

The Linnean

Volume 35  Number 1  April 2019



Global Network

Aylmer Bourke Lambert
and his circle

Lepidochromy

The tale of a mystery trunk

T. H. Huxley

Why there was no
'Darwin's bulldog'

AND MORE...

A forum for natural history

The Linnean Society of London

Burlington House, Piccadilly, London W1J 0BF UK

Toynbee House, 92–94 Toynbee Road, Wimbledon SW20 8SL UK (by appointment only)

☎ +44 (0)20 7434 4479

✉ info@linnean.org

🌐 www.linnean.org

🐦 @LinneanSociety

President ✧

Dr Sandra Knapp

Vice Presidents

Dr Olwen Grace
Dr Blanca Huertas
Prof Paul Henderson
Dr Malcolm Scoble

Treasurer ✧

Deborah Wright

SECRETARIES

Scientific ✧

Prof Simon Hiscock
Dr Malcolm Scoble

Editorial ✧

Prof Mark Chase FRS

Collections ✧

Dr John David

Strategy

Prof David Cutler

COUNCIL

The Officers (✧)

Vice Presidents

Dr Maarten Christenhusz
Dr Colin Clubbe
Dr Nick Crumpton
Prof Alan Hildrew
Prof Dame Georgina Mace FRS
Dr Christopher Michaels
Dr Silvia Pressel
Dr Paul Smith
Dr Rosie Trevelyan
Dr Mark Watson
Stephanie West

THE TEAM

Executive Secretary

Dr Elizabeth Rollinson

Head of Collections

Dr Isabelle Charmantier

Librarian

Recruitment underway

Archivists

Liz M^cGow
Vida Milovanovic

Archivist emerita

Gina Douglas

Financial Controller &

Membership Officer

Priya Nithianandan

Buildings & Office Manager

Helen Shaw

Communications & Events

Manager Dr Leanne Melbourne

Room Hire & Membership

Assistant Tatiana Franco

Digital Assets Manager

Andrea Deneau

Conservator

Janet Ashdown

Special Publications Manager

Leonie Berwick

Education & Public Engagement

Manager Joe Burton

Multimedia Content Producer

Ross Ziegelmeier

BioMedia Meltdown Project

Officer Daryl Stenvoll-Wells

Engagement Research &

Delivery Officer Zia Forrai

Publishing in The Linnean

The Linnean is published twice a year, in April and October. All contributions are welcome, but please contact the Editor or see the *Guidelines for Contributors* document on our website before writing and submitting articles (www.linnean.org/thelinnean).

Articles should be emailed to the Editor in MS Word format. Images should be sent as JPEGs or TIFFs at no less than 300dpi. Correct copyright information should accompany the images.

Cover image: *Lambertia* © Shutterstock 2019, RugliG

Editor

Gina Douglas
gina@linnean.org

Production Editor

Leonie Berwick
leonie@linnean.org

The Linnean Steering Group

Dr Fernando Vega
Prof Pieter Baas
Dr Michael R Wilson
Dr Mary Morris

Judging by our ever increasing audiences and their positive feedback, the Society's programme of public lectures is going from strength to strength. Our *Nature Reader* events, where authors speak about their recently launched books are proving firm favourites; our recent offerings included Katrina van Grouw's *Unnatural Selection: Evolution at the Hand of Man*; Mark Nelson and former PLS, Sir Ghille-an Prance's *Biosphere 2: Lessons and Relevance to Global Ecological Challenges*; and Ross Piper's *Animal Earth: The Amazing Diversity of Living Creatures*.



Ross Piper's lecture referring to his book *Animal Earth* drew a young and diverse crowd

The Meeting Room was also packed for Prof Dawn Scott's brilliant lecture on *Adaptations of Mammals*

to *Urban Living*, in which she showed fascinating footage of interactions between foxes, badgers, hedgehogs and cats. You can find the 'vodcast' on our website and YouTube channel—hear Dawn brilliantly mimic a vixen vocalising! Our Founder's Day lecture by the BBC's Philip Mould also enjoyed a full house, as he spoke about artistic mysteries and the symbolism of flowers in paintings.



Alexandra McGoran and Oliver Wilson won the public speaking competition at our first ever student conference

As you will have read in the Editorial, plans are crystallising for this summer's Courtyard Late, which will be on the theme of 'Elements', during the International Year of the Periodic Table—the six Courtyard Societies are busy developing activities for this, and further collaborative events are being planned for our cultural and scientific campus at Burlington House.

Burlington House: A Space for Learning

The Society stepped up its engagement of graduate students with two student workshops in the Discovery Room, covering topics like how to tackle imposter syndrome, how to communicate research, and how to write a PhD thesis. Following the success of these, our first

ever student conference focussed on communicating science through public speaking, and included a poster competition.

Another conference, following last year's successful day honouring women in science, looked at *Diversity within Natural History*. Setting out to discuss the disproportionate numbers of minority ethnic students studying bioscience compared with those who continue to Professorships, the day celebrated the contributions of ethnic minorities to natural history.

The BioMedia Meltdown Project (BMM) for 11–14-year-olds, now fully funded by the Society, culminated in a 'Celebration Evening' at BH for the competition winners at the end of March. Sadly, we said goodbye to Elisa Jones in November, our hugely enthusiastic BMM lead, and we welcomed new lead Daryl Stenvoll-Wells in January. BMM Assistant Zia Forrai and Education & Public Engagement Manager Joe Burton held the reins in between with help from other staff—this great team effort kept our flagship art-meets-science project running smoothly.

Supporting Worldwide Research

The Society's three research journals continue to flourish with Oxford University Press, with Impact Factors for 2018 ranging from 2.5 to 3.1, putting them in the top 20% of scientific journals. Various grants have been awarded from different bequests: Liping Dong, an Assistant Researcher in the Institute of Vertebrate Palaeontology and Palaeoanthropology in China received the Anne Sleep Award for her study on fossil lizards, while the Dennis Stanfield Memorial Fund Award was won by Megan K. Sullivan, a PhD student at Yale for her project *Seedling ecology in a dynamic ecosystem using selective logging as a natural experiment in Gabon*. The John Topp Legacy was awarded to John Tennent, a former member of the Army's Special Investigations Branch, to facilitate his fieldwork on butterflies in the southwest Pacific.

“The Society's journals continue to flourish, with Impact Factors ranging from 2.5 to 3.1, putting them in the top 20% of scientific journals.”

Trustee Changes

There have also been changes on the Trustee front: Treasurer Deborah Wright announced in October that she was standing down for reasons of ill health, and Dr Mark Watson, Head of the Major Floras Research Programme at the Royal Botanic Garden Edinburgh, at Council's request, kindly took on the role of Interim Treasurer in December. We wish Deborah well and are indebted to Mark for his diligence in all matters financial. Our new President, Dr Sandy Knapp, is also having to deal with serious health issues and is being ably supported by her stalwart Vice-Presidents. She thanks everyone for their support and will be back in harness soon!

Elizabeth Rollinson, Executive Secretary
elizabeth@linnean.org

The Arts Council PRISM (Preservation of Industrial and Scientific Material) grant to conserve the Linnean Society's Carpological Collection will come to an end on 29 March 2019. Conservator Janet Ashdown has been rehousing the collection into newer conservation grade boxes, whilst cleaning some of the enclosures. Additionally, a bespoke table with storage for the collection has been built in the Smith Herbarium. Some enlightening specimens from the collection are currently on display in our Library, in support of the Lunchtime Lecture *The History of Seed Exchange* in early March.



These specimens, part of the Society's Carpological Collection, are labelled as *Zamia spiralis* (now *Microzamia spiralis*), a cycad endemic to Australia, and are on display in the Library. Other specimens include flax from Norfolk Island and cochineal from the linen merchant John Ellis.

Extraordinary Acquisitions & Worthy Winners

We are extremely grateful to Sir Robert Craufurd, Bt and Lady Georgina Craufurd for their donation to the Society of the portrait of David Hosack by John Trumbull. Hosack (1769–1835), an American physician and botanist, was a Fellow of the Society and established the Elgin Botanic Garden in New York. (See Lady Craufurd's article in *PuLSe* for more information about Hosack and the painting.) The portrait now hangs in the Society's staircase, next to the wedding portrait of Linnaeus.

Another portrait has also joined our collection. As part of our AdoptLINN scheme, Jean Gustaf Haagen-Nilsson's copy of the 1774 portrait of Carl Linnaeus by Per Krafft has been conserved through the support of Hazel Marsden and family. The portrait usually hangs in our historic Meeting Room, so the Society held a competition to find a suitable work of art to temporarily replace it. Open to 8–11 year olds, the competition attracted nearly 200 entries and was won by 10-year-old artist, Leo. Visit www.linnean.org/AdoptLINN to find out what treasures are currently up for adoption.

The Library recently acquired the two-volume set of *The Transylvania Florilegium*, a lavish collection of botanical watercolours which records the flora of Transylvania. The

first volume (printed in 2017) was briefly on display in the Library. The second volume is due to be published this year.

Collections Staff Update

We were sad to say goodbye to Librarian Dorothy Fouracre in mid-March; recruitment is underway for a replacement. Archivist Liz McGow returned from maternity leave in February on a part-time basis, and her maternity leave cover, Vida Milovanovich, is in post until 11 April. Volunteers John Aboot, Lynda Brooks, Hazel Marsden, Sheila Meredith, David Pescod and Pia Wilson continue their invaluable work to catalogue and conserve various parts of the Library and Archives collections.

History of Science & Collections Outreach

With the start of the university year, we have had a number of visits from university groups, including students from Queen Mary University, UCL, and Chelsea School of Botanical Art. Many lecturers from London universities are keen to integrate a visit to the Collections as part of their history of science seminars. The Discovery Room has been used to this end with great success.



Isabelle Charmantier and Andrea Deneau represent the Society at History Day

Collections staff attended the annual History Day at Senate House on 27 November 2018. This one-day event brings researchers together with information professionals from libraries, archives and research organisations. It is a good way to make researchers aware of all of the Society's collections. Isabelle Charmantier also gave a talk on Linnaeus to sixth-formers at Wycombe Abbey School in January.

Two students from King's College London have started a 100-hour internship from January to April as part of their MA in History. They are cataloguing two archival collections (E. M. Holmes and the Zoological Club), with an outreach project at the end.

Digitally Enhanced

The digitisation equipment, which was over eight years old, has been upgraded to the new BookDrive Elite Mark 2, which offers more flexibility and better image quality. As of January this year, the Society now charges for all image reprographics requests and some permissions to reproduce images. All details are on the website: www.linnean.org/images

Isabelle Charmantier, *Head of Collections*
isabelle@linnean.org

Donations

The following people have made book donations to the Library of the Linnean Society of London. These books will now be in the process of being added to the Society’s online catalogue, accompanied by the appropriate donor information.



THANK YOU TO ALL THOSE WHO HAVE DONATED TO THE SOCIETY:

Julian Barker

The Geological Society of London

Sir Ghillean Prance

Robert Cameron

The Ray Society

The Estate of Prof. J. L. Cloudsley-Thompson

Peter Graves

Royal Botanic Gardens, Kew

Allison Jackson

Prof. J. J. Symoens

Gina Douglas

Dr Bansi Lal Kaul

Dr Christian de Vartavan

Thomas R. Fairchild

Dr Mary Morris

Gathorne Gathorne-Hardy, Earl of Cranbrook

Robert McCracken Peck



The full list of donations is also accessible as a PDF with the online version of this issue of *The Linnean* at www.linnean.org/thelinnean.

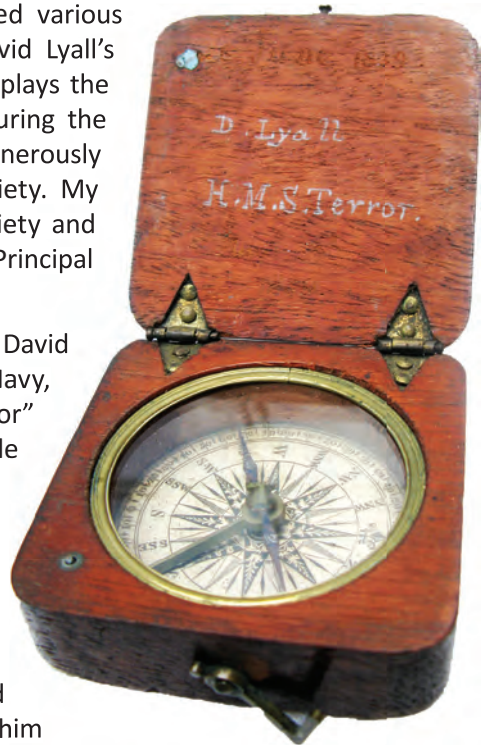
A printed copy of the list can be sent upon request—please contact the Library staff at library@linnean.org.

