PULSE

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

GROUND-BREAKERS

Supporting Scientific Research

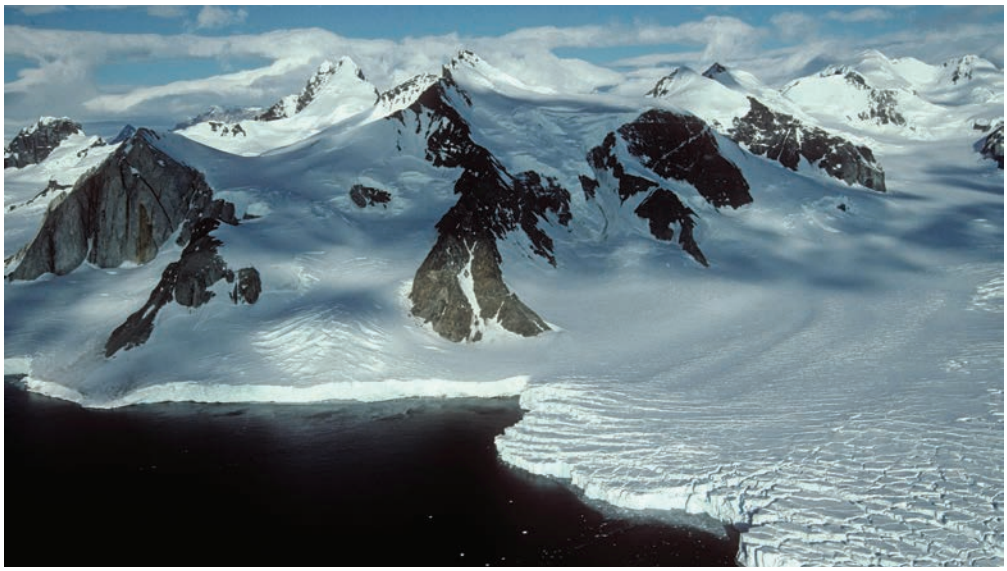
The Linnean Society of London aims to promote the study of all aspects of the biological sciences, with particular emphasis on evolution, taxonomy, biodiversity and sustainability. This is achieved in part by the awarding of grants, through initiatives like the Systematics Research Fund, the Anne Sleep Award and the Appleyard Fund. Recent projects that have been awarded support in some of these categories include:

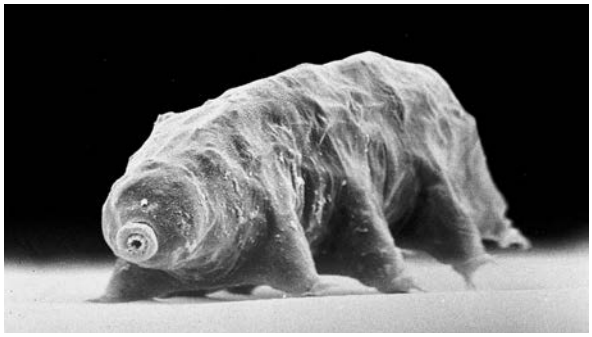
The Anne Sleep Award

This was established by Mrs Ivy Sleep in fulfilment of the wishes of her daughter, Dr Anne Sleep FLS. Awards of up to £3,000 are made at two-year intervals, to assist one or more scholars in carrying out biological research in the Middle or Far East, or similarly for scholars from the Middle or Far East to pursue their own biological research in the UK. Two Anne Sleep awards were made in 2015:

- Dr Ryoko Matsumoto, from the Kanagawa Prefectural Museum of Natural History, for her project entitled *The first record of the enigmatic amphibian group Albanerpetontidae from the Early Cretaceous of Japan*, a comparative study on Japanese & European fossil amphibians which she is carrying out in collaboration with University College, London (UCL), under the direction of Professor Susan Evans. The results of this study will form the basis for a re-evaluation of the group's biogeographic history and a test of the America to Asia hypothesis.

- Dr Joe Monks for his fieldwork project entitled *The Fig Wasp ecology of the mountains of Oman*, which he is carrying out in collaboration with the Oman Botanic Gardens to investigate tri-trophic interactions between *Ficus* spp., fig wasps and their parasitoids in relation to altitudinal gradients in Oman. While the effects of altitude on community ecology have been recorded in tropical regions, research in arid/desert environments is limited and there are barely any data on pollination services in Oman. The implications are that rising temperatures (due to climate change) will see levels of parasitoids increasing at higher altitudes, threatening a pollinator community that is not adapted to cope with such high levels of parasitism.





Appleyard Fund: Tardigrade study in the Antarctic Peninsula
TOP Antarctic landscape © Chris Gilbert (BAS)
ABOVE Tardigrade © Sandra McInnes (BAS)

The Appleyard Fund

The Appleyard Fund was established in 1968 from the estate of Percy Appleyard FLS. Up to £2,000 is available from which grants are made towards the expenses of research projects in the field of botany or zoology.

