

PERFECT SIMILARITY

New Addition to an Old Concept

One of the oldest concepts in biology, the theory of mimicry still presents us with fruitful debate, even some 150 years after Henry Walter Bates (1825–92) first proposed this idea with his paper 'Contributions to an Insect Fauna of the Amazon Valley' at the Linnean Society. With the two schools of thought revolving around Batesian and Müllerian mimicry (after Fritz Müller, 1821–97)—the former outlining the reflection of the aposematism of a toxic species, the latter a theory more of similarity ('signal standardisation') for mutual benefit—an additional hypothesis to these theories has been proposed in *Ecology and Evolution*.

With these theories in mind, 'wasp mimicry' seems to have a solid foundation, and while in most cases the mimicry hypotheses have not yet been explicitly supported with empirical evidence, they are very plausible. It is recognised that the similarity of other species to wasps is often not really 'perfect'—and several additional hypotheses have been proposed to explain how 'imperfect mimicry' can work well. Studying biodiversity in the Neotropics, Prof. Michael Boppré encountered day-active moths (and other insects) which imitate wasps virtually perfectly: a wasp waist, yellow-black pattern, transparent and folded wings, and wasp-like antennae. Models and mimics can be very hard to distinguish, even for trained eyes.

Yet, how can such 'perfect' similarity develop when imperfection seems sufficient for confusion? Wasps are predators and hunt insects as food for their larvae. Could the mimics, by looking just like wasps, protect themselves not only from learning birds and other vertebrate predators, but also from attacks by their models, the wasps? By imitating their own enemies could the mimics go unnoticed by the wasps, which innately do not attack their own nest-mates or conspecifics? It seems plausible that very precise similarity is sufficient to cause wasps, when foraging, to react to such mimics as if they were other wasps.

If this hypothesis is correct, then the similarity among many species of wasps can also be explained: wasps from their own nest (sisters) during hunting flights are not discriminated from wasps coming from other nests, or other similar-looking wasp species, and are thus not attacked. Non-defended wasp mimics cheat wasps by looking like them, and are likewise not attacked. Further, the probability that a wasp mimic meets a wasp is, in many habitats, much higher than being confronted by a learning vertebrate antagonist.

This hypothesis, authored by **Prof. Michael Boppré** (Albert-Ludwigs-University, Freiburg, Germany), **Prof. Dick Vane-Wright FLS** (Natural History Museum, London) and **Prof. Wolfgang Wickler** (Max-Planck-Institut für Ornithologie, Seewiesen,



LEFT: A day-active arctiine moth (*Sphecosoma deceptrix*) 'perfectly' imitating a yellow jacket wasp
© FZE, Otti Fischer

Germany), as an addition to the currently accepted Batesian and Müllerian theories, is presented in *Ecology and Evolution* <http://onlinelibrary.wiley.com/doi/10.1002/ece3.2586/full>. At first glance this hypothesis might appear as a minor detail, but it has wide-reaching consequences. While, for example, it is believed that the advantage of imitation (protection) in Batesian mimicry goes with a disadvantage (lower abundance), imitating wasps which innately do not attack accurate mimics would not appear to incur this cost. Further study needs to be undertaken.

Helichrysum sibthorpii

Botanical Jewel of Mount Athos

Discovered in early August 1787 by John Sibthorp (1758–96) and Ferdinand Bauer (1760–1826) when ascending Mount Athos, *Helichrysum sibthorpii* is not just one of the rarest plants in Greece, but also the world, with the total population consisting of just a few hundred individuals. This alpine perennial was first described as *Gnaphalium virgineum*, aptly named after Παναγία, the only woman on Mount Athos (situated in a peninsula which has come to be regarded as one large monastery and where women, and even female animals, are banned). When the species was later re-classified to the genus *Helichrysum*, it was named after its discoverer.