DAVID LYALL MD FLS RN (1817–1895): REDISCOVERED DESCENDANTS, AND ARTEFACTS

When I published my biographical article on Dr David Lyall (*The Linnean*, Vol. 26(2) July 2010, pp. 23–48) I hoped that it might lead to some further information on his remarkable life as a Victorian explorer, naval surgeon and plant collector, and perhaps turn up some descendants. In fact, it has resulted in a contact with Richard Gault and his sister Annabel, who are Dr David Lyall's great great grandchildren. Over a year ago now, I received a letter from Mr David Gault whose wife Jane is a direct descendant of Lyall, and it was he who came across my article in *The Linnean* on the internet. He had some trouble finding me since my address had changed but he was able to contact me through a mutual academic contact. David Gault's son Richard then contacted me and provided more interesting information on Lyall and the family connections.

A few years ago Richard's mother inherited various items relating to David Lyall, including David Lyall's compass, his gun and some cast lists from plays the crews used to put on as entertainment during the Arctic and Antarctic voyages. The family generously gave these to the Royal Geographical Society. My brothers and I then paid a visit to the Society and were shown the artefacts by Dr Eugene Rae, Principal Librarian of the Society.

The compass (RIGHT) is apparently the one David Lyall had from the time he joined the Royal Navy, as it has the words "D. Lyall, H.M.S. Terror" inscribed inside the lid and also, just visible and scratched into the surface above it, the date "6 June 1839". That was the date on which he joined the navy and HMS *Terror* as assistant surgeon on Sir James Clark Ross's famous expedition (alongside the HMS *Erebus*) to the Antarctic in 1839 to 1843. This object must have been a prized possession and he probably had it with him throughout his naval career on his expeditions not only to Antarctica but also to New Zealand, the Arctic and North America.



The gun is a fowling piece and is thought to have been used by David Lyall on the Belcher expedition. As I noted in my original article, on his return to England from New Zealand, David Lyall volunteered for the Belcher expedition of 1852–54 under (later Admiral) Sir Edward Belcher (1799–1877) to find Sir John Franklin's ill-fated expedition in search of the North West Passage. By what I am assured is a coincidence, Annabel

Gault is married to Jonathan Franklin, the natural history author,¹ who is a relative of Sir John.

The Franklin expedition and the fate of its members were the subject of a July 2017 exhibition at the National Maritime Museum, Greenwich.² In fact, the connection between the Lyall and Franklin families goes back to the time of David Lyall himself. The same ships used for the Ross expedition, HMS *Erebus* and HMS *Terror*, had been chosen for Franklin's expedition, although by then they had been fitted with steam engines and screw propellers. Captain Crozier, who had commanded HMS *Terror* on the Ross Expedition, had again commanded the *Terror* on the Franklin voyage. He took command of the Franklin expedition after the death of its leader and is presumed to have died later with the remaining members. Neither Franklin's body nor that of Crozier has ever been found. David Lyall met Sir John Franklin in Hobart, Tasmania when Franklin was lieutenant governor and Lyall was an officer on the Ross expedition. So when Annabel Gault met Jonathan Franklin it was not the first meeting between a Franklin and a Lyall!

MEDALS

David Lyall was awarded the Baltic Medal in 1856 and the Arctic Medal in 1857. I mentioned the medals in the original article but did not know of their whereabouts at the time. I found that David Lyall's medals had been sold at auction in recent years and was able to make contact with Glenn M. Stein, an American medal collector and author on Arctic exploration who had added them to his collection. The medals are in good hands and Glenn has allowed me to reproduce a photograph of them.

PLANTS OF MONTANA

The most recent link with David Lyall is through the Montana Native Plant Society³ that has recently published a book of essays entitled *Montana's Pioneer Botanists* edited by Rachel Potter and Peter Lesica. This features an essay by Jerry DeSanto (1928–2017)⁴ on David Lyall's work in assembling a herbarium while Lyall was on the Land Boundary Commission of 1857–62. Their main task was surveying and marking the border between the United States and Canada.

Andrew Lyall FLS



1 Franklin, Jonathan. 2016. *Two Owls at Eton: A true story*. London: Metro.

2 *Franklin: Death in the ice* exhibition, <http://www.rmg.co.uk/see-do/franklin-death-in-the-ice>.

3 http://www.mtnativeplants.org/Montana%27s_Pioneer_Botanists.

4 Obituary: Kelsey: *Newsletter of the Montana Native Plant Society* vol. 22 No. 4 | Summer 2009.

FURTHER ADDITIONS TO 'PAUPERRIMI RUSTICI': A LINNAEAN PHRASE, APPLYING TO MOSSES

The following note refers back to a previous article in *The Linnean* (Vol. 34(1) April 2018) and includes additional content that the authors were unaware of at the time of publication.

When clarifying the interpretation of the assumed Linnaean phrase "*rustici pauperrimi*", Jørgensen & Lücking (2018) were able to trace its origin to Hoffmann (1787). They suggested that he might have heard this from his teacher Daniel von Schreber who had studied with Linnaeus, since he did not cite any Linnaean publication, i.e. it was an oral tradition. Wedin, however, has come across a thesis by Linnaeus, defended by Hans Christian Daniel Wilcke (1739–88) in 1760 called *Politia naturae* (= The administration of Nature; Fig. 1) where the following text is found: "*Mucos enim ut pauperimos rusticos concipere licet...*" In spite of the accusative form and the inverted order of the substantive and the adjective, this is the same as the phrase "*rustici pauperrimi*". The text was translated by Reverend F. J. Brand (1781) into English as:

We may consider mosses as the poor, laborious peasants of nature, occupying the most barren tracts of the earth which they cover and mollify, dedicating their services to other plants, so that they be not destroyed by the heat of the sun or rigor of the frost: those unfertile tracts are allotted to them which their fellow citizens do not think worth occupying.

Reverend Brand's translation reads well, even today, though it is rather archaic. Noteworthy is the good translation of "*pauperrimi rustici*", which unfortunately has escaped the attention of later generations, the incorrect version of Schneider (1897) being the most frequently adopted in English papers. The title of the thesis indicates that Linnaeus was trying to establish by what rules Nature works and develops. Clearly this is the same idea as the one expressed more vividly by him in 1749, but there he paid more attention to observations of the succession. In the biologically less interesting thesis of 1760 he is more interested in establishing the hierarchy that he finds: "Nature has established a subordination." The mosses are at the bottom of this ranking [no other cryptogams are mentioned in this part, though in the chapter on trees he says that they are covered in "muscis" and "algis" (=lichens?). Then follow the grasses which he calls the yeomen, those using the soil. Above them he ranks the herbs, the splendid gentry that give the vegetation splendour, and at the top he ranks the trees, the nobility, at the same time deeply rooted and with their heads above the others, protecting them from

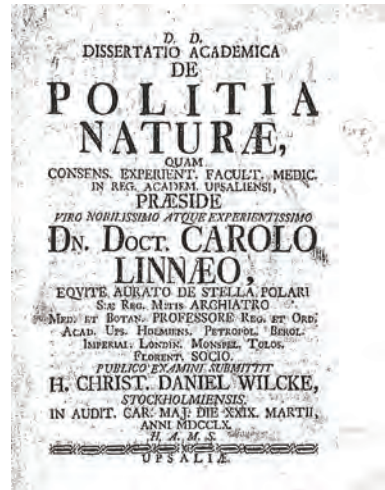


Fig. 1 Title page of Wilcke's dissertation

destructive forces. He concludes: “By this institution the several plants are preserved in their proper limits.”

This is the thesis Hoffmann may have had in mind when using the often misunderstood phrase “*rustici pauperrimi*”. He probably took it from memory, unwittingly transferring it from the mosses to the lichens (two groups Linnaeus kept apart, as seen in *Species plantarum*, 1753). It is, however, quite possible that Daniel von Schreber (Fig. 2) had heard Linnaeus using this phrase also about lichens. Von Schreber studied in Uppsala 1759–60 and likewise defended a thesis, called *Theses medicae*, in 1760. It is highly probable that he knew Wilcke, who was of German origin, his father Samuel being minister of the German church (St. Gertrude) in Stockholm. Schreber might well have been present at Wilcke’s disputation, and there picked up “*rustici pauperrimi*”, or heard it in discussions with Wilcke. It is also possible that it was a phrase Linnaeus used in his lectures being picked up by von Schreber who mentioned this in his lectures, just as suggested by Jørgensen & Lücking (2018).

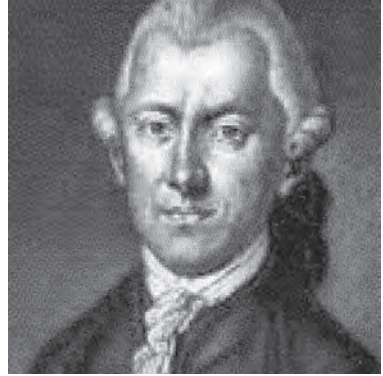


Fig. 2 The German Linnaean pupil, Daniel von Schreber, the teacher of Hoffmann, who probably initiated the incorrect use of “*rustici pauperrimi*”.

While it is now shown that Linnaeus actually used “*pauperrimi rustici*” in one of his theses, we conclude that the use of this phrase adopted for lichens is most likely an oral tradition created by von Schreber, and recorded by Hoffmann in 1787. Friedrich Wallroth then mistranslated it into German (1825–27), which was later transferred to English in Schneider’s A textbook of general lichenology in a way that completely distorted its original meaning.

Per M. Jørgensen & Mats Wedin

REFERENCES

- Hoffmann G. F. 1787. Commentatio de varie Lichenum usum. *Mémoire couronnées en année 1786, par l’Academie des Belles-Lettres et Arts de Lyon sur l’utilités des Lichens dans le médecine dans els arts*: 1–60.
- Jørgensen P. M. & Lücking R. 2018. The ‘*Rustici Pauperrimi*’: a Linnaean myth about lichens rectified. *The Linnean* 34: 9–12.
- Linnaeus C. 1749. *Oeconomia naturae*. Dissertation of J. I. Billberg. Uppsala.
- Linnaeus C. 1753. *Species plantarum*. Stockholm.
- Linnaeus C. 1760a. *Poltiae naturae*. Dissertation of H. C. D. Wilcke. Uppsala.
- Linnaeus C 1760b: *Theses medicae*. Dissertation of J. C. D. von Schreber. Uppsala.
- Linné C. von 1781. Select dissertations from the Amoenitas Academicae (1749–90), a supplement to Stillingfleet’s *Tracts relating to Natural History*, by the Rev. F. J. Brand. London.
- Schneider A. 1897. *A textbook of general lichenology*. New York.
- Wallroth F. 1825–27. *Naturgeschichte der Flechten*. Vol. I & II. Frankfurt a. M.

Aylmer Bourke Lambert & his Natural History Circle



Louise Anemaat

Executive Director, Picture Section

State Library of New South Wales, Sydney, NSW 2000, Australia

e: louise.anemaat@sl.nsw.gov.au

Aylmer Bourke Lambert (1761–1842) was a well-connected and enthusiastic natural history collector. With a remarkable social reach and an extensive circle of friendships and acquaintances, he was described during his lifetime as a “gentleman whose zeal for the advancement of ... science is unbounded, a man whose labours to that end, as well as his endeavours to render botany of universal benefit by combining the useful with the pleasing ... do him the greatest credit” (Smith 1797). In glancing through any of the myriad natural history publications from the late 1700s and early 1800s, words such as “from the collections of Mr Lambert”, “liberally communicated by Mr Lambert”, or “from a drawing in the collection of A.B. Lambert” frequently appear. A founding member of the Linnean Society in 1788, Lambert’s contributions to the *Transactions of the Linnean Society* cover 43 years, from 1794 until 1837, including papers on zoological and botanical subjects.

In 1791 he was elected a Fellow of the Royal Society and a member of its Council in 1810. He was a Fellow of the Society of Antiquaries and a member of numerous foreign societies.

Held in the highest regard by his contemporaries, Lambert was recognised during his lifetime by the naming of many species for him, including the whole Australian genus *Lambertia* (Fig. 1). Yet today Lambert has disappeared from view. The prediction made



Fig 1 Ferdinand Bauer's well known watercolour of *Lambertia*



Fig 2 Frontispiece for Lambert's *A Description of the Genus Pinus* (1803–07)

in 1842, at his death, that his reputation “with the world in general” would grow with every advance in the field of botany “to which he devoted his whole existence”, did not come to pass (Dodd c. 1843).