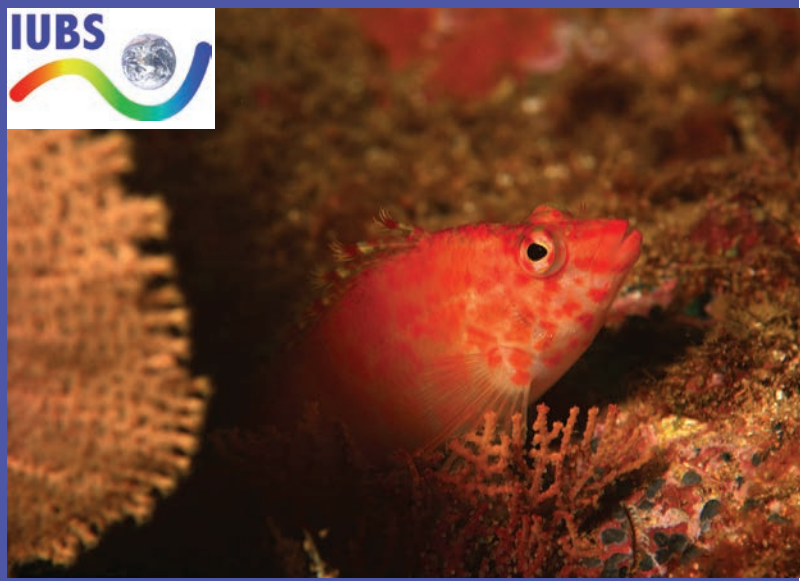
A grant was awarded in 2015 to Dr Sandra McInnes, for her project entitled *Antarctic Tardigrades: vicariant survivors or recent invasion?*, which will attempt to answer questions often asked of the Antarctic flora and fauna such as 'where did it come from', 'how long has it been *in situ*' and, 'will it survive the current warming that is very evident in the Antarctic Peninsula region'. Dr McInnes is carrying out this project in collaboration with the British Antarctic Survey, combining classical taxonomy with molecular data to identify 150 individual specimens (50 *Acutuncus antarcticus* and 100 *Macrobiotus furciger*) from a range of sites along the Antarctic Peninsula. With the data for both species from these different sites, it may be possible to discern modern shifts in colonisation and whether the current warming of this region is reflected in the colonisation patterns.

All of these initiatives help the Society to sustain ground-breaking projects. If you would like to discuss ways to support the work of young researchers, or to consider leaving a legacy, please do get in touch.

Dr Elizabeth Rollinson, Executive Secretary
elizabeth@linnean.org

The Linnean Society & the International Union of Biological Sciences (IUBS)

The Linnean Society has recently become a Scientific Member of the International Union of Biological Sciences (IUBS). IUBS, working alongside organisations like the Royal Society of Biology in the UK, and UNESCO on a global scale, aims to promote the study of biological sciences and to initiate, facilitate and coordinate research and other scientific activities necessitating international, interdisciplinary cooperation. Established in 1919, the IUBS began, in its own words, "as the major organisation representing unified biology globally". Since 2013, it has been the coordinating organisation within the biological sciences cluster (of 12 other international unions) of the International Council for Science (ICSU). As a Scientific Member, the Society will be part of a scientific conglomerate that "can provide opportunities for high-level international synergy and collaboration", from the dissemination of the results of cooperative research to nominating experts for international advisory boards and committees.
To find out more about IUBS visit ***http://www.iubs.org***



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The Lord Treasurer of Botany
Sir James Edward Smith

The Linnean Society of London is proud to announce the upcoming publication of *The Lord Treasurer of Botany: Sir James Edward Smith and the Linnaean Collections*—the first definitive biography on the Society's founder, Sir James Edward Smith (1759–1828). Follow Smith from his beginnings as a textile merchant's son in 18th-century Norwich, to his becoming a focal point for the study of botany and natural history in not only Great Britain but Europe as well.
Using Smith's letters, books, manuscripts and personal diary, Archivist Tom Kennett gives us an honest portrayal of Smith, from his unrealised medical career, to his brushes with royalty, to his close allegiances and rivalries with other naturalists. Rich in detail, we are offered an insight into the inner workings of a man who, with the fame brought to him by the purchase of the Linnaean collections, helped to change the way the study of natural history was perceived by the public, particularly women.
The Lord Treasurer of Botany is set to become the definitive work on this major, under-appreciated player in the field of natural history. Fellows are invited to a special launch at the Anniversary Meeting on 24 May, where they can meet the author. Otherwise, join us on 7 June at the public launch, where Tom will reprise his Smith lecture and sign copies of the book. Priced at £25.00, a 20% discount will be available for a limited time to celebrate the life and science of the Society's founder. To pre-order your copy, please email *info@linnean.org* or contact our office.

