegant and choreographed structure.

To understand how brambles grow, it helps to know and understand the other plant species they are related to. Brambles are members of the rose family (*Rosaceae*). Members of the family include, not surprisingly, the rose (*Rosa*) as well as plums and cherries (*Prunus*), apples (*Malus*), hawthorns (*Crataegus*) and strawberries (*Fragaria*). Of these, brambles are most like strawberries. Strawberry plants have a short, stout rootstock that produce long, thin trailing stems (runners) from which new plants develop. Brambles, and their close relative raspberry (*Rubus idaeus*), have a variation on this body plan. Every spring, the plant sends up one or more fresh vegetative growths whose role is to increase the physical territory that the plant occupies, and outcompete other plants. The growing tips of these stem arch, and when the tips meet the ground they produce fresh roots and a new plant. This is why brambles are so good at tripping us up; they're often rooted at both ends—creating a natural tripwire. The following year the same stem changes its function; it produces shorter side-shoots, which flower and then bear fruit. During the summer, when the plant is flowering, further vegetative shoots arise from the ground and grow through and over the flowering stems. Over a period of years, the plant steadily gets larger as the fresh stems overtop the older ones, which gradually weaken and die. For all their seemingly chaotic demeanour, brambles are very 'organised' plants with an effective strategy for surviving in our hedgerows, woodlands and the nutrient-rich corners of our habitations, where many crimes are committed.

The ability of brambles to gradually encapsulate territory is of great forensic value to me. If a person's remains become surrounded by bramble plants, they will soon be covered by the plants' enshrouding growth. It is my role to use the tell-tale signs in the plant's growth to estimate how long the person has been where they are, which involves carefully examining the position of the stems arising from the root stock, as well as observing how the stems have aged. I examine as many rootstocks as possible on which to base my conclusions. These humble brambles are so much more than annoying tripwires; they can help determine how long a body has been in *situ*. Embrace the wonder of this plant next time you stumble over one in your local wood or park.

Dr Mark Spencer will be talking about both his work as a forensic botanist and his new book *Murder Most Florid* at the Society on Thurs 28 November. Don't forget to register! www.linnean.org/murdermostflorid We hope to see you there.

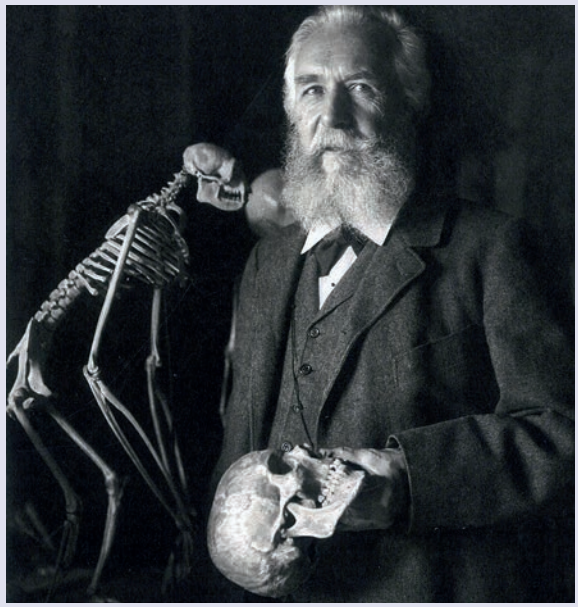
ABOVE:
An environment's vegetation, pollen, and spores can all be used as trace evidence.
© Pavla/Shutterstock.com

LEFT:
Dr Mark Spencer FLS. © The Linnean Society of London

BELOW:
Wild brambles (*Rubus fruticosus*) are like 'vegetable calendars' that can help determine how long a body has been in a location.
© Leonie Berwick

ERNST HAECKEL (100 YEARS)

Opening up the *Origin*



ABOVE:
Ernst Haeckel, around 1904.

During his own lifetime, and in the 100 years since his death, the great German naturalist and morphologist Ernst Haeckel (1834–1919) has been a controversial figure. Not only was he probably the greatest promulgator of Darwinian ideas in the world of the early 20th century, he conceived the underpinning of the phylogenetic paradigm with which we see all of life today, and was an accomplished artist whose drawings influenced the German artistic movement *Jugenstil* (Art Nouveau). His plates from *Kunstformen der Natur (Art Forms in Nature)* have also influenced contemporary artists and designers, such as Katie Scott, whose *Animalium* and *Botanicum* are distinctly Haeckelian in tone and composition. He was commissioned to undertake the identification of the radiolarians for the famous British *Challenger* expedition in the 1870s—the first global natural history survey of ocean life—and described more than 4,000 species of these exquisite unicellular organisms. He went on to be awarded the Linnean Society's Linnean Medal in 1894.