Born in Bath in 1761, Lambert’s mother, Bridget Bourke, daughter of the 8th Viscount Mayo, died in 1763. Lambert’s father, Edmund, married Bridget Seymer in 1774. Her father, natural history enthusiast Henry Seymer, the artist of many highly accomplished drawings of butterflies and moths, fostered the boy’s interest in botany. Lambert matriculated to Oxford University’s St Mary’s Hall in 1779, and in 1782 he married Catherine Bowater Webster who supported his botanical pursuits. Inheriting his father’s estate in 1802, in addition to his mother’s Irish estates and sugar plantations in the West Indies, Lambert had the leisure and the means to pursue his passion for natural history in an all-consuming way.

As part of the widespread, energetic and productive world of natural history collecting, Lambert regularly exchanged specimens, drawings, information, books and ideas within a broad, international network of like-minded friends, acquaintances and correspondents. These exchanges often led to lifelong friendships. His generosity was legion: “Mr Lambert with whom we are always incurring some debt of kindness” was typical acknowledgement (Andrews, H.C. *op.cit.*). Lambert’s collecting interests were broad, diverse and far reaching and not limited to any particular territory or region. By the end of his long life, his collections and library encompassed virtually the entire known world numbering around 50,000 specimens, at least 130 separate formed collections and a vast assortment of living plants. His library contained over 680 volumes and thousands of drawings.

His reputation as a botanist was cemented with the publication in 1803 of the first volume of his best known and most important work, *A Description of the Genus Pinus* (Fig. 2) (Lambert 1803–07, see also Renkema & Ardagh 1930). It was illustrated in part by Franz Bauer and his more famous younger brother Ferdinand, the botanical artist on Matthew Flinders’ Australian circumnavigation in the *Investigator* (1801–03).

The papers of Linnean Society founder, James Edward Smith, acquired by the Society after his death in 1828, include 40 years of Lambert’s friendly, chatty, gossipy and informative letters.¹ A global roll call of the men, and occasionally women, who were devoted to the pursuit of natural history, name

“A global roll call of the men, and occasionally women, who were devoted to the pursuit of natural history, name after name of the famous, the well connected, the well-travelled or well-read appear on page after page of his letters.”

1 (79 letters from December 1879 to August 1827, see http://linnean-online.org/view/correspondence_by_collection/smith=5Fcorrespondence/Lambert=3AAylmer_Bourke=3A=3A/Smith=3A_Sir_James_Edward=3A=3A.html).

after name of the famous, the well connected, the well-travelled or well-read appear on page after page of his letters. Every acquisition of drawings or specimens, every collector he met, every collection he acquired was quickly written up and reported to Smith, his enthusiasm and excitement, his sheer delight reflected in multiple underlining and rows of exclamation marks.

His exuberant letters are windows into his passions, what he valued, and his way of operating, acquiring, labeling, naming and documenting the world of natural history. They reveal what drove Lambert's collecting, his generosity, wit and his keen eye for detail, at ease with the elite of society, politics and church, yet he extended himself equally to gardeners, nurserymen and natural history dealers. He actively promoted skilled gardeners, and petitioned friends and acquaintances for seeds and cuttings on their behalf.

He spent days at White Knights, near Reading, the country estate of George Spencer-Churchill, Lord Blandford, later the 5th Duke of Marlborough. Both keen and skilful gardeners, they often indulged their hands-on love of gardening, and Blandford furnished Lambert with many fine specimens of rare plants, especially North American trees and shrubs. He exchanged specimens with the Hammersmith nursery of James Lee and Lewis Kennedy, the Royal Gardens at Kew, the Chelsea Gardens and the Botanic Garden at Cambridge. The Twickenham garden of Isaac Swainson, whose particular interest was medical botany, supplied Lambert with many species of hardy exotics and he received plants from the Clapham garden of George Hibbert.

In 1801 Lambert wrote of his pleasure at receiving a collection from the Cape of Good Hope, where John Roxburgh had spent five years collecting seeds and plants for the East India Company's Bengal Garden (Lambert to Smith, 6 May 1801). In the same year he purchased a parcel of fine specimens from Dusky Bay in New Zealand, part of the herbarium of George Forster, collected during James Cook's second Pacific voyage (1772–75). He knew Scottish botanist William Wright, English explorer Mungo Park, Swiss botanist Augustin de Candolle, and Norwegian botanist Professor Christen Smith, who gave Lambert duplicates of plants from an expedition to the Canary Islands.

Collections arrived from Archibald Menzies, naval surgeon and botanist on George Vancouver's voyage (1791–95) surveying the North West coast of the American continent.

In 1808 he acquired the whole herbarium of German zoologist and botanist, Professor Peter Simon Pallas. In 1810 a coach loaded with the Chinese collection of Lady Staunton was delivered to his London house. Sir George Staunton had been Secretary to the first

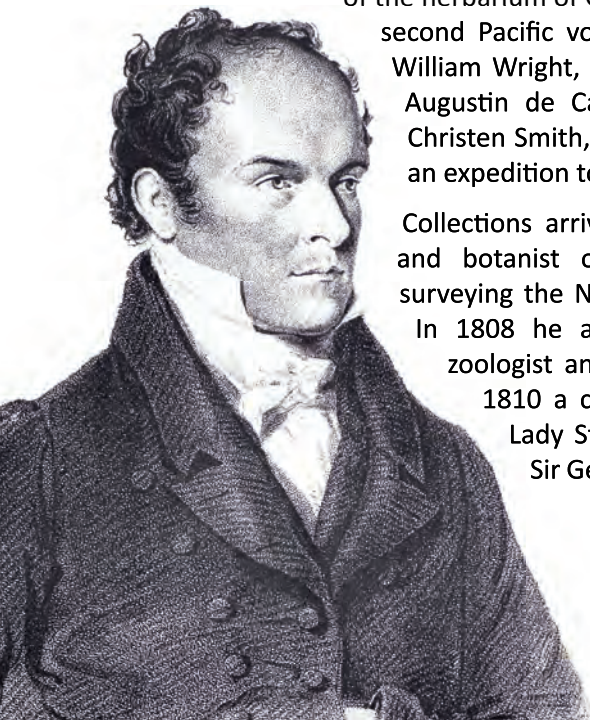


Fig 3 Thomas Nuttall gave Lambert living plants from Missouri

British Embassy to China. In 1814 English botanist and zoologist, Thomas Nuttall (Fig 3), gave Lambert all his living plants collected from Missouri. British statesman and founder of modern Singapore, Sir Stamford Raffles, sent a collection of specimens from Singapore during the same year. The extensive collection of Spanish botanists Hipólito Ruiz and Jose Pavón arrived in consignments over several years.

The Lamberts spent the winter months in their Lower Grosvenor Street home in London's Mayfair. In summer the household moved to Boyton House in Wiltshire. The plant nursery was fitted out with greenhouses, propagation plots and warming stoves. Lambert's life was peppered with the excitement of identifying and pursuing collections and the drawn out pleasure of unpacking and sorting them. New specimens were mounted, labelled and classified, seeds were propagated, and living plants were cultivated in the Boyton stoves. He received visitors wishing to consult his library and his collections across his properties, and it is clear from his letters that his collections were in use any day of the week, even late into the night. Visitors from all over the world were met with Lambert's "accustomed liberality" and courtesy, shown the collections "without reserve", and allowed to explore them for hours, sometimes days on end (Brown 1810).

Following the arrival of the First Fleet at Sydney Cove in New South Wales in 1788, Lambert extended his reach to Australia, including the smaller, satellite colonies on Norfolk Island and, from 1803, Van Diemens Land, now the island state of Tasmania, opening a new world of natural history for Lambert. The greatest fillip to Lambert's Australian collections came in 1797 when First Fleet surgeon John White sent, unsolicited, his entire extraordinary collection of Australian drawings, now known as the iconic Watling Collection and held in the Natural History Museum, London. Lambert commissioned artists to make copies of White's drawings and considered them important enough to lend to foremost ornithologist, John Latham, to classify.

French naturalist Jacques-Julien de Labillardière presented Lambert with many Australian plants and specimens collected during the expedition of Antoine-Raymond-Joseph d'Entrecasteaux, commissioned in 1791 to search for the lost ships of Jean-Francois de La Pérouse. In 1798 when Labillardière's large collection of plants was taken by an English ship of war and sold for prize money, Lambert did not hesitate to purchase it.

His letters record a burgeoning Australian network. In 1802, Lambert received the whole collection of duplicate plants brought home by founding Governor of New South Wales, Arthur Phillip. In 1805, when William Westall, Flinders' botanical and landscape artist, returned to England, Sir Joseph Banks introduced him to Lambert. Westall presented Lambert with drawings and bird skins from New South Wales. Lambert and Robert Brown, Flinders' distinguished naturalist, formed a lifelong friendship.

In 1808, with much enthusiasm, Lambert wrote to Smith that Major Francis Grose, Commander of the New South Wales Corps, had given him "one of the finest Collections of New South Wales plants I ever saw." (Lambert to Smith, 2 April 1808).

In the same year he received another large cargo of New South Wales plants from Philip Gidley King, Governor of the colony since 1800 (Fig 4). King allowed Lambert to “have the first pickings & I think I have added to my Collection from there above three hundred new species which I had not seen before”. Having spent days arranging them Lambert longed to show them to Smith who he was sure “would like to hear of this therefore have taken the 1st opportunity of writing.” (Lambert to Smith, 15 March 1808). He also purchased part of the extensive New South Wales herbarium of George Caley, a collector sent to the colony by Banks. A particularly rich collection, it contained more than 50 species of *Eucalyptus* alone.



Fig 4 These delicate packets contain seeds from plant species (including flax) found on Norfolk Island and are part of the Linnean Society's Carpological Collection. They were probably sent to Sir James Edward Smith by Philip Gidley King via Aylmer Bourke Lambert.

In 1828, Catherine Lambert died after a long illness, the same year as his great friend, James Edward Smith. The Lamberts had no children, and Lambert outlived many of his closest friends. Sir Joseph Banks died in 1820, John Latham in 1837 and the Duke of Marlborough in 1840. In 1836 Lambert dismissed David Don, his hardworking librarian, apparently for marrying Lambert's cook (Gray 1893). Visits to Boyton House ceased and the previously bustling Mayfair house became much quieter. From about 1836 Lambert took a house at Kew for part of the year yet he felt the comparative isolation of Kew, of encroaching old age, and the separation from the lively world of natural history.

While he maintained an extended network of correspondents until the end of his life, by the 1820s many of his contacts were from the next generation of natural historians, scientists and explorers. Phillip Parker King, son of the former colonial Governor, Philip Gidley King, sent Lambert letters and specimens “all interesting and many very new”.

Naval officer John Septimus Roe, in London after assisting King in his survey of Australia's coastline from 1817 to 1822, was invited to dinner by "the old boy", as he referred to Lambert (Roe 1828).

Lambert lived on into the Victorian era until, by the end of his life, he seemed outdated. Indeed, so defined was Lambert by the perceptions, taste and occupations of his age, in many ways he not only outlived his friends, he "outlived his own era". At 77 and virtually alone, he had become "the queerest old mortal" the young American botanist Asa Gray had ever set eyes on when they met in 1839 (Gray *op. cit.* p.111). Physically and mentally frail and with a drastically diminished fortune, Lambert

nonetheless remained an insatiable collector and continued to amass specimens at every opportunity. Increasingly though, their management became less organised, more haphazard. There were still visitors and loyal friends, especially Robert Brown, and Lambert continued to attend the Royal Society. After 1836 he no longer attended the Linnean Society. He was, Brown suggested, a little hurt when, after Smith's death, Lambert's friend and fellow naturalist, Edward Stanley Smith, the 13th Earl of Derby, had been voted President rather than Lambert himself (Gray *op. cit.* p.134).

When Kew Gardens was threatened with closure in 1840, Lambert devoted himself to saving them, writing to and enlisting the help of people who moved in the highest circles, lobbying friends to take the crusade to Parliament and trying to interest Queen Victoria in the cause.

Kew was, of course, saved and established as a national botanic garden, now one of the greatest in the world. Better still, Lambert's great friend, Sir William Hooker, moved from Glasgow to Kew to take up his position as the garden's first official director in 1841.

Lambert delighted in both the intellectual and the social aspects of collecting. His enthusiasm for seeking out, bargaining and acquiring collections stayed with him throughout his life. His collections speak of knowledge, an eye for natural history, and the nature of collecting itself. They show not only how intensely he exerted himself to understand natural history more broadly, and botany in particular, but how completely he devoted his life to it. His life models the capacity for natural history to draw and bond people together, sharing common interests, purposes and values. Most of Lambert's busy life was lived away from public view, though he was always a sociable person.