Join us at the Arnold Arboretum
Harvard University (6–8 May)

Don't forget that from 6–8 May the Linnean Society will be holding its first US-based meeting at the Arnold Arboretum, Harvard University, Boston. Over three days there will be a range of fascinating lectures given by a mix of speakers from the US and the UK. There will also be the chance to join guided tours of the museums and the Arboretum itself, plus the opportunity for US Fellows to be officially admitted to the Society on the evening of Saturday 7 May.
Lectures include:

- ***New Views on the Deep Origin of Modern Sharks and Jawed Vertebrates*** Prof Michael Coates (University of Chicago)
- ***Linnaeus, Anther Smut and the Germ Theory of Disease*** Prof Janis Antonovics (University of Virginia) and Prof Michael E. Hood (Amherst College, MA)
- ***The Herpetology of the Beagle*** Prof Aaron Bauer (Villanova University, PA)
- ***From Fieldwork to Neurobiology: A Botanical Journey*** Dr Dennis Stevenson (The New York Botanical Garden)
- ***Wallace and Biogeography*** Dr Sandra Knapp (Natural History Museum, London)

For more information on the speaker line-up, programme and tours, and to claim discounts when booking your conference accommodation, please visit **http://LinneanSociety.eventbrite.co.uk**
Be sure to book your place now—we look forward to seeing you there!

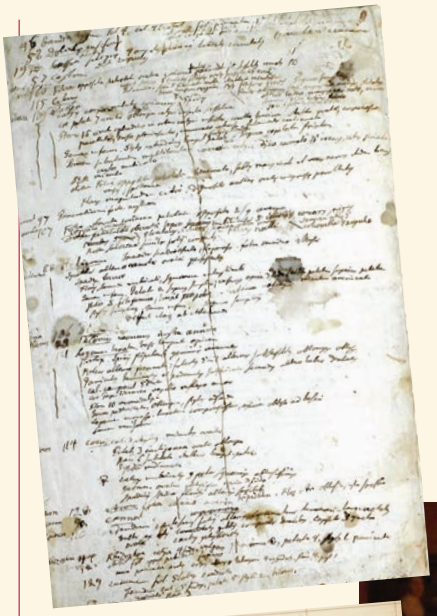
Opening Up Archives and Enabling Research

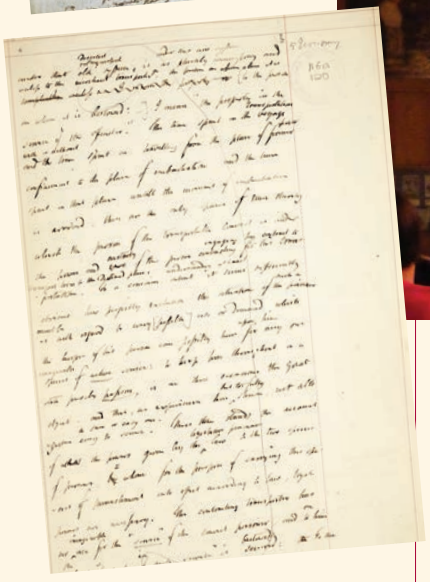
Handwritten Text Recognition as the Final Frontier

The Linnean Society of London is delighted to be part of a cutting-edge EU-funded project, running from January 2016 to June 2019. It will enable researchers world-wide to access and work with a huge number of complex archival documents. The READ (Recognition and Enrichment of Archival Documents) project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no. 674943. [1] The Society will play a supporting, but important, role in working toward a shared goal—to unlock complex handwritten material in archival collections, to automatically index digital images of text and to teach computers how to transcribe handwritten text. We are all familiar with Optical Character Recognition (OCR) technology for printed texts—wherein a page from a book can be scanned and the OCR software will produce the typed text automatically. The once static text is now fully searchable, key-words can be indexed or tagged and it can be edited.

Essentially, the READ project aims to achieve similar results for handwritten texts through Handwritten Text Recognition (HTR). Anyone familiar with archival material will recognise the hurdles: the complexity of a dizzying array of individual handwriting styles, eclectic abbreviations, special characters and foreign languages. Is it possible for a machine to 'learn' a task that requires years of specialist training? The truth is that this has become a real possibility. At the READ project conference and kick-off meeting in Marburg (Germany) in January, initial scepticism soon turned into amazement. A digital image of a scanned page of handwritten text was enhanced by applying an automatic stain remover, colour binarisation (conversion from colour or greyscale), skew and warp correction, baseline detection, slant correction and size normalisation. The page layout can then be examined in more detail, and text blocks, lines and words are determined.

The software analyses the pixel values of a single character, e.g. the letter 'a', in a word. The researcher will be presented with a hit-list of likely matches for the word he or she is looking for, and is now able to tell the machine which hits are correct, and which are not. The computer will remember this, and fine-tune its performance accordingly. A complex neural network supports this process—it can contain over 10^6 trainable parameters.





LEFT **Linnaean manuscript to be used to test the READ project software**
© The Linnean Society of London

ABOVE **READ project conference in January 2016, Marburg, Germany**
© Elaine Charwat

LEFT **Manuscript on convict transportation used in the Transcribe Bentham project, UCL**
Courtesy of the *Transcribe Bentham* project, UCL

The Society itself holds a great number of very complex archival items. This material, often written in complicated styles of handwriting and in languages like Latin or Swedish, sadly remains out of reach for all but the most intrepid researchers. Likewise, much of the handwritten information relating to specimens in the Society's collections (plants, insects, etc.) is waiting to be transcribed and added to the digital image. Therefore, as a READ Project Partner with a 'Memorandum of Understanding', we are providing some of this very complex material as digital images, along with the expertise of staff, Fellows and researchers, to help refine the HTR software. As part of the project, the Society is partnered with the Bentham Project at University College London (UCL). Its *Transcribe Bentham* initiative has brilliantly demonstrated how the general public can be drawn into the world of archives, learn invaluable skills and contribute to a scholarly edition. [2] Accordingly, part of the READ project will also involve similar crowdsourcing initiatives and developing training Apps for old scripts.