Mount Athos itself is 2,033 m in height; there are no roads, and the ascent starts at sea level. On a visit in 2009 I had the privilege of discovering a particularly fine individual of *Helichrysum sibthorpii* in a cliff crevice just below the main summit, which was still there on a subsequent visit in 2016. Note that the capitula are rose-pink in bud and later turn snow-white.

An interesting tale about the species: receiving news of the death of the prominent Serbian botanist Josip Pančić in 1888, monks at the Serbian-Orthodox monastery of Chilandar (situated at low altitude in the western part of the Athos peninsula) prepared



a cross with dried flowers and leaves from the local flora. Now kept in the Director's office at the Belgrade Botanical Garden, the base of the cross displays a few capitula of *Helichrysum sibthorpii*. One monk must have been aware of this rare and beautiful plant, "blessed by the foot of the Virgin", and took the trouble of walking the two-to-three day journey to Mount Athos's summit in order to seek out the flowers.

Arne Strid, author of *Atlas of the Aegean Flora* (2016)
<http://www.bgbm.org/englera>



ABOVE LEFT: *Helichrysum sibthorpii* as seen on Mount Athos; the capitula are pink in bud, turning white
 © Arne Strid

ABOVE: This rare plant was included in this botanical arrangement in memory of Serbian botanist Josip Pančić in 1888
 © Arne Strid

Linnean Learning: Thank You and Update

The Education team would like to thank everyone who responded to our 'Linnean Learning Needs You' article (*PuLSe* 31, 2016). We received overwhelming support in the form of images for our resources, offers of assistance at our events, and we have many completed Careers Profile questionnaires which will help to form a new careers support resource series for undergraduate students. We would particularly like to thank Jenny Grundy FLS for her extremely kind donation of £1,000 to Linnean Learning. We'll be putting this towards purchasing a 3D printer, which will be used to create completely unique resources for our schools' Loan Kits and science festival exhibits, ensuring our education programme is at the cutting edge of science education outreach.

However, we're not finished yet and we would love your help! Specifically—

- **Image pairs:** We're looking for pairs of images of the same species (one adult and one juvenile), and sets of three images that show one environment and two individuals of the same species (preferably with a

noticeable polymorphism) for card games that we're making to highlight how offspring are similar to their parents and how variation exists within species.

- **Timeline illustrations:** We also need illustrations for a timeline activity to represent events such as the formation of the Earth and the extinction of the dinosaurs. If you think you have appropriate images, or fancy flexing your drawing muscles, please get in touch.
- **More Careers Profiles:** Finally we need more completed Careers Profiles to ensure our new resource series is as comprehensive as possible—any career paths or professions are fine! The questionnaire can be downloaded from <https://goo.gl/IBW2VT>.

Please follow us on Twitter (@LinneanLearning) to stay up-to-date with our education news and events, and please email us at education@linnean.org if you think you can help with any of our resources or events.



ABOVE: Linnean Learning volunteer Melissa Antoniou-Kourounioti teaches young scientists at Big Biology Day
 © The Linnean Society of London

ELIZABETH YOUNG

It is with sadness that we have to report that Elizabeth Young passed away on 16 September 2016. Born in 1925, Elizabeth was the Society's first female Executive Secretary, taking over from Mr Theodore O'Grady in 1979; she stepped down from the role in 1982.

In addition to her careful guidance of the Society, as a botanist she was a keen supporter of the Botanical Society of Britain and Ireland (BSBI). She continued to take an interest in the Society and is seen here at our stand at the Chelsea Flower Show with the late John Marsden, himself Executive Secretary 1989–2004.



LEFT: Elizabeth Young (on the right) with John Marsden at the Chelsea Flower Show in London
© Janet Ashdown

HERBIE'S UP AND RUNNING

As reported in 'Herbie Rides Again' (*PuLSe* 31, 2016), the Society has been collecting donations to preserve Linnaeus's original herbarium cabinet in Prof Gren Lucas's honour. The state of the cabinet was shown in the article, with some scuffing and wear and tear evident. The conservation process has now been undertaken by Tristram Bainbridge of Bainbridge Conservation (www.bainbridgeconservation.com).