So why did he stir up controversy? Historian Robert J. Richards details many of the charges laid against Haeckel in his book *The Tragic Sense of Life,* and dissects them in an historical context. Instead, I wish to emphasise that Haeckel was not only a pivotal figure in the acceptance of evolutionary thought, but also that he deserves merit for bringing art and science together.

Early days

Ernst Haeckel was born in 1834, to a family of lawyers in Potsdam, on the outskirts of Berlin. He was, as was common at the time, educated at home, imbibing German poetry from his mother, and a love of geology and travel from his father. His world view was certainly shaped by reading works of the great German poet and morphologist Wolfgang Goethe (1749–1832), and the travel accounts of Alexander von Humboldt (1769–1859) and Charles Darwin (1809–82). He went on to attend medical school in Würzburg, whose star professor was Rudolf Virchow (1821–1902). Despite a revulsion for the practice of medicine, Haeckel continued with his studies, inspired by Virchow's use of the microscope to study anatomy and morphology. Humboldt's influence, however, led to a focus on natural history, rather than the practice of clinical medicine. Haeckel passed his medical exams in 1858, before embarking on his true vocation—research science in natural history.

He became engaged to his long-term love, Anna Sethe, though without a job marriage was not possible. However an invitation to Italy changed this. The diversity of marine life in the seas around Messina, near Naples, led him to study the almost unknown radiolaria—a group of single-celled organisms ("zooplankton") with silica skeletons. He not only described new species, but carefully analysed their internal structure, something never before achieved. This work served as his "*Habilitationschrift*", allowing him to apply for academic positions. It was during the preparation of the resulting monograph in the summer of 1860 that he buried himself in the German translation of Charles Darwin's *Origin of Species* (that interestingly left out one of its final sentences: "Light will be thrown on the origins of man and his history"), and pieces clicked together.

BELOW:
This plate from *Kunstformen* (1904) depicting hummingbird species shows how beautifully Haeckel married science with art.

Descent, death and radiolarians

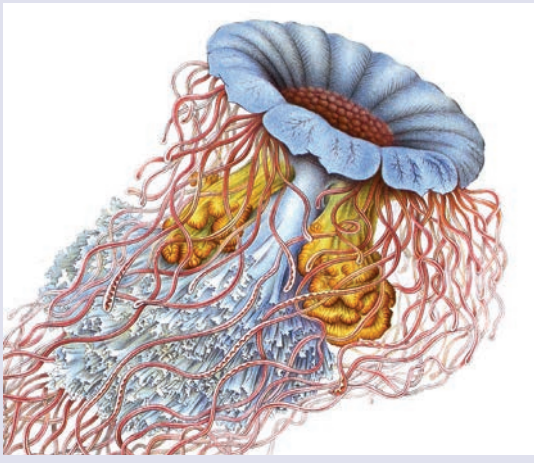
Haeckel realised that his studies on radiolarians provided positive evidence for descent with modification—the central thesis of the *Origin*. His two-volume monograph published in 1862 (*Die Radiolarien (Rhizopoda Radiaria): eine Monografie*) was received to great acclaim, with Darwin himself pronouncing it one of the most magnificent scientific works he had ever seen. The monograph was instrumental in Haeckel's obtaining a position at the University of Jena, allowing him to marry Anna. But both triumph and tragedy struck in 1864; on the same day Haeckel was informed he had been awarded the prestigious Cothenius Medal for his monograph, Anna died of pleurisy. His despair at losing Anna coloured the rest of his scientific life.