The READ project also brings together elements and institutions from two established EU projects: co:op [3] (which focusses on archives and user communities, outreach and education) and tranScriptorium. [4] One of the objectives of tranScriptorium was to introduce HTR technology to users such as researchers, who will benefit from using an HTR tool when transcribing documents.

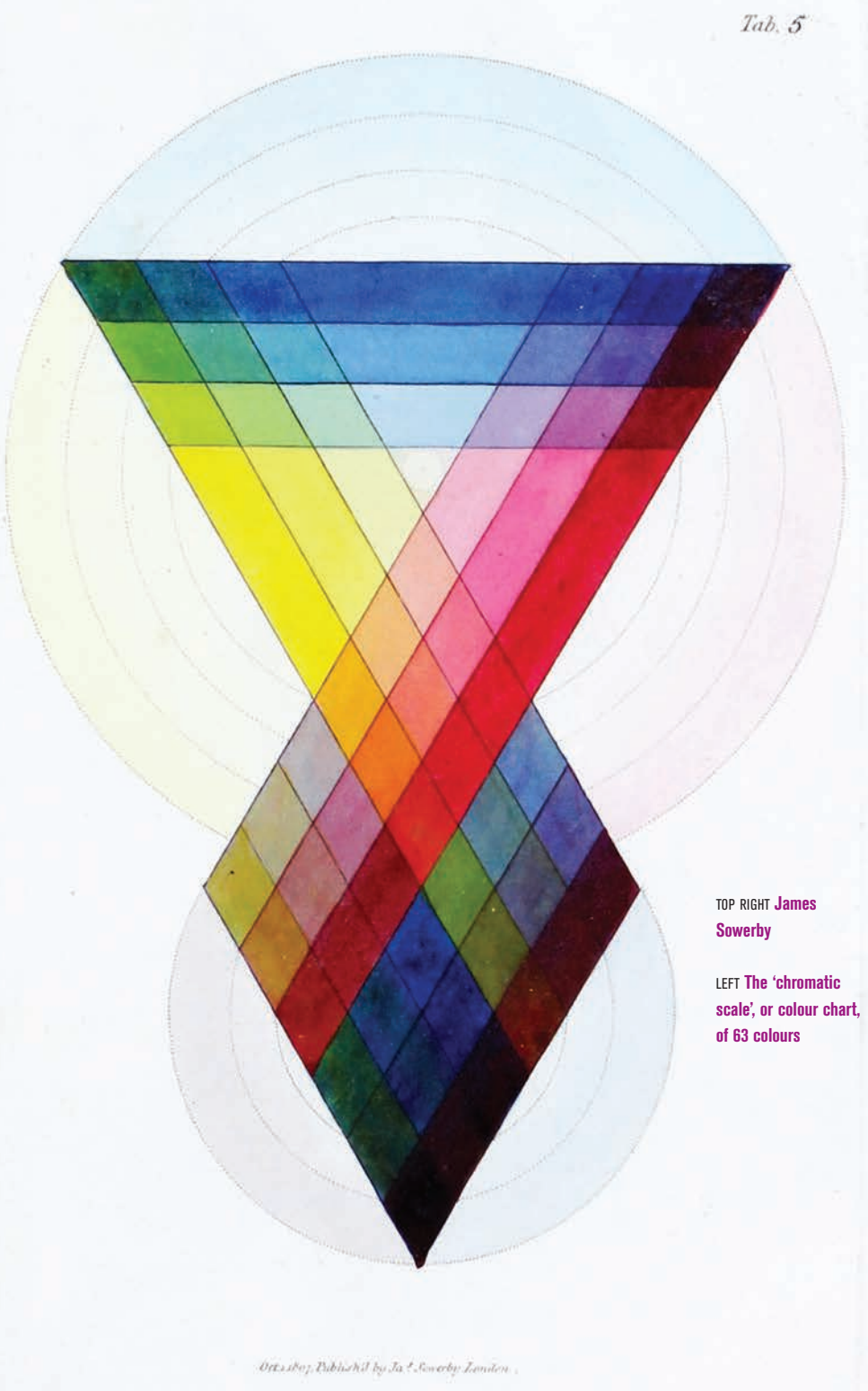
The ultimate goal of the READ project is to invite a plethora of experts and interested amateurs to be part of a technological (r)evolution, and to finally make available for research and outreach hugely important documents that have previously been left more or less untouched. Currently, HTR works best for collections where documents have a consistent layout and are written in the same hand, but part of the READ project will also be competitions to use new HTR technologies to tackle very complex documents. The final frontier of handwritten text recognition is already closer than we think. The Society, as part of the READ project, aims to harness the power of artificial intelligence for the benefit of all.