Many things that needed conserving were apparent, like the breaks in one of the 'apron feet' supporting the cabinet, and the obvious lean this gave the structure. Tristram outlined a list of treatments including: cleaning the surfaces of black sooty dust, (whilst retaining historic patinas—a layer or sheen on the wood that has built through use); fixing and re-touching any newer gashes in the wood and removal of any 'recent' adhesive residues. His aim was also to consolidate and re-adhere any loose textile and damaged labels, as well as to undertake cross-section fluorescence microscopy and pigment identification to determine the original surface of the cabinet.

What Tristram learned was that our cabinet is constructed from pine, and that the shelving has gone through a number of adaptations. The general construction shows that the shelving was probably not supposed to be removed, but at some point it has been cut out, as the stubs of some of the shelves are still visible in the grooves in the cabinet walls. Tristram also learned that there were possibly "three campaigns of labelling" inside the cabinet, with two 'campaigns' being letterpress paper labels and another being written on manuscript waste. The metal work is hand-forged and is secured with hand-forged nails (others in the cabinet are machine-forged). Paint samples put under the microscope show that, while actual pigments could only really be identified using light reflectance microscopy, what we do know is that there is a 'ground layer' of green around the outside of the cabinet, which suggests a copper-based pigment. Internally, this base layer is grey, covered with red (possibly an iron-based paint).

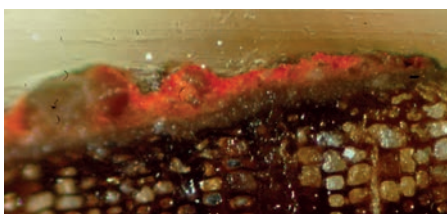
You can see from the before and after images that the cabinet is looking in much better condition. We are now aiming to raise enough money to invest in a professional display cabinet and information board so that everyone can enjoy this hidden gem. To donate, visit <https://www.linnean.org/library-and-archives/adoptlinn/linnaean-herbarium-cabinet>



LEFT: The Linnaean herbarium cabinet before conservation (left) and after (right). Shelving had at some point been removed, and the structure has now been restored
© All images courtesy Bainbridge Conservation



ABOVE: Surfaces were cleaned and any damaged areas were fixed and retouched



ABOVE: Under the microscope, a paint sample from the inside of the cabinet door shows a red layer of pigment, most likely an iron-based paint, on top of a grey base layer

THE PATRON'S FUND: A Fitting Tribute

The Linnean Society is honoured to have been awarded a gift of £2,500 from The Patrons Fund, a fund set up to acknowledge the work of the charitable organisations for which Her Majesty The Queen acts as a Patron, on the occasion of her 90th birthday in 2016.

The Society has enjoyed Royal patronage since George IV, with the longest period being served by HM Queen Elizabeth II. This gift from the Patron's Fund will help to bring the Society's history and science to life by supporting its public engagement and educational outreach programme. A portable touchscreen all-in-one PC will enable visitors to explore our Tree of Life project with OneZoom, resources and upcoming video series, and educational events will allow us to show off a new pop-up display and branded lab coats. This fantastic public engagement package will not only help to mobilise our story and our events, but will enable us to better connect with the biologists of the future. A fitting tribute to our Patron, Her Majesty The Queen.



ABOVE: Money gifted to the Society will help us improve our educational outreach and 'mobilise' our story
© The Linnean Society of London

(17)70s Medallion Men

While the word 'medal' was originally derived from the Late Latin word *medalia* (a term for half a denarius in Roman currency), its future use would soon change. The tradition of medals dates back, in theory, to the 4th century BCE, though they experienced a particular boom from the 1400s onwards. It became common to commemorate both leaders and specific events through medallions, with many artists extending their fame through the images used for these 'power portraits'. Italian sculptor Matteo de' Pasti (1420–67/68) produced several Royal medallions, as did Germain Pilon (ca. 1525–90), the favourite sculptor of Catherine de' Medici.