After his death Lambert's vast collection was broken up and sold as individual lots, in an effort to settle his debts. His vast natural history collection was left to the British Museum, on one condition: that the Museum would discharge any debts at the time of his death. His debts were considerable. The Museum declined, leading to

“At 77 and virtually alone, he had become ‘the queerest old mortal’ the young American botanist Asa Gray had ever set eyes on when they met in 1839.”

the inevitable sale and dissipation of a whole lifetime of natural history collecting in a mere five days. The proceeds failed to cover what was owed. So caught up was Lambert with his collections that he virtually became synonymous with them. The sale of his library and specimens was like a reversal, an unraveling of a lifetime of collecting. This might partly explain his historical haziness—once the collection was dispersed, Lambert’s identity also faded from view.

Collections are a significant benchmark not only for what was found but, over time, for what is lost in terms of species, biodiversity and traditional cultures. They document the international flow and dispersal of information, and speak of human endeavour and the fascination for new and different worlds. Lambert was part of an alliance of collectors, gardeners and natural historians who wrote to each other, shared specimens, seeds and drawings, and enhanced each other’s understanding of the natural world. Their interests were scientific, social and personal. Tracing his working life reveals a prodigious natural history network, a commitment to understanding and preserving collections, pondering and questioning them.

REFERENCES

- Smith J. E. 1797. In Andrews H.C. *The botanist's repository ...* Printed by T. Bensley, published by the author, London, vol. 1, opp. Pl. LXIX.
- Dodd C. 1843. *The Annual Biography ...* London, p. 20.
- Andrews H. C. 1821. *Op. cit.* vol. 7, opp. Pl. 531.
- Brown R. 1810. ‘On the Proteaceae of Jussieu’ (read 17 January 1809). *Transactions of the Linnean Society of London*, p. 46.
- Lambert A. B. 1803–07. *A Description of the Genus Pinus ... (Some Account of the Medicinal and Other Uses of Various Substances Prepared From the Trees of the Genus Pinus.* by William George Maton.) [Volume 1.]. London: White.
- Lambert to Smith, 6 May 1802 GB-110/JES/COR/6/23
- Lambert to Smith, 2 April 1808. GB-110/JES/COR/6/64
- Lambert to Smith, 15 March 1808. GB-110/JES/COR/6/61
- Gray J. L. (ed.). 1893. *Letters of Asa Gray*. Boston, New York: Houghton, Mifflin and Company. Vol. 1, pp. 110–111.
- Renmeka H. W. & Ardagh J. 1930. Aylmer Bourke Lambert and his ‘description of the Genus *Pinus*’. *Linnean Society Journal of Botany* 48(324): 439–466.
- Roe to brother, William, 18 April 1828. Privately held.

What was Inside the Zinc Trunk? (A Tale of Lepidochromy)



Dr Anthony Crawforth FLS
e: tonycrawforth@gmail.com

At a recent West Country sale, I purchased a small zinc trunk described as containing a collection of Indian butterflies. The butterflies were caught in India between 1946 and 1947 (during the time of Partition) and fixed on cards in albums. The result is interesting from a natural history point of view as there is some data included with them (Fig. 1). The fact that the albums have probably remained in the trunk since 1947 accounts for the remarkable condition of these beautiful butterflies.¹

Very little is known about the collectors, Major and Mrs Bigge. He was a Royal Artillery major from England's West Country serving in the British Army in India, and, with his wife, collected butterflies and preserved them using a relatively uncommon method. Bigge is a name associated with the West Country and well represented at that time in Colonial India, in the higher ranks of the British Raj. No entomological link can be found for them either professionally or as amateurs in India or the UK.

The trunk had been sealed, as could be seen by the remnants of tape around the sides. Some form of white pungent preservative had been used, the remains of which were in the corners of the trunk. It appears that at some point the box had moved on from the Bigge family as it was brought to the saleroom by a lady who collected curiosities but was not known to be linked to the family. It transpired that the butterflies preserved in the albums in the box are a form of nature-printing, known as lepidochromy.



Fig 1 The trunk contains examples of lepidochromy, like this 'Blue Mormon' collected in Kallar Nilgiris, Southern India

¹ Bigge's box contained five albums of Indian butterflies and miscellaneous scraps of working material. Most of the butterflies have some data, occasionally local names and a coded key to indicate place and date of capture.

Nature-prints

Many natural historians in the 19th century faced a challenge when illustrating their work. If they were not gifted artists, they could either describe in words what they saw, or produce sketchy illustrations. They could commission artists, but this would never have had their own personal touch. Drawing and painting skills could be acquired, but even with practice, success depended on talent, both for observation and for the meticulous use of artist's utensils.

In the age of digital photography we can all produce excellent images of butterflies and moths, and can use microscopes to obtain images of even minute details. In earlier times we had photographic film, and before that, glass plates. Plate cameras required long exposures and were therefore unsuitable for obtaining images of moving objects, certainly not those which were only a short distance from the observer.

While nature-printing has a long botanical history (the earliest known nature print is of a leaf inserted into a manuscript of Dioscorides, created in Anatolia or northern

“These images are made only from the scales on butterfly wings, meaning that the collector had to add a representation of the insect's body. The more ambitious would also add details of the plants on which the insect could be seen.”

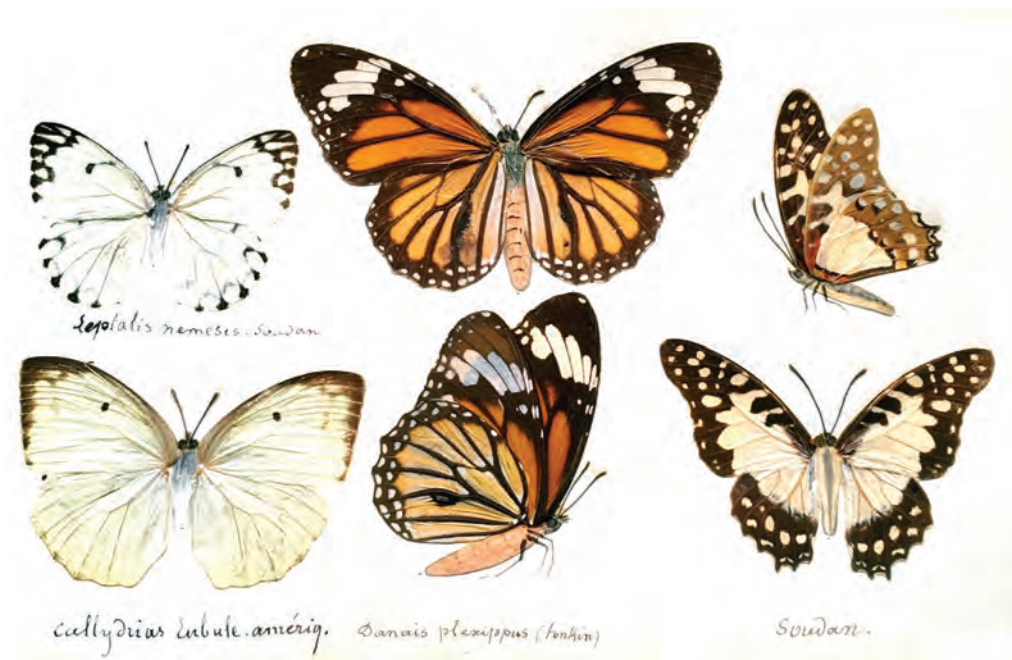


Fig 2 French Missionaries used a method of lepidochromy that saw the specimens pressed to the page to adhere the scales to the paper, and the body either drawn in or applied with gum arabic

Syria by Bihnam the Christian in 1228), other specimens like fossils, and even a bat (Cave 2010 & A.M.C. 1879) have been used to create a printed image. It has also been used to produce images of butterflies and moths: lepidochromy. These images are made only from the scales on butterfly wings meaning that the collector had to add a representation of the insect's body. The more ambitious would also add details of the plants on which the insect could be seen. As a young man in Romania, in the mid-1880s Prince Aristide Caradja formed a small but particularly fine collection of such prints. French missionaries practiced the art of lepidochromy, particularly in India and China in the 19th century, where the whole process of collecting was simplified by using this technique.² Nature-printing had advantages for collectors in tropical countries, as the results were far less vulnerable than whole specimens which were at the mercy of beetles and other pests. Such collections were also more transportable.

“A Fine Collection of Insects”

Wonderful examples of nature-printing are given by Joseph Merrin in his book *Butterflying with the poets; a picture of the poetical aspect of butterfly life* (Merrin 1864). One of the earliest attempts to use lepidochromy to produce a published work, he mounted each paper outline and then used pressed bodies of the butterflies to give a ‘realistic’ appearance, although the antennae were drawn in ink in all the illustrations; nature-prints of 15 British butterflies, upper- and underside.

Major Bigge and his wife used a similar method (Figs. 1 and 3), though it is closest to the style used by Horace Waller (1833–96) a missionary and anti-slavery activist of the 19th century, in his field book, *Butterflies collected in the Shire Valley East Af-*



Fig 3 Horace Waller's work may have inspired the collection of prints made by the Bigges

2 A handbook for those interested in nature-printing butterflies and moths was published anonymously by “A.M.C.” in 1879. The author details five separate methods of lepidochromy, the best known of which is the gum process, which originated with the aforementioned French missionaries in India. Wings are cut and removed in order to be placed on paper coated with gum arabic, the paper is folded to ensure both sides of the wings are secured and a lengthy rubbing process guarantees adhesion of the scales to the paper. After drying, the paper is cut around the outline of the wings and each preparation is then ready for mounting. The book is freely available online via Google Books.

rica. (See the Smithsonian blog post <https://blog.library.si.edu/blog/2014/10/31/lepidochromy-butterfly-transfer-prints/#.W6pZUHtKjIU>). In the Bigges' case, the original bodies were applied with gum arabic, as were the antennae.

One of the best-known specialists in lepidochromy was Sherman Foote Denton (1856–1937) who in 1900 published *As Nature Shows Them: Moths and Butterflies of the United States East of the Rocky Mountains* in two vol-

umes with 56 full-page nature-prints of butterfly and moth wings, and over 400 illustrations in the text (Denton 1900). This beautiful work represents a major achievement in the field of nature-printing (Fig. 4). It was the first systematic study of the butterflies and moths of North America and is special for its unique nature-printing technique and hand colouring. At the recent exhibition of nature-printing in the 19th century at the University of Delaware Library, Denton's butterflies were described as containing the 'most successful of all' nature-printed illustrations.

According to the preface, Denton personally collected over 50,000 butterflies and moths from all parts of the United States for his book. He then made nature-prints from the direct transfer of the specimens themselves. Denton writes: "The scales of the wings of the insects are transferred onto paper, while the bodies are printed from engravings and afterwards coloured by hand."

REFERENCES

- Merrin J. 1864. *Butterflying with the poets; a picture of the poetical aspect of butterfly life*. London.
- Cave R. 2010. *Impression of Nature. A History of Nature Printing*. London.
- "A.M.C." 1879. *A guide to nature-printing. Butterflies and Moths*. London, Harrison. Facsimile edition published in 2010 by General Books for the British Library.
- Denton S. F. 1900. *Moths and butterflies of the United States east of the Rocky Mountains*. Boston: J. B. Millet Company
- Rowley H. 1866. *The Story of the Universities Mission to Central Africa*. London
- Smithsonian Libraries: <https://blog.library.si.edu/blog/2014/10/31/lepidochromy-butterfly-transfer-prints/#.W6pZUHtKjIU>
- Waller H. Ca. 1861–62. *Butterflies collected in the Shire Valley East Africa*. (Smithsonian Field Book Project.)



Fig 4 Denton's *As Nature Shows Them* is nature-printed, and is the first systematic study of butterflies and moths in North America

Natural History on the Shelf



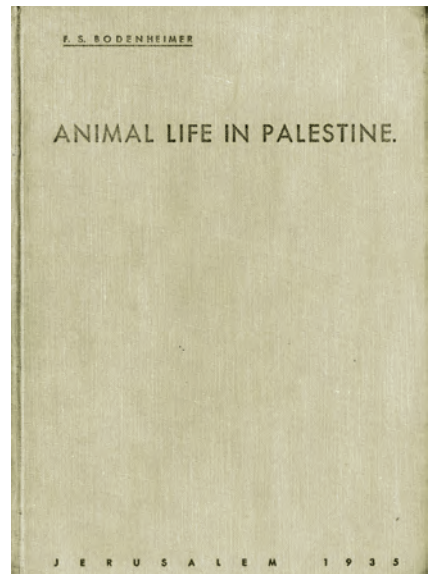
Peter M. Leckstein FLS

e: pmleckstein@icloud.com

I love sales of old books—you never know what you'll find. So I was delighted to pick up a copy of F. S. Bodenheimer's *Animal Life in Palestine* (1935) while rummaging through some textbooks being sold off by the Linnean Society's Library. Many books are donated by Fellows and some leave their own collections to the Society when they pass on. When the Library already has a copy of a book, the supernumerary copies are sold off to raise funds which go towards future Library purchases.