Elaine Charwat, Deputy Librarian
elainec@linnean.org

[1] https://ec.europa.eu/programmes/horizon2020/en/what-horizon-2020
[2] http://blogs.ucl.ac.uk/transcribe-bentham/
[3] http://coop-project.eu/
[4] http://transcriptorium.eu/

COLOUR IN TAXONOMY

A challenge for James Sowerby in the early 19th century



TOP RIGHT **James Sowerby**

LEFT **The 'chromatic scale', or colour chart, of 63 colours**

Colour is a prime factor in the description of plants, of many animals and even of minerals. This was especially the case during the 18th and early 19th centuries when there was a remarkable burgeoning of interest in, and publications about, the natural history of Europe and beyond. In Britain, the botanical works of authors such as William Curtis, Richard Salisbury, James Edward Smith, Dawson Turner and Robert Thornton often emphasised the illustrations, some even saying that an accurate coloured illustration could supplant a taxonomic description. These publications, increasingly written in English rather than Latin, gained a wide popularity through their accessible style and attractiveness.

In my research into the life of the artist and scientist James Sowerby (1757–1822), I was struck by the attention he gave to the colouring of his illustrations. His early training was as an artist, particularly of portraits, but he moved into the world of botany through the influence of people such as William Curtis who employed him (and others) for the illustrations in the renowned *Flora Londinensis* and the popular *Botanical Magazine*. Later, Sowerby entered into a productive partnership with James Edward Smith in publishing Smith's early works including his *Coloured plates of rare plants*, which even by its title emphasises the artist's work. They jointly produced the famous *English Botany* (1790–1814) of some 36 volumes with 2,592 illustrations—all coloured.

Sowerby strove for accuracy in the drawing and colouring of his illustrations, both for his own and other authors' publications, whether on plants and fungi or on minerals, fossils and animals. He wanted to standardise colour so that the particulars of, say, a flower could be given and communicated to his employed colourists or to naturalists, even though the tint on a hand-coloured plate might fade or change with time. But how to 'define' or measure a specific colour when satisfactory colour printing was not available?

Sowerby's colour system was an intriguing attempt to deal with this question and

was of interest to many naturalists. His innovative idea was simple in principle but tricky in practice. It was based on the colours of the spectrum occurring at the boundaries of a black band on a strongly contrasting white background when observed through an optical prism. The nature and intensities of the colours depend on the width of the band. He devised a 'chromatometer' consisting of different black bands, or wedges, on a white background, which is fixed to a wall with light shining on it. The observer stands a few feet away and looks at the chromatometer through a long edge of a standard triangular prism. The spectral colours on each band can then be observed. Reds and yellows generally occur above a band, purple within it and greens and blues below. A specific colour can then be 'defined' by its position on a particular band provided all other variables (such as the refractive index of the prism) are fixed. The reader can gain much amusement and interest by trying it for themselves! Sowerby developed this idea from his earlier observations on the interference colours occurring in the thin laminae or cleavages of minerals.

Sowerby argued that there are only three primary colours—yellow, red and blue. Two of these can be mixed to produce the 'binaries' such as orange, green and purple, while three primaries can be used to produce the 'ternaries'. Realising that

ABOVE **The 'Common fritillary' (Snake's head fritillary, *Fritillaria meleagris*) from *English Botany* (1790–1814)**

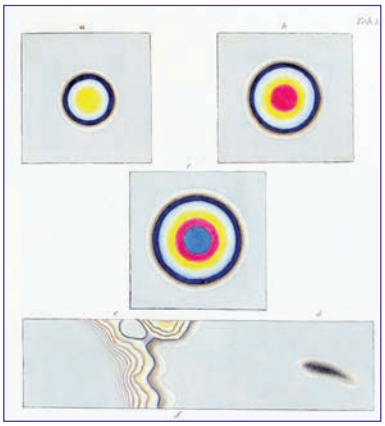
RIGHT **Sowerby's observations on the interference colours in the thin laminae of minerals**

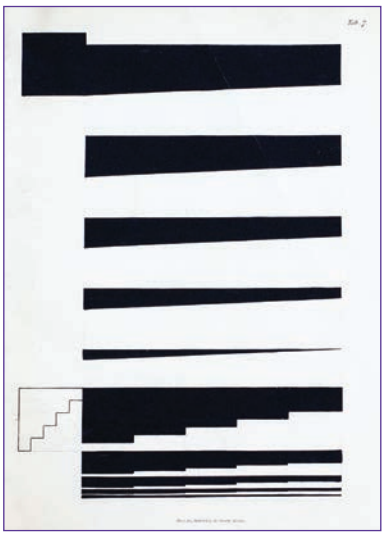
BELOW RIGHT **Chromatometer from Sowerby's *A new elucidation of colours…* (1809)**

the use of a chromatometer with a prism was not easy, Sowerby drew up his list, and a colour chart or 'chromatic scale' as he called it, of 63 colours.