Wedgwood

The Linnean Society's own collection of medallions boasts the output of another well-known name in the field: Josiah Wedgwood (1730–95). Though Wedgwood's medallions are from a much later period, they are no less treasured for it. The Staffordshire pottery manufacturer was quick to capitalise on the growing interest and demand in portraiture in the late 18th century, creating many medallions of those in the public eye and taking on private commissions as well.

These medallions were not just about fame and glory however—they also had the power to assist in promoting change. Wedgwood's most famous medallion was created to draw attention to the inhumanity of the slave trade. Depicting a shackled slave, the medallion is emblazoned with the words 'AM I NOT A MAN AND A BROTHER', and was produced in 1787 for the then Committee for the Abolition of the Slave Trade, of which Wedgwood was a member. He sent a package of these medallions to Benjamin Franklin, President of the Pennsylvania Society for the Abolition of Slavery, writing "a few Cameos on a subject which I am happy to acquaint you is daily more and more taking possession of men's minds on this side the Atlantic as well as with you". Franklin replied, "I am persuaded [the medallion] may have an Effect equal to that of the best written Pamphlet in procuring Favour to those oppressed People".

ABOVE RIGHT:
Linnaeus was very pleased with his likeness on the Wedgwood medallion saying those who'd seen it agreed that "they had never seen anything more skilfully done"
All images © The Linnean Society of London, except Mathieu engraving of Nikolaus and Joseph Jacquin © Wellcome Library, London

RIGHT:
This plaster medallion of famed botanist Nikolaus Jacquin was given to the Society by Jonas Dryander; next to it is an engraving of Nikolaus and Joseph Jacquin, drawn from the wax impression upon which our medallion was based



Medallion Men in the Society

The Society's own collection naturally revolves around those in science. In his catalogue of *Ornamental Wares* (1779) Wedgwood lists, among the 'Heads of Illustrious Moderns from Chaucer to the Present Time', our very own Carolus Linnaeus (1707–78).

The portrait in relief and in profile (common to all the medallions) was produced by the English sculptor John Flaxman (1755–1826), using Carl Fredrik Inlander's wax model of 1773 as its basis.



Fig 2

Within the Wedgwood manuscripts collection is a bill from Flaxman's son (also called John) on behalf of his father, dated 19 January 1775 which records:

Moulding and making a cast from a Medall (sic) of Lennaeus (sic) Mending a wax medal and making a Mould from it.



(The moderate sum of two shillings was charged for this work.) There is no mention of the portrait of Linnaeus being produced in jasperware until 19 April 1777, but it is assumed that earlier versions in basaltes (a

black stoneware introduced by Wedgwood in 1768) were available. James Tassie (1735–99)—Wedgwood's main portrait competitor—also copied the Inlander wax portrait of Linnaeus; a version in plaster is in the Scottish National Portrait Gallery (ref: PG1909).

Linnaeus obviously approved of Inlander's wax model of him for he wrote:

Inlander has modelled me in wax so skilfully that all say they had never seen anything more skilfully done or more like me.

Dutch naturalist Nikolaus Joseph Jacquin (1727–1817) was also amongst the later lists of 'porcellaneous' medallions. The collections hold a plaster version of the medallion, given to the Society by botanist and Linnaean pupil Jonas Dryander (1748–1810) in 1791. The image of Jacquin is based on a wax portrait medallion by Leonhard Posch (1750–1831) of Nikolaus and his son, Joseph Franz Jacquin (1766–1839). The Wellcome Collection holds an engraving by Mathieu dated 1802 showing the original wax model (ICV No 6984). Jacquin himself was a collector of these objects, with a letter to Linnaeus (dated 30 April 1760) stating:

I have heard that a medal has been cast [of Linnaeus] and would like a copy of it. In return I promise to send a silver medal with Gerhard van Swieten's portrait, of which I own two copies.