I first encountered Bodenheimer's work in 1969 when I was a post-graduate student researching polymorphism in aphids. My PhD supervisor, the late Mike Llewellyn, suggested I read *The Aphidoidea of the Middle East* (Bodenheimer and Swirski 1959) as an introduction to some of the key issues in aphid ecology and physiology.

Frederick (Fritz) Simon Bodenheimer (1897–1959) was born in Cologne, Germany, and on graduating from high school in 1914 he had intended to study medicine at the University of Munich. However, the outbreak of the First World War channelled him into the German Army where he served on the Eastern Front. As an assimilated middle-class Jew, his experience of anti-Semitism had up until that time been somewhat limited. Now he met it full on as he observed the impact of the Tsarist regime's anti-Jewish policies in the front line territories in Poland and Russia. He also had to contend with the prevalent anti-Semitism of the German Officer Corps.



His wartime experience of anti-Semitism led him to embrace the political Zionism of which his father, the lawyer Dr Max Bodenheimer, was a leading proponent. On his discharge from the army in 1918 the young Fritz determined to join the growing number of European Jews who were migrating to the newly established British Mandate territory of Palestine. At that time there were no universities in Palestine and very little in the way of scientific research had been undertaken in the Middle East. For



F. S. Bodenheimer in 1935

this reason, before leaving Germany he completed his studies at the University of Bonn, and unusually for that time, focussed on applied entomology, so that he could benefit the farming communities in his new homeland.

In 1922, at the age of only 25, young Bodenheimer accepted the recently created post of head (and only member) of the entomology division in the newly formed Agricultural Research Station in Tel Aviv. During his time at this research station Bodenheimer did much of the ground work that was to underpin applied zoology and entomology in Palestine and later in Israel. He surveyed and identified the pests of crops and published numerous guidelines for farmers. This magnificent body of work formed the basis of his first major book, *Die Schädlingfauna Palästinas* (1930).

In addition to his work at the Agricultural Experimental Station, in 1928 Bodenheimer was invited to join the science faculty of the Hebrew University of Jerusalem which had opened in 1925. As this university's first professor of zoology he taught for 22 hours per week, lecturing in Hebrew on a wide range of zoological topics and having to write the first Hebrew language textbooks on the subject. His workload was tremendous!

Bodenheimer was also enthusiastic about the history of natural history. In his 1935 book *Animal Life in Palestine*, he starts by reviewing the history of the zoological exploration of Palestine from the earliest biblical references to reports of expeditions mounted by 18th- and 19th-century explorers, such as the Swedish student Friedrich Hasselquist, one of Carl Linnaeus' "Apostles", and the British clergyman Henry Baker Tristram FRS, who for a time was a Fellow of the Linnean Society. Bodenheimer's enthusiasm for natural history led him to mount his own expedition to the Sinai Desert in July 1927. Together with another entomologist, Oskar Theodor, he set out to investigate the nature of tamarisk manna in order to ascertain if it had any connection to the Biblical manna which sustained the Israelites in the desert for 40 years after the Exodus from Egypt (Bodenheimer 1929).

“As this university's first professor of zoology he taught for 22 hours per week, lecturing in Hebrew on a wide range of zoological topics.”

In *The Aphidoidea of the Middle East* Bodenheimer wrote that: “Characteristic for the more arid parts of the Middle East is the phenomenon described as ‘manna’... the abundant excreta of sap-feeding aphids, coccids and cicadas, which harden and/or crystalize in dry air.” He went on to attribute the Biblical manna to the exudate of two species of coccids in June and July feeding on tamarisk bushes. Could such a material have been collected in sufficient quantities to feed the nomadic Israelites?

Bodenheimer went on to report that “peasants consume the manna as a sweet with their breakfast in the form of sherbet drinks and when mixed with flour and nuts it makes a delightful cake”. He noted that in the oak forests of northern Iraq and northern Iran abundant manna was harvested by the Kurdish population to enable the sale of about 30,000 kilos per year in the market at Sulimaniya. It was used by confectioners as a source of carbohydrate, comprising mainly trehalose, sucrose and glucose.

Bodenheimer’s contribution to furthering our understanding of the ecology and physiology of aphids and other insects was immense. During the 1950s, together with the late Eliahu Swirski, he wrote *The Aphidoidea of the Middle East—a tour de force* of comparative biology—describing, cataloguing and comparing the life cycles of aphid species present throughout that region with populations of the same or similar species in Europe and the United States of America (Bodenheimer and Swirski 1957). As a graduate student I was particularly drawn to their elucidation of the complex interactions between aphids and environmental factors, such as photoperiod, crowding and food plant quality, in explaining seasonal variations in the morphological forms of aphids, such as the appearance of winged (alate) and wingless (apterate) phenotypes in genetically homogeneous clones.

Unfortunately I never got to meet Professor Bodenheimer, as he died suddenly while attending a conference in London in 1959, some ten years before I became a graduate student. His remains were returned to Israel for burial near his home in Jerusalem. Purchasing his book *Animal Life in Palestine* has encouraged me to look again into the life and work of one of entomology’s great exponents.

I am pleased to acknowledge Professor Isaac Harpaz’s paper ‘Frederick Simon Bodenheimer (1897–1959) Idealist Scholar Scientist’, for much of the biographical information in this article.

REFERENCES

- Bodenheimer F. S. 1929. ‘Ueber das Tamariskmanna des Sinai’ in F. S. Bodenheimer & O. Theodor, *Ergebnisse der Siani-Expedition*. Leipzig: pp. 45–89.
- Bodenheimer F. S. 1930. *Die Schädlingsfauna Palästinas*. Berlin.
- Bodenheimer F. S. 1935. *Animal Life in Palestine*. Jerusalem.
- Bodenheimer F. S. & Swirski E. 1957. *The Aphidoidea of the Middle East*. Jerusalem.
- Harpaz I. 1984. Frederick Simon Bodenheimer (1897–1959) Idealist Scholar Scientist. *Annual Review of Entomology* 29: 1–23

Editor’s Note

Surplus books are now available for acquisition in the Society’s entrance hall, in exchange for a small donation.

Why there was no ‘Darwin’s Bulldog’: Thomas Henry Huxley’s Famous Nickname



John van Wyhe FLS

Department of Biological Sciences and Tembusu College, National University of Singapore, 14 Science Drive 4, Singapore 117543, Singapore

*University Professorial Fellow, Charles Darwin University,
Darwin, N.T., Australia*

e: dbsjmvw@nus.edu.sg

‘Darwin’s bulldog’ is one of the most famous nicknames in the history of science. Virtually every mention of the Victorian zoologist Thomas Henry Huxley (1825–95) includes this pithy epithet. Equally ubiquitous is the claim that Huxley was known by this name during the 19th-century debates over Darwinism. Adrian Desmond’s racy 1997 biography of Huxley uses the phrase many times, but never mentions where it comes from although the back cover of the book states that Huxley was “often referred to as ‘Darwin’s Bulldog’” (Desmond 1997). In a popular history of science, historian William Bynum wrote that by 1863 Huxley “had already assumed his mantle as ‘Darwin’s bulldog’” (Bynum 2012). Figuratively speaking this is no doubt true, but most references to this famous sobriquet indicate that this is not just what Huxley *was*, but what he was *known as*. For example, the primatologist Frans de Waal noted that, during his lifetime, Huxley “had gained a reputation as ‘Darwin’s Bulldog’ owing to his fierce advocacy of evolution” (de Waal 2009: 7). Jonathan Miller wrote in his illustrated beginners guide to Charles Darwin (1809–82), “Huxley ... devoted so much of his life to defending & popularizing the theory of descent with modification that he earned the name of ... Darwin’s Bulldog” (Miller 1982: 4). In a popular biography for juvenile readers, Anna Sproule wrote: “Huxley sprang to Darwin’s defense whenever necessary and was soon known as ‘Darwin’s bulldog’” (Sproule 2002). The biologist Tim Berra attributed the nickname to a specific event: “[Huxley] earned nickname of ‘Darwin’s Bulldog’ for his staunch defense of Darwin at an Oxford debate with Bishop Samuel Wilberforce in 1860 and in published articles” (Berra 2013:36; also Henderson 2013). More recently, journalist A. N. Wilson has written that Huxley “often so referred to himself in the 1870s” (Wilson 2017). This has been repeated by countless writers. It has probably been repeated in tens of thousands of student essays. And its popularity is still increasing.

Huxley is one of the most famous characters in the so-called Darwinian revolution (Fig 1). Apparently few today remember his actual scientific work in comparative anatomy. He was elected a Fellow of the Linnean Society in December 1858 and awarded the Linnean Medal in 1890. But he is most celebrated for his pugnacious defence and promotion of Charles Darwin's evolutionary theory after the publication of *On the origin of species* in 1859.

To the Curs which will Bark

After reading an advance copy of the book, Huxley wrote to Darwin on 23 November 1859 about the impending attacks and objections that were likely to come. "And as to the curs which will bark and yelp, you must recollect that some of your friends, at any rate, are endowed with an amount of combativeness which (though you have often and justly rebuked it) may stand you in good stead. I am sharpening up my claws and beak in readiness." (F. Darwin 1887, vol. 2: 232). In this oft-quoted passage, Huxley refers to the critics as dogs (a cur is a worthless, low bred dog) and himself as a bird of prey. ('Combativeness' may be an allusion to the phrenological organ of that name, with its associated character. Phrenological language was often used by those who did not prescribe to it for humorous effect.) On some occasions Darwin himself referred to Huxley as "My General Agent" (F. Darwin 1887, 2: 251).

Huxley's combativeness is most widely remembered today for his part in the infamous Huxley-Wilberforce 'debate' at the 1860 meeting of the British Association for the Advancement of Science at Oxford. According to one account, Bishop Samuel Wilberforce taunted Huxley "if it 'was through his grandfather or his grandmother that he claimed his descent from a monkey?'" Huxley is said to have replied:

a man has no reason to be ashamed of having an ape for his grandfather. If there were an ancestor whom I should feel ashamed in recalling, it would rather be a *man*—a man of restless and versatile intellect—who not content with success in his own sphere of activity, plunges into scientific questions with which he has no real acquaintance, only to obscure them by an aimless rhetoric, and distract the attention of his hearers from the real point at issue by eloquent digressions and skilled appeals to religious prejudice. (Judd 1910, 140)

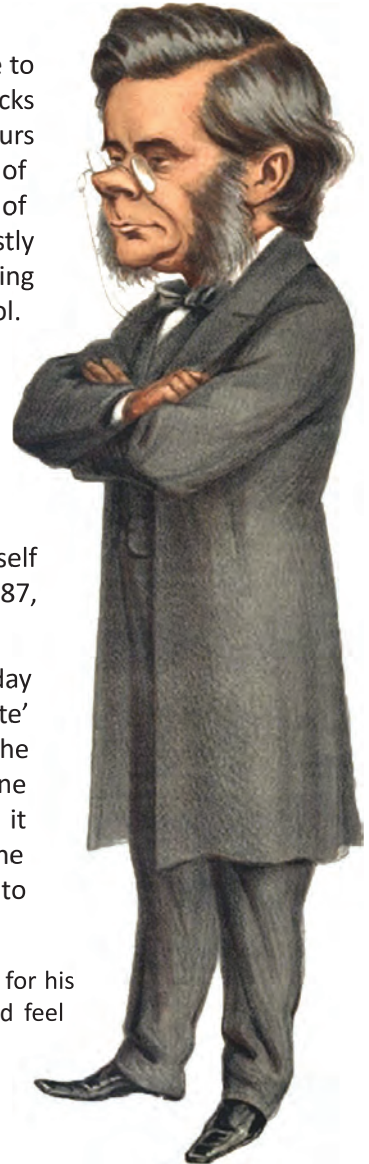


Fig 1 T. H. Huxley in 'Men of the day' *Vanity Fair*, January 1871

This is based largely on a 3 July 1860 letter from J. R. Green to W. Boyd Dawkins. (Stephen 1901, 44–45).

A bulldog seems like the perfect title for Huxley. The Oxford English Dictionary gives the definition: “Applied to persons: One that possesses the obstinate courage of the bulldog.” Bulldogs had been traditionally used in bull baiting, in which the small snub-nosed dogs would chase, harass and bite a massive bull many times their size. Hence bulldogs had a reputation for courage and ferocity. Phrenologists used them as an example for their mental faculty of Firmness. In his *The variation of animals and plants under domestication* (1868), Darwin noted that the breed was known for “courage and indomitable perseverance” (Darwin 1868, vol. 1: 41). The clergyman and novelist Charles Kingsley described the hero of *Water-babies* (1863) in like manner: “Tom was always a brave, determined little English bull-dog, who never knew when he was beaten.” (Kingsley vol. 4: 138). A writer in the *Journal of Horticulture* in 1873 noted: “We say of a bold plucky orator, ‘Ah! he has so much of the British bulldog in him’” (Anon 1873: 52). Thus Huxley surely could have been called this since it was widely agreed that he was a plucky and courageous orator.