The colour chart arouses much interest, as it did after my talk on James Sowerby at the Linnean Society last November. It is also a beautiful design—even sold by the Royal Society as one of its 'Art Prints'. The top large triangle contains 36 colours—nine primaries (each primary is given three intensities, or 'fullness' as Sowerby called it), e.g. light yellow, middle yellow and full yellow, each in its own triangle, and 27 binaries (three sets, each in its lozenge). The three lowermost lozenges contain 27 ternaries. The two circles generalise the changing intensity of the colours in passing outwards from their centres—changes which could be observed with the chromatometer. It is interesting to note the changes resulting from the relatively simple mixing of the primaries.

Sowerby was anxious to make his colour system usable. He saw that his innovative plan for spectral colours produced at the boundaries of contrasting black and white bands needed further development to make it of practical use for other artists and natural historians but he had no proposals on how that could be done. He turned instead to providing really valuable





information on the use of suitable pigments that were available at the time. In this he had considerable experience not only through his publications but also by his experimentation. For the three primaries he considered gamboge (yellow), carmine (red) and Prussian blue to be the best. For the binaries he gave helpful indications such as in the use of Prussian blue for which he wrote: *"… may be used in water or oil; it is the most perfect blue we know, but has a purplish tinge in some instances. It is extremely useful in forming greens with gamboge, and purples with reds, and ternaries or browns with both."* Potential problems were also noted such as for vermilion which *"…used in oil or water, is liable to change on exposure to air"* but this can be prevented by treatment with a varnish.

All of these ideas and information were in his rather grandly produced quarto-sized book of 1809: *A new elucidation of colours, original prismatic and material; showing their concordance in three primitives, yellow, red and blue*, which was dedicated to *'The memory of the Great Sir Isaac Newton'*. Natural historians took note. For example, the Reverend William Kirby, entomologist and author of an important work on bees, questioned Sowerby about the possible absence of certain colours. He had earlier suggested that specific parts of species of insects could be used as colour references. Despite Sowerby's efforts, even including demonstrations about colour at this home, the prismatic scheme for standardising colours did not catch on, mainly because of its impracticability.

Others had attempted to meet the challenge about colour. For example, the entomologist Moses Harris published his *Natural system of colours* in 1766, also based on the three primaries of red, blue and yellow. He gave a graduated colour plate as a circle but his work seems to have been poorly circulated and was rarely referenced. As with many of these publications the coloured plates have degraded over time.

My own study of the work of James Sowerby reveals a fascinating and full life of dedication and purpose, together with the social challenges he had to face. His output was truly amazing, often beautiful, and with a long-lasting legacy. Colour was just one of the concerns encompassed within his passionate desire to communicate the scientific truth about the natural world.

Prof Paul Henderson, University College London
Author of *James Sowerby: the Enlightenment's natural historian*. Published by Kew Publishing in association with the Natural History Museum, 2015

This year we celebrate the bicentenary of diplomatic links between Britain and Nepal, a relationship that predates Nepal's ties with any other country by 150 years. Yet scientific links date back even further, to at least 1802, when British East India Company surgeon-naturalist Francis Buchanan-Hamilton (1762–1829), made the first natural history collections in Nepal. Nathaniel Wallich (1786–1854), Joseph Hooker (1817–1911), and zoologist Brian Houghton Hodgson (1801–1894) followed, but there were others whose roles have largely been forgotten—including many local collaborators. The collections, drawings and observations recorded by these pioneering naturalists set the foundation for systematic research in Nepal.

19TH-CENTURY PIONEERS OF NEPALESE

ABOVE **Danish botanist Nathaniel Wallich**

ABOVE RIGHT **Jill Smythies award-winner Claire Banks studies the Francis Buchanan-Hamilton illustrations, "in much the same state" as when they were first presented to the Society**

All images © The Linnean Society of London except the Green cochoa © Zoological Society of London

British Exploration of Nepal

Until the end of the 18th century, Nepal was *terra incognita* to Europeans. The Nepalese Durbar (Royal Court) jealously protected its lands, forbidding all but a few Capuchin monks to cross the hills and live in the Kathmandu valley. The Durbar was quite rightly wary of the expansionist activities of the British East India Company; the Company wanted access to the lucrative trade between the Indian plains and the Tibetan plateau, which passed through Kathmandu. After much persistence by Company officials, the Durbar reluctantly signed a trade agreement in 1792, paving the way for the first British mission the following year. William Kirkpatrick (1754-1812) led a handful of British officials who spent seven weeks in Nepal and visited Kathmandu. Kirkpatrick published the first European account of Nepal, *Account of the Kingdom of Nepaul* (1811), which included descriptions of the forests they passed through and illustrations of two animals. Edinburgh-trained surgeon-naturalist Adam Freer (1747–1811) accompanied Kirkpatrick and is responsible for these comments on natural history, but no specimens or manuscripts have been found.

British understanding of Nepal took a leap forward after a one-year mission in the Kathmandu Valley (1802–03) led by British Resident William Knox (1762/3–1829). Joining Knox was Buchanan-Hamilton and Charles Crawford, Commander of the Escort. Buchanan-Hamilton published a second *Account of the Kingdom of Nepal* (1819), and Charles Crawford produced three hand-drawn maps of Nepal, one of which is an impressively detailed and accurate topographic map of the Kathmandu Valley. The Company's set of these maps survives in the British Library, and the Linnean Society recently purchased the only other known set, which was made for Buchanan-Hamilton by order of the Governor-General, Arthur Wellesley (1769–1852).