Swedish naturalist Dr Daniel Charles Solander (1736–82) was also immortalised, with the Society again holding a plaster version of the medallion modelled by

John Flaxman in 1775.

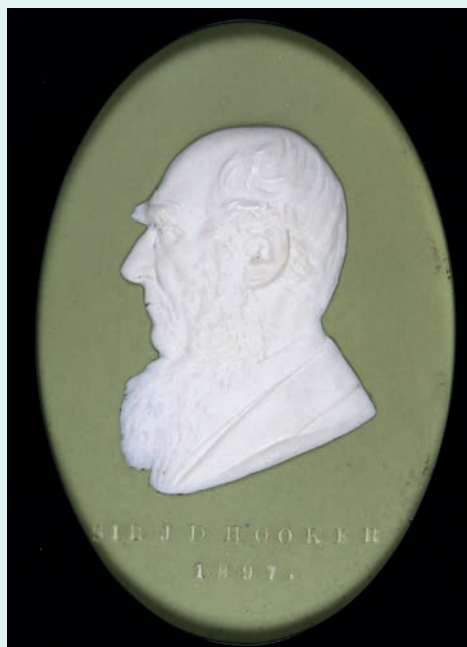
It shows Solander aged around 45; the source of the image has not been fully traced.

The National Portrait Gallery in Canberra, Australia holds a print (ref:

2010:156) of Joseph Banks (1743–1820), and Solander facing each other in profile dating from 1 April 1778, based on the Wedgwood portrait medallions of the two men. The portrait of Solander was modelled as a companion to an early version of Banks, and both portraits are referred to in a letter (in the British Museum) from Wedgwood to his business partner Thomas Bentley (1731–80) dated 25 July 1775:

I wish you to see Mr Flaxman before you leave London, & if you could prevail upon him to finish Mr Banks & Dr Solander they would be an acquisition to us.

The Society also holds a blue jasperware medallion featuring Sir William Jackson Hooker (1785–1865). The medallion was first produced by Wedgwood



around 1865–67, though the date of the version held by the Society has not been confirmed.

With talk of 'medallion men', you might be forgiven for conjuring up images of moustachioed Lotharios in loud shirts with huge lapels and tight trousers. So it is fitting that the final place in this gallery of illustrious men goes to the spectacularly bearded Sir Joseph Dalton Hooker (1817–1911)—perhaps J. D. Hooker was the ultimate hipster! Though not technically a 1770s man (possibly more of an 1870s man), he warrants inclusion. The medallion marks the 80th birthday of the botanist—having been issued in 1897—and was modelled by the sculptor and medallist Frank Bowcher (1864–1938). This copy was given to the Society in 1960 by Spencer Savage FLS.

Glenn Benson, Curator of Artefacts

FAR LEFT:

Plaster medallion of Daniel Solander, aged around 45

ABOVE LEFT:

Blue Wedgwood jasperware medallion of William Jackson Hooker

LEFT:

Medallion honouring botanist Joseph Dalton Hooker's 80th birthday in 1897

REFERENCES

Reilly, R. and Savage, G. 1973. *Wedgwood: The Portrait Medallions*. London: Barrie and Jenkins.
Reilly, R. 1974. *Wedgwood Portrait Medallions: An Introduction*. London: Barrie and Jenkins.
Young, H. (ed). 1995. *The Genius of Wedgwood*. London: Butler and Tanner.

Before Our Very Eyes

EVOLUTION IN REAL TIME

Does evolution invariably take place so slowly and gradually, as Charles Darwin and Alfred Russel Wallace (and before them Alexander von Humboldt and Jean-Baptiste Lamarck) believed and as we have been commonly taught, as to be virtually imperceptible to the human eye or, given the right circumstances, rapidly enough to be actually observable in real time?