What Bulldog?

It should come as a surprise then to discover that, in fact, Huxley was *not* widely known as or indeed *ever* referred to as ‘Darwin’s bulldog’ during his lifetime. The name occurs in no 19th-century newspapers, magazines or books. It has never been quoted from a contemporary diary or letter.

The nickname first appeared in a lecture by the American palaeontologist Henry Fairfield Osborn in 1895 (Fig 2), shortly after Huxley’s death in June that year. As Osborn later wrote, “I had the privilege of listening to [Huxley’s] great course of lectures on comparative anatomy and evolution during the winter of 1879–80, of working in his anatomical laboratory in South Kensington, and of forming his personal acquaintance in his own home.” (Osborn 1925: 654). Osborn was then a 22-year-old student. One day in 1879 Huxley brought Darwin for a tour of the laboratory and Osborn was introduced to him. Sixteen years later, Osborn reflected on the differences between the two naturalists.

There was the widest possible contrast in the two faces. Darwin’s grayish-white hair and bushy eyebrows overshadowed the pair of deeply set blue eyes, which seemed to image his wonderfully calm and deep vision of nature, and at the same time to emit benevolence. Huxley’s piercing black eyes and determined and resolute face were full of admiration and at the same time protection of his older friend. He said afterwards: ‘You know I have to take care of him—in fact, I have always been Darwin’s bull-dog,’ and this exactly expressed one of the many relations which existed so long between the two men. (Osborn 1896: 32)

Osborn gave almost the same lecture later that November before the biological section of the New York Academy of Sciences, repeating the bulldog sentence verbatim (Osborn 1895).



Fig 2 Henry Fairfield Osborn, *The American Museum Journal* (1916) XVI

Thirty years later still, Osborn told the story again, but what had at first been represented as a single utterance was now increased to a frequent saying. “Huxley was solicitous of Darwin’s strength, and often alluded to himself as ‘Darwin’s bull dog.’” (Osborn 1924: 58). Osborn told this story on at least one further occasion, in 1925, using almost the identical wording: “Often alluding to himself as ‘Darwin’s bull-dog,’ he took the brunt of the fighting.” (Osborn 1925: 660). It is interesting to note that the first two accounts represent Huxley as protective and shepherding Darwin whereas only the latter represents the nickname as connected with fighting.

But by this time Osborn’s first recollection had already spawned literary offspring. Probably the most influential was that quintessential Victorian biographical monument, Huxley’s *Life and letters* (1900). Edited by his son Leonard, Osborn’s wording

was changed from “I have always been Darwin’s bull-dog” to “‘I am Darwin’s bull-dog,’ he once said”, thus removing the link between a recollection by Osborn and instead coming straight from Huxley’s mouth, although here it was still represented as a one-time statement (L. Huxley 1900, vol. 1: 363). Leonard Huxley did not give a source so his volume has generally been credited for our knowledge that T. H. Huxley called himself and was generally known as ‘Darwin’s bulldog’ during the controversies over Darwinism in the 1860s and 1870s. Thus from the 1900s onwards the sobriquet ‘Darwin’s bulldog’ has proliferated ever more. By the 1920s it was already commonplace to say that “Huxley was known in his day as Darwin’s bull-dog” (Dietrich 1927: 96). And by that time there were few contemporaries left who would have been able to remember such things.

There seems to be no reason to doubt that Huxley may have once called himself ‘Darwin’s bulldog’, but we should remember that our source is both second-hand and a recollection of a sentence uttered almost 20 years before. And yet, virtually every writer on Darwin and Huxley has noted the commonplace ‘fact’ that during the Victorian debates over Darwinism, Huxley was known as ‘Darwin’s bulldog’. He wasn’t.

It is true that Huxley was widely known as a defiant defender of Darwinism. But imagining that he was widely acknowledged as ‘Darwin’s bulldog’ obscures some of the historical reality, such as the fact that he had his own (non-Darwinian) ideas about evolution and was long tentative about the efficacy of natural selection. Appreciating that he was not known as ‘Darwin’s bulldog’ should lead to a more nuanced recognition of who he was and what he really did. If one of the most widely known, enjoyed and unquestioned nicknames in the history of science is incorrect, what other undisputed facts might also be wrong?

Acknowledgements

I am grateful to Kees Rookmaaker for helpful assistance.

REFERENCES

- Anon. 1873. Dogs in general. *Journal of Horticulture, Cottage Gardener and Country Gentlemen* 25: 52.
- Berra T. M. 2013. Wallace's acceptance of Darwin's priority in his own words. *The Linnean* 29(2) 23–40.
- Bynum, W. 2012. *A little history of science*. Yale.
- Darwin C. R. 1868. *The variation of animals and plants under domestication*. 2 volumes. London: John Murray.
- Darwin F. (Ed.). 1887. *The life and letters of Charles Darwin*. 3 volumes. London: John Murray.
- de Waal F. 2009. *Primates and philosophers: how morality evolved*. Princeton.
- Desmond A. 1997. *Huxley: from devil's disciple to evolution's high priest*. London: Penguin.
- Dietrich J. H. 1927. *The fathers of evolution*. Minneapolis.
- Henderson M. 2013. *50 genetics ideas you really need to know*. London (ebook).
- Huxley L. (Ed.). 1900. *The life and letters of Thomas Henry Huxley*. Volume 1. London.
- Judd J. W. 1910. *The coming of evolution: The story of a great revolution in science*. Cambridge.
- Kingsley C. 1863. *Water-babies*. Volume 4. London.
- Miller J. (Illustrated by Borin van Loon) 1982. *Darwin for beginners*. London.
- Osborn, H. F. 1895. Memorial tribute to Professor Thomas H. Huxley. *Transactions of the New York Academy of Sciences* 15: 40–50.
- Osborn H. F. 1896. A student's reminiscences of Huxley. *Biological lectures delivered at the Marine Biological Laboratory of Wood's Hole, in the summer session of 1895*. Ginn & company, Boston, vol. 4: 29–42
- Osborn H. F. 1924. Charles Darwin. In *Impressions of great naturalists*. New York, London.
- Osborn H. F. 1925. Reminiscences of Huxley. *North American Review* 221, No. 827, (Jun.–Aug.): 654–664.
- Sproule A. 2002. *Charles Darwin: visionary behind the theory of evolution*. Blackbirch Press.
- Stephen L. (Ed). 1901. *Letters of John Richard Green*. London: Macmillan.
- Wilson A. N. 2017. *Charles Darwin: Victorian mythmaker*. London: John Murray.
- Wyhe J. van (Ed.) 2002–. *The complete work of Charles Darwin online*. (<http://darwin-online.org.uk/>)

ELIZABETH EDGAR (1929–2019): Elizabeth worked at DSIR Botany Division (Allan Herbarium, CHR) and was New Zealand's eminent monocot taxonomist, an author of numerous taxonomic revisions and of three volumes of the *Flora of New Zealand* (II, III and V). Most notably she was senior author of Volume V *Gramineae*, completed in her retirement in 2000, the seminal work on New Zealand Grasses. She died on 1 Jan 2019 in Christchurch, NZ. Her obituary notice appears on p. 46 in the *Australasian Systematic Botany Society Newsletter* 177 (December 2018) http://www.asbs.org.au/newsletter/newsletter_177.html

THE REV. DENNIS FOWLER (1929–2018): Rev. Fowler was a self-taught ethnobotanist and speaker of the endangered Ila language in Zambia. He helped to document the Ila language and the use of plants in Zambia, working with scientists at Kew, and was awarded an MBE for his contributions in 2017. An obituary can be found in *The Times*.

DAVID T. MOORE (1936–2018): Sadly, David died before the recent news of the discovery of the remains of Matthew Flinders, of HMS *Investigator*. His contribution on the botany of this voyage is due to appear in print later this year. He joined the Mineralogy Department of the Natural History Museum, London, in 1968 and became interested in the history of collectors and collections, developing a long and productive interest in the voyage of the *Investigator* and, in particular, in Robert Brown F.R.S. (1773–1858), the naturalist on the voyage. A fuller obituary notice appears on p. 48 in the *Australasian Systematic Botany Society Newsletter* 177 (December 2018) http://www.asbs.org.au/newsletter/newsletter_177.html

MARGOT WALKER (1920–2018): Margot (*RIGHT*), who many will remember as a long-term volunteer in the Library, passed away in November last year. Apart from creating the first catalogue of our extensive portrait collection, she wrote a brief biography of J. E. Smith for the Bicentenary of the Society in 1988, then sorted and listed the papers from Lady Smith, including knitting one of the patterns which form part of Lady Smith's manuscripts. More details of her wartime role in MI5 can be found in *The Times*.



Further to the note on the death of Sir David Smith PPLS in the last issue, Professor Per-Magnus Jørgensen FMLS has sent additional information:

"He took up lichenology in Uppsala when a student of Elias Melin and developed ingenious techniques to study their physiology. This was his greatest international achievement to lichenology. He was a co-founder of the British Lichen Society, and an important person in the vast task to publish a new British Lichen flora (the first new since Crombie/A. L. Smith)."

BRITAIN'S RAREST PLANTS

Christopher J. Dixon

160pp, Pelagic Publishing, 2017, paperback. Col. illustr.
£19.99

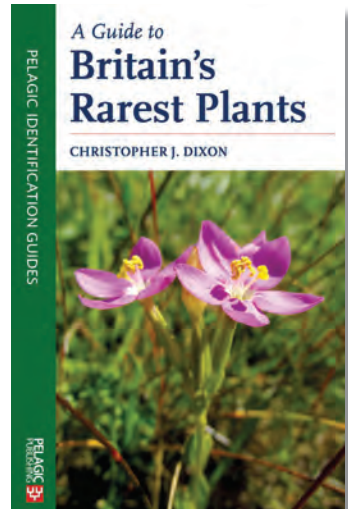
ISBN 978-1-78427-146-6

In *Britain's Rarest Plants* the author's choice of 66 species, from the Land Quillwort to the Alpine Gentian, are calculated to inflame the passions of anyone of adventurous spirit who is willing to track from the Scilly Isles to John O'Groats in pursuit of rare flora.

Pelagic Publishing have billed the book as an identification guide, and in its A5 size, with slightly glossy pages and a brief description of the ways in which each plant differs from its nearest close relative, it certainly looks like one. Plants are organised A–Z by their Latin names, and this, along with a good, concise index, makes everything easy to find. A double page spread for each species contains a short text on its interest, discovery, naming, and the conservation efforts which maintain it. The description detail for each species is curiously brief, giving measurements of just one part of the plant (the flower, for example), but normally includes the major difference between the plant and its more common relatives. Small, but clear and beautifully printed pictures show the flower and the habitat of each species, and a small cut-out map of Britain, showing the plant location along with flowering period, conservation status and plant height. A short section at the back on "critical groups" deals with "families of which there are many endangered microspecies in the UK", and includes *Taraxarum spp.* (Dandelions) and *Sorbus spp.* (Whitebeams).

However, it is openly acknowledged that most of the information and many of the photographs are from the internet. The blurb claims that the author: "has travelled the length and breadth of the country to visit and record rare plants in their natural habitats" but only 22 out of the 66 species illustrated are photographed by Dixon in Britain, and just a handful more are photographed in Britain at all. This is a disappointment (not least because he is an excellent photographer); it is specifically the location of these plants, and their appearance in their local habitats, that are the point of interest. Why visit a remote glen looking for the Alpine Catchfly when we know that it is common across the Alps, the Pyrenees and the Arctic of Finland, Greenland and Canada, and when our identification guide uses a picture off Wikipedia?

Christopher Dixon does not directly address this point. He compiled the interactive key to the flora of the British Isles, and this broad knowledge comes through—his facts are impeccable and his writing is full of interest. Best of all, he is a good writer,



and gently witty; the Least Adder’s-tongue is described as “fundamentally a warmth-loving species, albeit with a coastal bent”. Other nice touches include a section at the end of each page “Also in the Area”, highlighting other rare plants in each habitat and the emphasis on the conservation efforts currently being made to keep the plants alive. The story of each plant’s discovery is well-told, but lazy research means that a universal dearth of knowledge about female collectors is un-remedied here. A woman who has discovered a plant is known just as “a Miss M. Williams” whereas men’s discoveries are given their full story, or at the very least a short biography.