The Beginnings of Nepalese Botany

Buchanan-Hamilton was a field naturalist who had to rely on others to refine and publish the 1,200 species he recorded, which included 800 he thought were new. In 1806 Buchanan-Hamilton gave the top set of his herbarium, all the drawings painted by his Bengali artist, and all his manuscripts (including an unfinished *Flora Nepalensis*) to James Edward Smith (1759–1828). But Smith did little with them, publishing less than 50 of the new species, and reproducing just 12 of the drawings. The material is in the Society's archives in much the same state as when Buchanan-Hamilton presented it. Fortunately Buchanan-Hamilton gave an incomplete set of herbarium specimens to Aylmer Bourke Lambert (1761–1842) and Lambert's librarian, David Don (1799–1841), used them as the basis of 428 new names in his *Prodromus Florae Nepalensis* (1825).

The Treaty of Sugauli brought to an end the Anglo-Nepal War in March 1816, and heralded the start of a diplomatic relationship between the two countries. Edward Gardner (1784–1861) became the first permanent British Resident (or Ambassador). Danish botanist Nathaniel Wallich, based in Calcutta (Kolkata), was keen to use this opportunity to explore the plants of Nepal, and find species to grow in the Calcutta Botanical Garden or gardens in Britain, particularly those of medicinal or other commercial value. Wallich sent two of his best collectors: the Bengali Bharat Singh and Francis De Silva, a man of Indo-Portuguese origin, who were supervised by Gardner. Large numbers of seeds, living material and herbarium specimens were sent to Wallich, who in turn sent them on to Lambert in London. Lambert's set was included by Don in his *Prodromus*, and duplicate specimens given to Smith and Alphonse Pyramus De Candolle (1778–1841) in Geneva. Don gives Wallich the credit for this material in *Prodromus* (279 species are based on 'Wallich' specimens) and so the role of Gardner and his team has been forgotten.

Gardner persuaded the Nepalese Durbar to allow Wallich into Nepal, and he spent a year in the Kathmandu Valley between 1820–21. This was highly productive as Wallich sent back to Calcutta 220 large baskets of living plants, two boxes of seeds, 20 'extremely large chests of specimens', 34 chests of wood

samples and 10 chests of flowers and fruits preserved in spirits, as well as the numerous plant drawings made by his Bengali artist and his voluminous manuscript notes. The herbarium specimens were later incorporated into the 'Great Wallichian Distribution' of the East India Company Herbarium (1828–47). The top set was given to the Linnean Society but is now kept at Royal Botanic Gardens, Kew, and duplicates can be found in more than 100 herbaria worldwide. Wallich used his drawings to produce *Tentamen Floræ Nepalensis Illustratæ* (1824–26), the first botanical book printed in India with lithographed illustrations, and the magnificent three-volume *Plantæ Asiaticæ Rariores* (1830–32).

Nepalese Zoology: Brian Houghton Hodgson

Brian Houghton Hodgson spent more than 20 years in Nepal between 1820 and 1843, first as Assistant Resident and then Resident. Whilst in Nepal, Hodgson taught himself zoology. Following Wallich's example, Hodgson organised a team of Nepalese trappers, specimen preparers and painters who helped him discover at total of 39 species of mammals and 124 species of birds. Hodgson sent the stuffed birds and cured skins to the British Museum (now Natural History Museum, London—NHM), and presented his six manuscript volumes of bird drawings and two of mammals to the Zoological Society of London. Other Hodgson material can be found at the Royal Asiatic Society and the British Library. Like Buchanan-Hamilton, Hodgson became frustrated with the scientific elite in Britain, complaining that he was dependent on 'closet naturalists working in comfortable museums' to realise the full impact of his discoveries. Although he published many papers these were mostly in Indian journals and it was only in his twilight years that he received the scientific recognition he deserved.

BELOW **Specimen of *Pinus longifolia* collected by Wallich in Nepal, now in the Society's collections**

BENEATH **Brian Houghton Hodgson's illustration of the Green cochoa (*Cochoa viridis*), now held in the collections of the Zoological Society of London**
© Zoological Society of London

By the late 1840s, Hodgson was retired and living as a recluse in Darjeeling. In 1848 he invited Joseph Hooker to stay in his house, offering him free lodging, the use of his extensive library and mentored the young, impoverished botanist during

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his Himalayan journeys. Without Hodgson's support and connections, Hooker would not have been able to stay for so long, visit restricted areas, enlist the help of local people, or make such an extensive study of the east Himalayan flora. In contrast to Buchanan-Hamilton, as a professional botanist working at Kew Hooker was able to make the most of his materials, publishing the beautifully illustrated *Rhododendrons of the Sikkim-Himalaya* (1849-1851) and *Illustrations of Himalayan plants* (1855), as well as his *Himalayan Journals* (1854), *Flora Indica* (1855) and the *Flora of British India* (1875–97).