An Evolutionary Trend?

As Richard Dawkins says in his book *The Greatest Show on Earth*, from which the title of this piece is borrowed:

some examples are so fast that we can see evolution happening with our own eyes [...]. There's a plausible indication that this may have happened even with African Elephants (*Loxodonta africana*) [...] with one of the longest generation turnovers. [...] All other things being equal, we might expect an evolutionary trend towards smaller tusks as a result of human hunting.¹



The declining weight and length of tusks which has indeed occurred, but is this an evolutionary trend? Leading African elephant authority, Iain Douglas-Hamilton, has indicated to me that there may well be a *prima facie* case that this is so. In fact, a recent study in southern Kenya found that, after using tusk size data collected in 1966–68 and comparing it to data collected in the mid-90s (after the extreme ivory harvests of the late 1970s):

tusk length declined by ~21% in male and by ~27% in female elephants born during population recovery, while tusk length declined by 22% in males and 37% in females among survivors. Tusk circumference at lip declined by 5% in males

but not in females born during population recovery, whereas tusk circumference reduced by 8% in male and by 11% in female survivors.²

Island Life

As Dawkins also relates, in 1971 five pairs of the mainly insectivorous Italian wall lizard (*Podarcis sicula*) were transplanted from the island of Pod Kopište to nearby Pod Mrčaru off the coast of Croatia in the Adriatic. In 2008, a thriving population of *P. sicula* was found on Pod Mrčaru, presumably the descendants of the 1971 transplantation; though genetically similar to the source population on Pod Kopište, physically they were markedly different in having significantly larger, wider and higher heads—adaptations more suited to the vegetarian diet available on Pod Mrčaru. Additionally, the lizards on Pod Mrčaru were discovered to have ileocecal valves in the intestine to aid the fermentation of vegetation—something not found in the insectivorous source population on Pod Kopište.

Dawkins further points out that research in Trinidad, Tobago and Venezuela on guppies (*Poecilia reticulata*), a popular freshwater aquarium fish, has shown that the waters in which the males were less brightly coloured and thus better camouflaged against the gravelly bottom, contained higher populations of potential predators. In waters with fewer predators male guppies were more highly coloured and had larger, more numerous showy spots, and were thus of greater attraction to females. “As ever,” says Dawkins, “evolution finds a compromise between selection pressures.”

In 1977, following a period of drought in the Galápagos Islands, over 80% of the population of medium ground finches (*Geospiza fortis*) on the island of Daphne Major died. Researchers Peter and Rosemary Grant studied the species through capturing and measuring many individuals, comparing measurements to offspring to determine inheritance and tracking the progress of these individuals over a long period of time to determine selection.³ Those that survived were found to be larger individuals with exceptionally large beaks, being the only birds capable of cracking the large and tough seeds of *Tribulus cistoides* (or puncture vine) that survived in comparative abundance once the majority of smaller seeds had been eaten. Conversely, just eight years later, climatic changes in the shape of El Niño transformed the island between November 1982 to August 1983. The rain and warm temperatures led to an abundance of vegetation and a prolonged breeding season (increased from one-to-two months to eight). As the low growing *Tribulus* plants were smothered and smaller seeded species were prevalent, larger birds were unable to survive during the following drought of 1985 and individuals “that were small, with relatively pointed beaks, were selectively favored.”⁴ On Daphne Major,

LEFT:
Podarcis sicula, the usually insectivorous Italian wall lizard, has developed several adaptations in order to survive on the vegetation available on Pod Mrčaru, off the coast of Croatia
© IlzeTheBeast 2017, Shutterstock.com



LEFT:

The number of predators in surrounding waters has been shown to have an effect on the colours of guppies (*Poecilia reticulata*)
© WikiCommons/ H. Crisp

BELOW LEFT:

House mice (*Mus musculus* L.) found on islands in the North Atlantic have increased in both size and brown body fat in response to cold conditions
© Perutskiy Petro 2017, Shutterstock.com

BOTTOM LEFT:

One of the most famous examples of evolution 'before our very eyes', the peppered moth *Biston betularia* L. is shown here in its melanic form (*carbonaria*).
© Steve McWilliam 2017, Shutterstock.com



medium ground finches have altered significantly in both beak size and conformation, as a consequence of each generation tracking environmental change due to natural selection observable in real time.