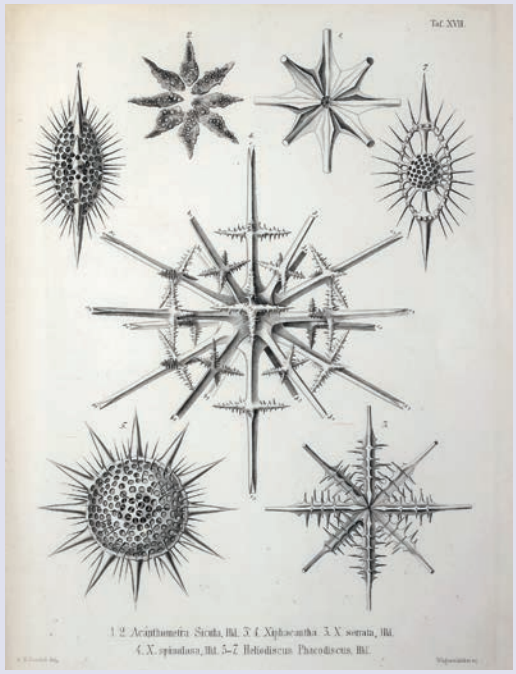
After Anna's death he travelled and wrote. A little more than a year later, his two-volume *Generalle Morphologie der Organismen* (*General Morphology of Organisms*), the conceptual basis for the rest of his scientific work, was published. This book established the science of phylogenetics—the tracing of evolutionary relationships amongst organisms. Haeckel demolished the reigning authorities in science and detractors of evolutionary theory with gleeful abandon; Richards suggests that the book might have been less acidly combative had it not been written in the haze of the loss of Anna..

Missing links

Haeckel became the strongest proponent of Darwin's ideas worldwide, and it is said that more people were exposed to evolutionary theory through Haeckel's works than through the Origin itself. But his writing style did not endear him to critics and non-evolutionists. His anguish over Anna's death led him to completely reject religion, and he became embroiled in many arguments with religious authorities of all stripes, from the evangelical Lutherans to Catholics. His 1868 book *Natürliche Schopfungsgeschichte (The Natural History of Creation)* boldly asserted that descent with modification was the unifying basis for all diversity, including that of human beings and their languages. The diagrams depicted descent with modification as trees—most famously as a gnarled oak. In a way, these diagrams, even more than Darwin's single branching diagram in the *Origin*, were the genesis of "tree-thinking", now the dominant paradigm in systematics and evolution. He speculated that "missing links" would be found to connect apes with humans (in the late 1890s Eugène Dubois went on to discover fossils of *Homo erectus*). This too was rejected by Haeckel's detractors; his old professor Rudolf Virchow, who had become what might be termed "anti-Haeckelian", maintained the fossils were not human at all.

Controversy continued to dog Haeckel even in death. In order to better conform to his "ontology recapitulates phylogeny" argument (essentially that shared features of embryos are evidence of commonality of descent of all vertebrates), he had been accused of altering the supporting embryological diagrams.





This charge was resurrected in the late 20th century, and has been used by anti-evolutionists espousing intelligent design as "proof" that Darwin was wrong, and that descent with modification is not how life evolves. His diagram of the relationships of the races of humans has been used to accuse his work of being the springboard behind National Socialism in Germany. The context of his work is perhaps deliberately misunderstood—these studies of relationships were commonplace at the time, and Haeckel never mentioned anything about racial "purity". Haeckel's works were even on Nazi lists of banned books—hardly an endorsement.

A passionate advocate

In truth, Haeckel was a careful scientist whose fierce defense of Darwinian theory did so much to cement its centrality in today's biology. Phylogeny as we know it today has its roots in Haeckelian thought. In addition, his artistic talent did much to subtly show a non-scientific public how organismal form provided the evidence for common descent, as well as being incredibly beautiful. Haeckel believed that art could depict the essence of the organism, and that the activity of painting and drawing was essential to really understanding nature.

Although his major works were translated into many languages, much of his work was in German, perhaps less accessible to a largely anglophone audience, thus allowing detractors a field day. His life was fraught with tragedy and controversy, but biology today would not be same without him. Ernst Haeckel deserves to be remembered not just for his seminal contribution to today's evolutionary biology, but also for his zeal in bringing the wonders of nature to audiences of all types.

Dr Sandra Knapp, President, Linnean Society of London

Reading

Haeckel, E. 1862. *Die Radiolaren. (Rhizopoda Radiolaria): eine Mongraphie.* 2 vols. Georg Reimer, Berlin; (1866) *Generalle Morphologie der Organismen.* Georg Reimer, Berlin.

Haeckel, E. 1868. *Natürliche Schopfungsgeschichte.* Georg Reimer, Berlin.

Haeckel, E. 1904. *Kunstformen der Natur.* Bibiographischen Institut, Leipzig.

Richards, R. J. 2008. *The Tragic Sense of Life: Ernst Haeckel and the struggle for evolutionary thought.* University of Chicago Press, Chicago.