The collections of these pioneering naturalists are still relevant today as they are the vouchers (nomenclatural types) for many hundreds of scientific names of Asian species. When researching for the *Flora of Nepal* (www.floraofnepal.org) taxonomists have to consult them to understand the application of these names. Once the preserve of those able to visit London, digitisation is now enabling remote access via the internet: scans of the Smith herbarium, Wallich Herbarium and types at the RBG Kew and NHM all freely available online.

The Buchanan-Hamilton archives at the Society are now being studied for the first time in nearly 200 years, and scans of the coloured illustrations are also available online via the Society's website. Claire Banks (2015 recipient of the Jill Smythies award) has started researching the drawing and painting techniques used at the time, including the methods used to make the copies now held at the British Library and NHM.

Dr Mark F. Watson FLS, Royal Botanic Garden Edinburgh
m.watson@rbge.org.uk

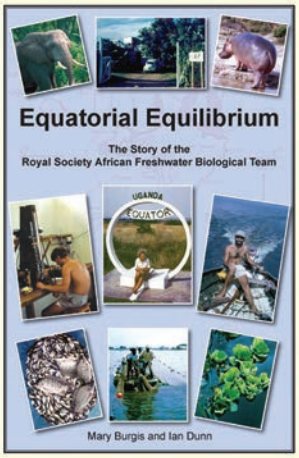
Don't miss the ZSL library's stunning display of original illustrations of Nepalese and Northern Indian wildlife, running until June 2016. http://www.zsl.org/blogs/zsl-london-zoo/discover-the-fascinating-wildlife-of-nepal-and-northern-india

BOOK REVIEW

Equatorial Equilibrium:
The Story of the Royal Society African Freshwater Biological Team

By Mary Burgis and Ian Dunn, 2015. pp 164, MPM Publishing, Ascot

It is rare that you get the chance to read about the real background to a scientific project. This readable and highly pictorial book tells of life and work during the UK International Biological Programme's freshwater project in Uganda between 1965–72. It is an account that starts the reader at the planning stage, and takes them through the building of the lakeside accommodation and work space (a daunting start!) before the actual study of Lake George, a shallow and very productive lake in Queen Elizabeth National Park. There are different accounts from the varied perspectives of the team and their many visitors, which contribute to the overall picture of life and science in this part of the African Rift Valley, bounded by the Ruwenzori Mountains.



It was very fortunate that the project was towards its completion by the time Idi Amin dropped in to visit and then precipitated a final departure! While the success of the project is highlighted by the list of scientific publications, later work elsewhere indicated a sort of ripple effect, as well as the ongoing connections and the support of some of the local team members.

For me, reading this was to go back in time, recalling all of these freshwater scientists and those who encouraged them in this incredible scientific adventure. It seemed to be the 'unbelievable Golden Age' of scientific study before 'administration, accountabilty and competition' took such a slice of available science funding.

It is a book to read, not just dip into, and a good one for those beginning their own adventures in science.

Elizabeth Y. Haworth, Freshwater Biological Association

Linnean Society Website Update

The Society's website has been going through some changes. Due to unforeseen circumstances, the Society had to change website providers at short notice at the start of the year, and we have been working hard to rebuild and rejuvenate our site with a new company. As such, the main site is now up and running, and the Society shop and Fellows' area will follow soon after. **www.linnean.org**

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

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

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

Growing the Grass Classification

Celebration of Derek Clayton's 90th Birthday and Discussion about the Future of GrassBase

SPECIALIST GROUP DAY MEETING 18–19 July 2016

The grass family is one of the largest families of flowering plants with around 12,000 species. Derek Clayton has been building a classification system for the grass family during his 56 years at Royal Botanic Gardens, Kew (RGB Kew), writing *Genera Graminum* and inventing the world's first electronic Flora and e-taxonomic system, GrassBase. Can GrassBase contribute to modern analyses and will it have use for future generations? What are the possible connections between the study of grass diversity and other scientific disciplines?

This meeting will bring together the global community of grass taxonomists. Registration is essential; for more details or to register visit www.linnean.org

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FORTHCOMING EVENTS 2016

21 April Partner Event 18.00–19.00	**Science Policy Lecture 2016** Speaker: ***Professor Kevin J Gaston,*** *Director of the Environment and Sustainability Institute* Organised jointly with the Systematics Association No registration required
6–8 May Special Event	**Linnean Society Meeting at the Arnold Arboretum** Taking place at **Harvard University, Boston, US** Registration essential: http://LinneanSociety.eventbrite.co.uk
24 May Special Event 16.00	**Anniversary Meeting 2016** Includes Fellows' launch of *The Lord Treasurer of Botany.* **This event is for Fellows only; registration for dinner is essential:** http://www.linnean.org/meetings-and-events/events
1 June Lunchtime Lecture 12.30–13.00	**Dinosaurs at Crystal Palace Park** Speaker: ***Prof Joe Cain, UCL*** No registration required
7 June Book Launch 18.00-19.00	**The Lord Treasurer of Botany: Sir James Edward Smith and the Linnaean Collections** Speaker: ***Tom Kennett***
16 June Evening Meeting 18.00–19.00	**When Antarctica was Green: Fossil plants reveal Antartica's climate history** Speaker: ***Prof Jane Francis, British Antarctic Survey*** No registration required

Please check our website for other events not listed here