Analogously, within a very short time (just a few generations) of their introduction to South Georgia in the South Atlantic and to St Kilda, the Faroe Islands and Foula in the North Atlantic, house mice (*Mus musculus* L.) had increased in size and weight, had grown a longer and more dense pelage, and had increased their amount of brown body fat—all evolutionary indicators of physiological adaptations to stress caused by extreme cold.

Of Moths and Men

Of course the most frequently cited example of evolution taking place 'before our very eyes' is the industrial melanism of the peppered moth *Biston betularia* L.. In Victorian England, visually the species varied from the 'typical' white speckled wings with flecks of black to a uniform dark brownish-black (f. *carbonaria*)—the latter not having been observed before 1811. As is well known, the 'typical' species's mottled pigmentation (dark spots on a lighter background) hid the moth well from predatory birds on a background of lichen-covered tree-bark. In melanic variants, however, the darker wing colour rendered the moth more conspicuous to predatory birds, yet the data collected tells us that the melanic individuals became more prevalent.

Over time many contributing factors have been assigned to this shift in population, including humidity, heredity, disease and migration—even diet has been



studied in other insects to see how it effects melanin production and immunity.¹ What has been agreed upon is that the Industrial Revolution in 19th-century England caused pollution that, almost overnight, killed off many lichens and turned the bark of trees black, giving dark-winged melanic variants an advantage over those lighter 'typical' individuals. Charles Darwin's theory of natural selection indicates that, within a very short time, these dark-winged moths could become increasingly common with light-winged individuals in decline, and this is indeed what actually occurred. So much so that "the increase [in melanic individuals] was so great that in some industrial parts of England the original wild type was almost lost by the end of the century."² The percentage of black-winged individuals rose from just 2% in 1848 to 95% in 1895, providing an example of 'transient polymorphism'.³ However, with the passing of the UK's Clean Air Act in 1956, which greatly reduced pollution and restored the lichens on the bark of trees to their former colour, numbers of the lighter 'typical' individuals are increasing.

Given the right set of circumstances, evolution can indeed be seen to occur 'before our very eyes'.

Dr Sir Christopher Lever, Bt.

¹ Dawkins R. 2009. *The greatest show on Earth: the evidence for evolution*. New York: Free Press.

² Chiyo P. I., Obanda V. and Korir D. K. 2015. Illegal tusk harvest and the decline of tusk size in the African elephant. *Ecology and Evolution* 5(22): 5216–5229 <http://onlinelibrary.wiley.com/doi/10.1002/ece3.1769/full>

³ Rosemary B. Grant, Peter R. Grant; What Darwin's Finches Can Teach Us about the Evolutionary Origin and Regulation of Biodiversity. *BioScience* 2003; 53(10): 965-975. doi: 10.1641/0006-3568(2003)053[0965:WDFCTU]2.0.CO;2

⁴ Ibid.

⁵ Cook LM and Saccheri IJ. 2013. The peppered moth and industrial melanism: evolution of a natural selection case study. *Heredity*. 110(3): 207–212. doi:10.1038/hdy.2012.92.

⁶ Ibid.

⁷ Ford E.B. 1945. *Butterflies*. Collins: London.