BOTTOM LEFT:
Desdemona annasethe, a jellyfish species Haeckel named for his beloved wife after her death, from his *Kunstformen* (1904).

LEFT:
Plate 17 from Haeckel's monograph of radiolariens, *Die radiolarian* (1862).

FORTHCOMING EVENTS 2019

17 Oct **Evening Lecture** **18.00-19.00**	**SCIENCE POLICY LECTURE 2019: Badgers, Bees and Biodiversity – Can we really have an Evidence -based Environmental Policy?** In association with The Systematics Association **Speaker:** Prof Charles Godfray FLS, *University of Oxford*
23-24 Oct **Specialist Group**	**Palaeobotany and Palynology Specialist Group Meeting** Celebrating the Life of Cedric Shute
30 Oct **Lunchtime Lecture** **12.30-13.00**	**Not the Sincerest Form of Flattery: The Puzzle of Imperfect Batesian Mimicry** **Speaker:** Dr Tom Reader, *University of Nottingham*
6 Nov **Lunchtime Lecture** **12.30-13.00**	**The Wonderful Biology of Bryophytes** **Speaker:** Prof Jeff Duckett FLS, *Natural History Museum, London*
7 Nov **Day Meeting** **09.30-17.30**	**A "Central and Controlling Incident": Celebrating *The Malay Archipelago* and the Intellectual Legacy of Alfred Russell Wallace** **Speakers include:** Dr Andrew Berry FLS, Dr David Collard, Prof James T. Costa FLS and Ms Eleanor Drinkwater
14 Nov **Evening Lecture** **18.00-19.00**	**SIR JULIAN HUXLEY LECTURE 2019: 60 Years in Asian Rainforests – How Systematics could Support their Anthropocene Future** In association with The Systematics Association **Speaker:** Prof Peter Ashton FLS, *Harvard University*
21 Nov **Evening Lecture** **18.00-19.00**	**Francis Hamilton's Gangetic Fishes: An Icthyological Masterpiece ahead of its Time** **Speaker:** Dr Ralf Britz, *Natural History Museum*
28 Nov **Nature Reader** **18.00-19.00**	**Murder Most Florid: Botany and the Crime Scene** **Speaker:** Dr Mark A. Spencer FLS
2 Dec **Evening Lecture** **18.00-19.00**	**FOUNDER'S DAY 2019: Linnaeus in Lapland – Parasites, Reindeer and People** **Speaker:** Prof Staffan Müller-Wille FLS, *University of Exeter*

REGISTRATION IS ESSENTIAL FOR ALL EVENTS:
https://www.linnean.org/events

Please check our website for other events not listed here

A "Central and Controlling Incident"

Celebrating *The Malay Archipelago* and the Intellectual Legacy of Alfred Russel Wallace

7 November **Register:** www.linnean.org/wallacemeeting2019

© Wallace Memorial Fund

2019 is the 150th anniversary of Alfred Russel Wallace's landmark travel memoir *The Malay Archipelago*, chronicling his eight years of exploration in Southeast Asia—the watershed experience that he later famously called "the central and controlling incident of my life".

Wallace may be most famous as co-discoverer of the principle of natural selection and founder of the field of evolutionary biogeography—two great achievements connected with his epic journey—but the depth and breadth of his later contributions are equally impressive.

This day meeting will celebrate Wallace's legacy. Speakers include: **Dr Andrew Berry FLS, Dr David Collard, Prof James T. Costa FLS, Ms Eleanor Drinkwater, Prof Martin Fichman, Clay Bolt,** and **Prof Dr Matthias Glaubrecht** (please check our website for the full speaker list), and is co-sponsored by the Charles Darwin Trust.

Francis Hamilton's Gangetic Fishes

An Ichthyological Masterpiece ahead of its Time

21 November **Register:** www.linnean.org/hamiltonfishes

© The Linnean Society of London

Francis Hamilton (né Buchanan) was a Scottish naturalist employed as a Surgeon of the Honourable East India Company. Starting off as a knowledgeable botanist, he soon developed an interest in ichthyology and began collecting and documenting the fish species he encountered. With his unique approach, drafting descriptions and having illustrations of them drawn while the fish were still alive, he covered a total of 272 species. The results of his two visits to India (1795–1805, 1807–1815) were published in a monograph in 1822. The talk will provide some background on and discuss interesting facets of the history of Hamilton's Gangetic Fishes on the occasion of the publication of a new coloured edition.

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PULSE

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