This book is not, despite its layout, a book to be compared with field guides such as the Collins *Wild Flower Guide*, Phillip’s *Wild Flowers of Britain* or Stace’s *New Flora of the British Isles*, (which is recommended in the introduction). Nor does it have the narrative charm of the bloom of books that have come out this summer, such as Peter Marren’s *Chasing the Ghost*, and John Dun’s *Orchid Summer*. It is most similar to Marren’s book published in 1999, *Britain’s Rare Flowers*, but is more methodical, focussing on fewer plants, and fewer themes.

If “in telling the story of Britain’s rarest plants, we are telling the story of Britain’s natural world, the turmoil it has faced in the past and the challenges it will meet in the future” as asserted in the introduction, I do not think these are the plants to do it with. They are too marginal, too obscure, too ghostly to do this. But we can enjoy this slight book and dream by the fire, of one day finding for ourselves some of the most beautiful, and rarest, of Britain’s plants.

Harriet Rix FLS

AROUND THE WORLD IN 80 TREES

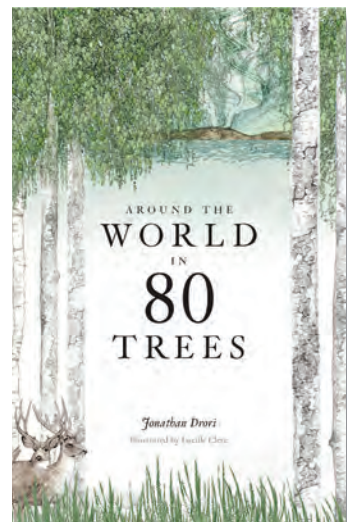
Jonathan Drori

240pp, Laurence King Publishing, 2018, hardback. Col. illustr.

£17.99

ISBN 978-1-78627-161-7

As the title indicates, this book is written in the informal style which, for many readers will be exemplified by books such as Geoffrey Grigson’s *Englishman’s Flora*. The author’s career has included production of wildlife documentaries and BBC websites. He is a trustee at the Royal Botanic Gardens, Kew and the Eden Project, and has given several fascinating and entertaining TED Talks on botanical



topics (www.ted.com/talks). His knowledge of the 80 trees that he has chosen to write about is extensive, and he also includes much cultural information on the human interactions with the trees. Of course many of the stories are sad, describing loss of pollinators, loss of genetic diversity, loss of environment, introduced diseases and the effects of climate change. However they are all interesting.

A major question must have been what to leave out and occasionally I think he gets it wrong. For example there is no mention of the very significant effects of leaf miners on the native European white-flowered Horse Chestnuts while there are details of how to play “conkers”. On the other hand there will certainly be fascinating details here that perhaps not many will know. For example, Stradivarius stringed instruments can produce such superb sounds because they were in a position to use Norway Spruce (*Picea abies*) that had been growing during the “Little Ice Age” of the 15th–17th centuries. Slower growth produces a stiffer and better tonewood.

The text is very much enhanced by the botanical artwork from Lucille Clerc, who demonstrates how drawing and painting still has an edge over photography. Even though this is not an academic book, it would have been useful if the plant family had been included with the Latin binomials, but there are citations in a section at the end. These are aimed at the intended audience of the enthusiastic lay reader. However, I would also recommend this book to professional botanists as a fascinating source of lesser known botanical facts.

Brian Livingstone FLS

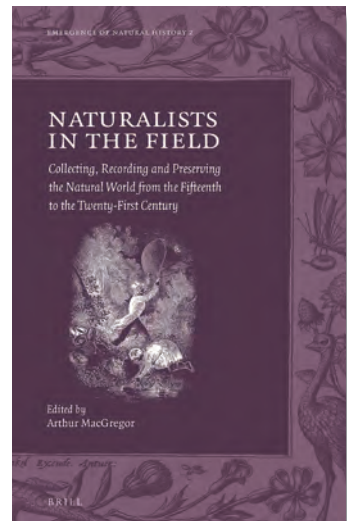
NATURALISTS IN THE FIELD: COLLECTING, RECORDING AND PRESERVING THE NATURAL WORLD FROM THE FIFTEENTH CENTURY TO THE TWENTY-FIRST CENTURY

Arthur Macgregor (Editor)

999pp, Leiden: Brill, 2018, hardback. Illustr., some col.

€270.00/US\$324.00 (also ebook)

ISBN 978-90-04-32383-4



This ‘brick-like’ tome includes an extremely wide range of information, covering, as the title suggests, all aspects of the work of naturalists undertaken outside laboratories and institutions. The contents vary, from chapters covering exploration of vast areas, such as that by Lucas on the collecting experience in Australia and by Vermeulen on field work in Siberia, to

the contribution of individual collectors (William Turner, Burchell and Cuming among others) and details discussions on methodology and equipment. It even includes the psychology of finding and recognising potential natural history specimens. Bringing together information that is otherwise much dispersed will make this an essential first point of reference for anyone investigating the history of natural history collecting and collections. An appendix includes reprinted versions of the key texts on guidance for collectors, dated from 1602 to 1826. A 60 page index takes the reader to specific content, while each of the 30 chapters includes a comprehensive bibliography. The size and weight make it a cumbersome volume to handle and read, but the illustrations scattered throughout are nicely reproduced and the binding is robust. The price will be a deterrent but an ebook is available and print copies should certainly be available in institutional libraries.

Gina Douglas FLS

BURNING PLANET: THE STORY OF FIRE THROUGH TIME

Andrew Cunningham Scott

231pp, Oxford University Press, 2018, hardback. Col. and mono illustr.

£20.00/US\$27.95

ISBN 978-0-873484-0

Present day wildfire features in chapter 1, with discovery of fossil charcoal in 2. “Kindling” follows, about fuel, its ignition by lightning, oxygen levels through time and feedback between these. In 4, Scott considers by the late Silurian there was enough oxygen and land flora for the earliest fires, with late Devonian *Callixylon* forests providing more fuel. He mistakes a charcoalified ovule’s hirsute integument for an embryo (Pl. 5), but this fossil supports Fortey’s (1997) idea “Perhaps coal measure seeds were developed as a paradoxical consequence of fire”. Scott speculates smoke from late Permian fire blackened both vegetation and polar ice, causing climate change.

Chapter 5 covers Mesozoic fire, with atmospheric oxygen over today’s 21% for much of that era. Poor contrast in parts of Fig. 45 renders the wording illegible; close scrutiny alone distinguishes four lines showing Cretaceous oxygen. Angiosperm origins are discussed and non-avian dinosaurs (as on the dust cover) get brief attention. I enjoyed Scott’s account of evolution of fire traits where DNA studies on extant Proteaceae point to Cretaceous origins for the release and/or germination of seeds only after the passage of fire.



Chapter 6 deals with Cainozoic wildfire, including evidence from the Palaeocene/Eocene Thermal Maximum and signs of increasing savannah fires from charcoal input into oceanic sediments. Scott mentions Neogene evolution of C4 photosynthesis; he states “Grasslands (as opposed to individual grass species) probably originated in the Oligocene Epoch...”, clarifying an ambiguity on p. 64. Charred tree rings and estimates of burning global biomass from marine charcoal disclose Holocene climate in 7. Not only *Homo sapiens* L. but other homonids are discussed as to how they changed habitats through fire from Pliocene to Recent times. The chief benefits to humans of fire are outlined and evidence appraised for earliest use of fire; e.g. what defines a hearth? Fig. 56 is mystifying; how has “population size” varied over the last 10 million years? Scott uses cosmopolitan evidence for “anthropogenic fire” and poses searching questions on Pyne’s speculative “pyric transition”; a time when fossil fuel consumption is rising, but “wildland”—and agricultural—fires may be in decline.

Chapter 8 looks ahead, discussing invasive plants, wildfire on a warming Earth and related health hazards. In Fig. 61, the left/right transposition of the time axis and distinction between qualitative and quantitative are confusing. Scott calls for education to consider both positive and negative aspects of wildfire. His stratigraphic appendix (American usages) is helpful, but Oligocene is not Neogene; the halves of the “Paleozoic” are transposed. The Glossary clarifies many technical terms used here; “Notes” and “Further reading” are valuable links to wildfire literature.

Intending a popular book, Scott often uses the first person and much here is autobiographical; c. 23% of references are to his own publications. His anatomical, taxonomic and spelling mistakes are few; he presents material in an accessible and personal style. I hope readers of *Burning Planet* will enjoy his approach, and be stimulated to consider how wildfire is likely to affect Earth’s future just as it did in the past.

Hugh Lance Pearson FLS

Reference

Fortey R. A. 1997. *Life: An unauthorised biography*. London: HarperCollins.



BLOOMSBURY SCIENTISTS: SCIENCE AND ART IN THE WAKE OF DARWIN

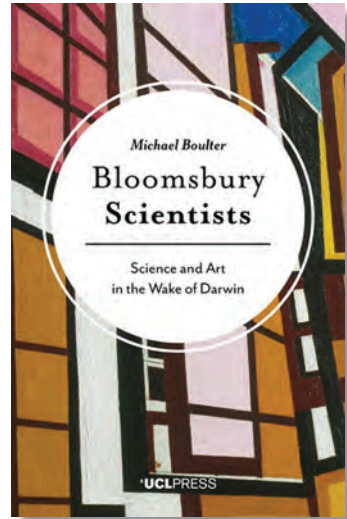
Michael Boulter

188pp, UCL Press, 2017. Col. and mono illustr.

Hardback £35.00 ISBN 978-0-873484-0

Paperback £15.00 ISBN 978-1-78735-005-2

epub £5.99 ISBN 978-1-78735-007-6



In *Bloomsbury Scientists* we read a measure of autobiography set in the square mile or so of London's academic postcode WC1. Boulter sets his studies at University College London (UCL) in the 1960s in the context of scientific, artistic and social events in Bloomsbury spanning 1871–1942. Nearby railway stations improved not only accessibility but also affordability there for academics of “godless Gower St.” (*i.e.* UCL), bohemian artists and writers on limited budgets, encouraging them to move in. Charles Darwin FLS began married life in Upper Gower St., but this focusses mainly on events after that great man's death. Boulter describes his own family life in Leicester from the Second World War to his arrival at UCL in 1961 and acknowledges his teachers there, dedicating this book to Prof. W. G. Chaloner PPLS, his mentor at UCL, fellow palaeobotanist and friend in later life.

The main text is in ten chapters on the education, careers and personalities of over 80 people who interacted with scientists in Bloomsbury, 18 of them with monochrome photographs (ten with dates); many of these I had not seen elsewhere. E. R. Lankester FLS, “who often used to call in at the Linnean Society on his way home from school”, is the main subject of the first two chapters; Prof. of Zoology at UCL, he became Director of what is now London's Natural History Museum. T. H. Huxley FLS also features, as does the “unexpected friendship” between Lankester and Karl Marx. Two chapters feature “Eccentric campaigners” and “Insiders and outsiders” amongst Bloomsbury intellectuals in the 1890s. Here we meet Karl Pearson, Prof. of Applied Mathematics at UCL (of chi-squared test fame); the Irish dramatist and critic George Bernard Shaw; plus one of the Bloomsburians to build bridges between the arts and sciences, H. G. Wells. Further chapters deal with “new breeds” of biologists around the turn of the 19th century when gentlemen naturalists were giving way to aspiring young professional scientists from the middle classes, such as Marie Stopes FLS, the rise of eugenics, led by statistician Francis Galton, and changes from oligarchy to wider meritocracy in the years running up to and during the First World War.

A final chapter covers “the one culture” of the inter-war period; “barren years” in evolutionary biology prior to the breakthroughs in genetics of the 1950s and 1960s, when Darwinism was widely questioned philosophically, both by scientists and by writers such as H. G. Wells, Aldous Huxley and Virginia Woolf.

The biographical approach here is successful and heart-warming, setting the work of many *Bloomsbury Scientists* (including several Linnean Society Fellows) in a wider human context.

Hugh Lance Pearson FLS

REAKTION BOOKS: *ANIMAL SERIES*

Several books in this series have been received for review, with reviewers opinions differing significantly. This edited version of three recent reviews will enable readers to decide on whether they wish to investigate the series. Other (unreviewed) titles include: *Sardine* (Trevor Day), *Wild Boar* (Dorothy Yamamoto) and *Zebra* (Christopher Plumb and Samuel Shaw).

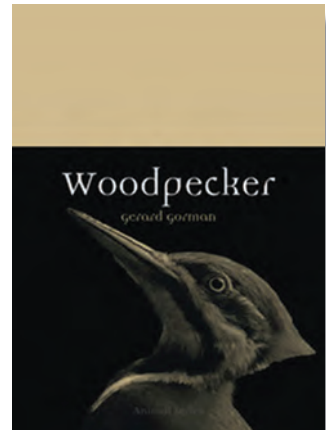
Woodpecker

Gerard Gorman

184pp, Reaktion Books, 2017, paperback.