FORTHCOMING EVENTS 2017

22 March
Day Meeting

Reginald Punnett: Father of British Genetics – Marking the 50th Day Meeting Anniversary
Speaker include: Anne Ferguson-Smith, *University of Cambridge*, Maarten de Groot, *VHL Genetics, Holland*, Libby Henson, *Grassroots Pedigree Systems*, and Andrew Sheppy, *President of the Autosexing Breeds Association*.
Registration is essential: www.linnean.org/events

5 April
Lunchtime Lecture
12:30–13:00

Museums in a Digital World
Speaker: Jack Ashby FLS, *Grant Museum of Zoology, UCL*
No registration required

20 April
Evening Meeting
18:00–19:00

SCIENCE POLICY LECTURE 2017: Evidence, Expertise and Policy
Speaker: Professor Susan Owens OBE, *University of Cambridge*
No registration required

10 May
Lunchtime Lecture
12:30–13:00

Fascination of Plants Day
Speaker: Professor Monique Simmonds OBE FLS, *Royal Botanic Gardens, Kew*
No registration required

24 May
Fellows' Event
16:00–19:00

ANNIVERSARY MEETING 2017
This event is for Fellows only; registration for dinner is essential:
www.linnean.org/meetings-and-events/events/anniversary-meeting-2017

7 June
Lunchtime Lecture
12.30–13.00

Starting the Revolution from my Easel
Speaker: Jess Shepherd FLS, *Inky Leaves*
No registration required

15 June
Evening Meeting
18.00–19.00

CANCELLED: Reproduction in Sponges
Dr Ana Riesgo Gil's lecture 'Reproduction in Sponges: Genes, Structures and Ecological Patterns' has been cancelled. Please check the website and Linnean News for updates on a possible replacement lecture.

Please check our website for other events not listed here

Linnean Ties Back in Stock



Our famous Fellows' ties are now back in stock, available in four colours (navy blue, red, brown and green) and with a woven logo. They are available in our online shop for £12.50 + postage and packaging (<https://www.linnean.org/shop/other-merchandise/linnean-society-tie>) or alternatively email info@linnean.org.

Dr Isabelle Charmantier: Deputy Collections Manager/Librarian

We are delighted to announce that Deputy Librarian Elaine Charwat's replacement is a familiar face to many who use the library: Dr Isabelle Charmantier. Isabelle worked at the Society as our Manuscripts Specialist from 2014, before moving on to become the Information Scientist at the Freshwater Biological Association (FBA) in Cumbria. In just a short time at the FBA, Isabelle secured a Preservation of the Industrial and Scientific Material grant to rehouse the FBA's invertebrate collection, and managed a volunteer programme to list, photograph, repair and digitise the herbarium (see http://www.environmentdata.org/archive/fbaia:herb_collection). In addition to managing the initial cataloguing of the legacy of the late Ro McConnell FLS (a collection of books and reprints left to the FBA), Isabelle introduced tours of the FBA's holdings to visitors and contributed many blog posts in order to highlight the richness of the collections. She also undertook record input for Aquatic Science and Fisheries Abstracts (ASFA) in Rome.



Isabelle's PhD in history of science from the University of Sheffield, and her post-doctoral position at the University of Exeter (2009–13), working with Dr Staffan Müller-Wille on the Wellcome Trust funded project entitled 'Rewriting the System of Nature: Carl Linnaeus's Use of Writing Technologies', means her combined knowledge and experience will be a great asset to the Linnean team. Please join us in welcoming Isabelle back to the Society!

© Image courtesy Isabelle Charmantier

The
**LINNEAN
SOCIETY**
of London



The Linnean Society of London
Burlington House, Piccadilly,
London W1J 0BF UK

T: +44 (0)20 7434 4479
E: leonie@linnean.org
W: www.linnean.org

Manufactured in the UK, using paper with a minimum 75% recycled content that is FSC accredited. Printed to ISO 14001 accreditation.

Charity Reference No. 220509



All articles welcome – please submit news, reviews, events and articles in MS Word format to the Editor at leonie@linnean.org. Accompanying images must be a high resolution JPEG or TIFF with appropriate permission and copyright.