Mainly col. illustr. £12.95 ISBN 978-1-78023-829-6

The Reaktion Animal series calls itself “a new kind of animal history” and is aimed at a new kind of reader: both the viewers of Planet Earth and the aficionados of the “nature writing avant garde” popularised by Robert MacFarlane will find much to interest them here. The books themselves are small (not quite pocket sized), and beautifully laid out, with clear font and text, wide margins, and clean, modern, front covers.



Humorous, lucid and highly readable, this book is a delight.

An anthropocentric account, it explains the distribution, speciation and anatomical adaptations of the woodpecker family before excavating its mythological and magical history, and concludes with a discussion of the family's profile in the world today, the threats it faces and the way in which it is adapting to an encroaching human population

Woodpeckers is not a sweeping thesis nor a field guide—rather an account of the interaction of humans and woodpeckers across the world. Short, but broad in both geography and scope, it could be a present for a teenager or the esoteric professional; the writing is clear enough for both, while the content is unobtrusively well-footnoted enough to satisfy the most pedantic reader. In addition, the illustrations are superb; clear, striking, and placed next to the appropriate text, while a timeline, list of woodpecker species and comprehensive bibliography and index make it a well-produced book

The Linnaean classification of the woodpecker family, and limitations of current scientific knowledge about its evolutionary history are discussed first. The diversity of the family, in geography, appearance and behaviour is stressed, with glancing reference

to its role as a possible ecological keystone species. The two most remarkable aspects of woodpecker behaviour—carpentry and drumming—are explained. In the following chapters, the mythological and magical associations of the woodpecker family in numerous different civilisations are explained through numerous examples, roughly linked together by topic. Finally, the woodpecker's depiction in the modern age, the threats that it is facing and the future survival of various species are comprehensively summarised.

However, the book mixes an extremely broad engagement with world cultures, with an essentially "western" view of truth, and this causes three major problems. Firstly, using a modern scientific family grouping to assess similarities within mythologies is not very useful; the wryneck and the greater spotted woodpecker are not similar enough in behaviour or appearance to merit their direct comparison in mythology. Secondly, the thematic discussion in consecutive chapters of mythology and magic leads to confusion and occasional repetition. Finally, we must ask whether such a short book can order so vast a range of cultural and mythological supposition effectively? It sometimes appears to fall in to the trap of attempting to distort a sophisticated piece of folklore in order to transfer it precisely onto an observed phenomenon, and in dealing with such a range of facts a more open structure—perhaps opposing the mythos and logos of the family—would give the book more chance to flow. Taking the above into account, this is a beautiful book of great interest, which will be appreciated by anyone who wants to be amused and amazed by the diverse role that woodpeckers have in our lives.

Harriet Rix FLS

Hippopotamus

Edgar Williams

196pp, Reaktion Books, 2017, paperback.

Col. and mono illustr. £12.95 ISBN 978-1-78023-732-9

The publishers claim the book (as the series) examines an animal's global role. Hippopotami—one could argue this should be the title as both common (*H. amphibius*) and pygmy hippopotamus (*Choeropsis liberiensis*) are covered—history, mythology, religion and science are described. Other aspects include food use, trade, early appearance in menageries and roles in films, photography and artistic and literary imagination.

There are several errors. Initially I took the statement that hippos retired to water to digest and ruminate took to be a generalised remark. Regrettably, not so. Page 48 reads "Unlike other ruminants, the hippo does not regurgitate its food for a second chew; ...". In several other places it is a ruminant. The Hippopotamidae are in Suborder Suiformes, Order Artiodactyla. "Ruminants" are in Suborder Ruminantia, have four-chambered stomachs, regurgitate cud and have fermentative digestion. Common to these in hippopotami is some fermentative digestion.



This is the second book by Edgar Williams, a Professor in Cardiopulmonary Science. Only six of the 99 illustrations are from the “Author’s collection”, three being from a little known South African book. There is no apparent anterior connection with hippopotamuses but the author claims an indulgence for all things hippopotamus.

The copiously illustrated book is small format on good quality paper. The six chapters are referenced by superscript numbers which are gathered at the end of the book. The style is somewhat stilted and in some sections it seems the author had to scratch around to find something to say. The Index is not fully comprehensive and has no mention of ruminants! There is little of interest to biologists even when the biology is correct. If you really want to know about hippos then S. K. Eltringham’s 1999 volume *The Hippos: Natural History and Conservation* is the book to buy.

Trevor Wilson FLS

Llama

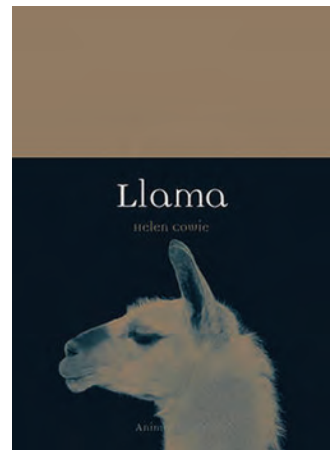
Helen Cowie

200pp, Reaktion Books, 2017, paperback.

Col. and mono illustr. £12.95 ISBN 978-1-78023-738-1

There is no clear statement nor intuitive evidence of the intended readership. Biologists will be disappointed in the content, not only in the limited extent of text devoted to biological matters but also in several basic factual errors. In Chapter 1 we are told: “All South American camelids belong to the genus *Lama*. There are four separate species: llama (*Lama glama*), the alpaca (*Vicugna pacos*), the guanaco (*Lama guanicoe*) and the vicuña (*Vicugna vicugna*).” It is later stated that “*Lama* wool is, in fact, hair since it is hollow in the middle” (p. 15) and then “*Lamas* are not as efficient at storing water as camels”. Brief mention is made of the copulatory position of camelids and that they are induced ovulators but major references on reproduction in the subfamily are absent.

There is apparently indiscriminate use of *lama*, *lamas*, llama and llama throughout. The first chapter entitled Alpacas [sic] Unpacked provides a generalised natural history of the four South American camelids. It is notable, from the beginning, that much of the text and much of illustrative material relates not to llamas but other camelid species. Chapters following the opening one cover in great detail the history and culture of the camelids (Sustenance and Sacrifice, Peruvian Sheep, Enlightened Llamas). The final two chapters (of six) describe the export of camelids from Latin America to much of Europe from the 16th and 17th centuries onwards and then to Australasia and North America as meat and wool-producing stock, as pets and as lifestyle adjuncts (From the Andes to the Outback, A Very Modern Llama). There is a two-page illustrated Timeline covering 40–50 Million Years Ago to 2014.



Trevor Wilson FLS

FELLOWS ELECTED OCT 2018–JAN 2019

Dr Krishnendu Acharya
Mr D. A. Agbudeloye
Dr Tariq Ahmad
Dr Anoop Balan
Mrs Mary Bartlett
Dr Sven Batke
Prof. Julian Bayliss
Prof. Subir Bera
Dr Ilse Breitwieser
Ms Madeline Brenker
Mr Trevor Chilton
Mrs Dearest Chinonye
Dr Zanna Clay
Mrs Mary Colwell-Hector
Mr John Currey
Dr Scott Cutmore
Dr G. W. Danahar
Dr Nandita Dasgupta
Prof. Francis Davis
Dr Natasha de Vere
Dr G. S. Deora
Dr Abhijit Dey
Mr Jon Dunn
Mr Mathew Frith
Dr Roberta Gargiulo
Lord Callum Graham
Mrs Rachel Hamilton
Prof. Dorian Haskard
Prof. Richard Hawkes
Dr Julian Hector
Mrs Eleanor Hooker
Dr Lauren Hughes
Dr Edmund Hunt
Miss Nwachukwu Ifeoma
Miss Eguono Igben
Mr Odoligie Imarhiagbe
Mr Alexander Inzani
Miss Juliette Jowit
Prof. Venkateswarlu
Kanamarlapudi
Mr James Karanja
Dr Rohini Karunakaran
Dr Takeshi Kawakami
Dr Britta Kuempers
Dr Naveen Kumar
Dr Michael Leach
Mr Peter Livock
Miss Kirsty Malpas
Mr Reuben Margerison
Dr Stuart McLanaghan

Dr Patrick McMillan
Dr Leanne Melbourne
Dr S. J. Naine
Dr Madhab Naskar
Mr Timothy Newton
Mr Colin Norman
Prof. Moses Osawaru
Prof. Anne Osbourn
Ms Turkan Ozdemir
Mr Philip Parker
Dr Emma Perry
Mrs Lucy Pitman
Dr Heleen Plaisier
Dr Steve Portugal
Dr Muhammad Imran Qadir
Dr Sigurd Ramans-Harborough
Dr Shivendu Ranjan
Dr Julia Reiss
Mr John Riutta
Dr E Selvarajan
Prof. Miguel Sequeira
Dr Emily Seward
Dr Ravi Sharma
Dr Bhavisha Sheth
Dr Lal Ji Singh
Dr Richard Smith
Dr Vincent Smith
Dr Balasundaram Sridharan
Mr Richard Steven
Mrs Vivien Taylor
Dr Jessica Tucker
Dr Sundaram Vickram
Dr Pragasam Viswanathan
Dr Chris White
Prof. Philip John White
Ms Hannah Wood

ASSOCIATES

Ms Ruth Cousins
Ms Emilie Cros
Ms Ann Dean-Gripton
Ms Krysia Dziedzic
Mr Jo Gilbertson
Prof. Peter Hammond
Mr Jonathan Hopkins
Mr Javier Jauregui
Mr Martin Paucar
Mr M. K. Rajesh
Mr Gregah Roughead

STUDENTS

Mr Gino Brignoli
Mr Gregory Bulmer
Mr Kyle Davis
Ms Ellen Goddard
Ms Amanda Grunwald
Mr Daniel Hall
Mr Stephen Hewitt
Mr David George James
Mr Alexander Kumar
Miss Hiu Wai Lee
Ms Lydia Miller
Ms Lieselot Nguyen
Ms Stephanie Ryder
Mr Martin John Siaw
Ms Louise Sinnock
Mr Ed Straw
Ms Tamara Szentivanyi
Ms Katie Thompson

DEATHS REPORTED TO COUNCIL IN 2019

Dr James Adderson
Dr Hassan Amjad
Prof. Lincoln Brower
Prof. John Cairns Jr. FMLS
Dr Donald Caulton
Dr Geoffrey Creber
Mr Elliott Dalby
Rev. Dennis Fowler
Mr Edward Little
Mr Charles Lyte
Dr Derek H Mills
Mr David Moore
Mr Richard Moore
Mr Michael Morgan
Dr Johannes Payens
Prof. Giorgio Pilleri FMLS
Mr Frank Reitz
Prof. Shamil Shetekauri
Dr Henry Stroyan
Dr Jan-Frits Veldkamp
Mrs Margot Walker
Dr Brian Whittle

The Linnean Society of London : Programme of Events

May–Sept 2019

- 1 May**
12.30–13.00
+ Treasures Tour
- Putting Flesh on Ancient Bones**
Dr David Button, *Natural History Museum, London*
- 16, 21, 22 May;
2 July**
- Discovery Workshops**
Intro to bookbinding; Botanical and entomological painting
- 16 May^A**
18.00–19.00
- Evolution in the Genome: Studying Brightly-Coloured Tropical Butterflies to Understand Evolution and Speciation**
Prof. Chris Jiggins, *University of Cambridge*
- 24 May^A**
16.00–19.00
- Anniversary Meeting**
FELLOWS' EVENT: AGM, Medals, Awards and Prizes
- 5 June**
12.30–13.00
+ Treasures Tour
- Plants of the Qur'an and other Religious Texts: Preserving Cultural History in a Changing World**
Dr Shahina A Ghazanfar FLS, *Royal Botanic Gardens, Kew*
- 20 June^A**
18.00–19.00
- American Eden: David Hosack, Botany and Medicine in the Garden of the Early Republic**
Dr Victoria Johnson, *Hunter College, NY*
- 24 June^{*}**
DAY MEETING
- A Contribution to the Origin and Early Evolution of Snakes**
Dr David Gower, *Natural History Museum, London* and Dr Hussam Zaher, *University of São Paulo, Brazil*
- 16–18 Aug^{*}**
- Linnean Society Field Trip 2019: Slapton Ley, Devon**
In association with the *Field Studies Council*

REGISTRATION REQUIRED FOR ALL EVENTS UNLESS STATED • * Payment required • ^A Admission of Fellows

All meetings are held in the Society's Rooms unless otherwise stated.
A tea reception precedes evening meetings at 17.30.
Evening meetings begin at 18.00 and are followed by a wine reception in the Library.

To register and for other events visit www.linnean.org/events