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PULSE

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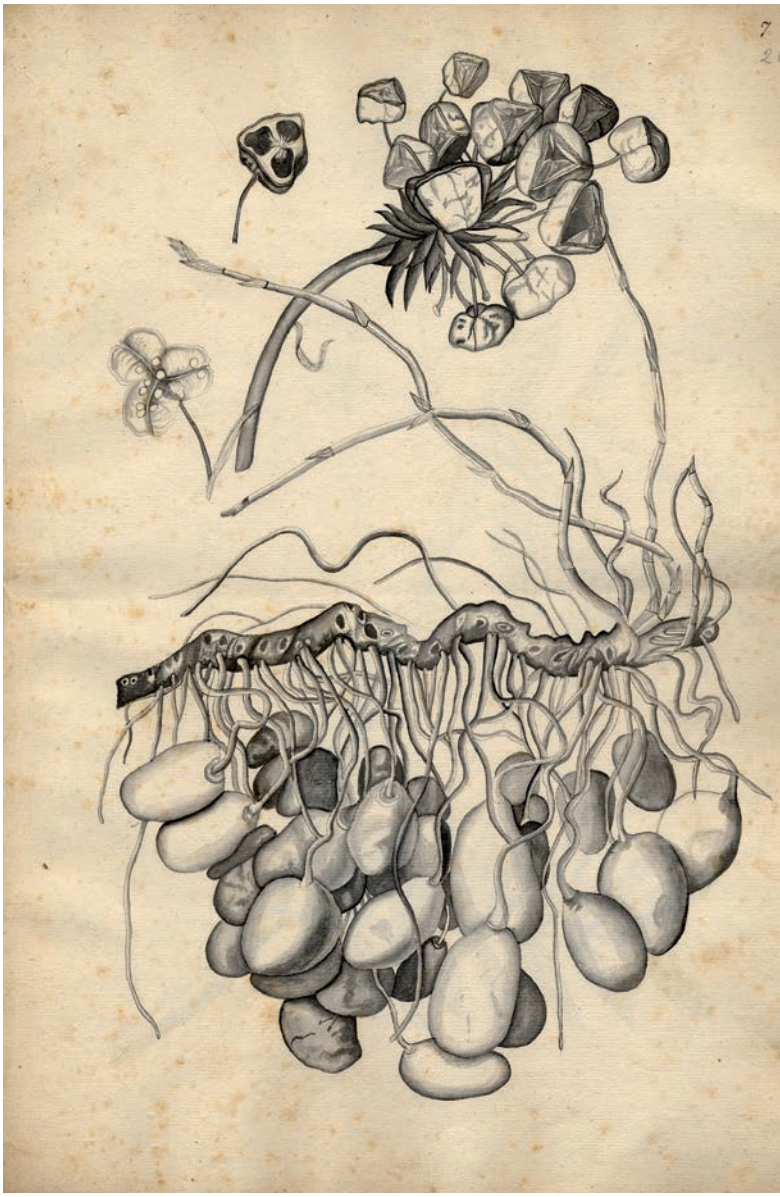
News from the Linnean Society of London – A living forum for biology

Mutis plant drawings at the Linnean Society

Among the rich archives held at the Linnean Society is a fascinating set of drawings of South American plants dating from the 18th century, commissioned in the Spanish colony then known as Nueva Granada, now in Colombia, by the Spanish botanist José Celestino Mutis (1732–1808). Mutis published little but was held in very high esteem as a meticulous observer of natural history by his peers, among them Alexander von Humboldt and Carl Linnaeus. Mutis's correspondence with Linnaeus, between 1761 and 1778, introduced the Swedish biologist to a large number of new South American plants and, through descriptions, herbarium specimens and drawings, provided a rich source of new information. As a result, Linnaeus described five new genera and several new species that he attributed to Mutis in the *Mantissa Plantarum Altera* (1771). Linnaeus's son took up the correspondence after Linnaeus's death, and published many new names based on the materials that Mutis sent, including *Mutisia*, the remarkable climbing daisy that Linnaeus had promised to name in his honour. After his death in 1808, Mutis's main collection of maps, correspondence, dried plants and drawings were sent to Spain where they remain today at the Real Jardín Botánico in Madrid.

The 32 drawings that Mutis sent to Linnaeus are now housed at the Linnean Society. They are in ink and wash, and are of interest scientifically, as well as artistically and historically, because many were cited by Linnaeus's son in describing new species. James Edward Smith, too, after his acquisition of the Linnaean collections, described several new species based on these drawings, as well as using some as the basis for engravings prepared by James Sowerby for an edition of botanical illustrations.

A study by the present authors (supported by an award from SYNTHESYS) of Mutis collections in London and Madrid, and their contribution to Linnaeus's knowledge, is shedding new light on the London drawings. Comparison with one particular set of Madrid drawings (misplaced within the Expedición Malaspina archive until recently recognised by Javier Fuertes as from Mutis) shows that some of the London drawings are evidently by the same artist, some of them being faithful copies. Of the 32 drawings in London, 18 are unique, while 14 are represented by copies in Madrid. Mutis's later commissions, typically larger, hand-coloured plates, sometimes used these early drawings as the starting point for their design. The discovery of this relationship between these sets of drawings illuminates their history, and we are continuing to explore this, along with their significance as the basis for the names of new species of plants published by Linnaeus and his son.



A drawing of *Bomarea multiflora* (L.f.) Mirb., communicated by Mutis, at the Linnean Society

A number of these magnificent coloured drawings, on loan from Madrid, will be on display as part of an exhibition "Old and New South American Botanical Art" at the Sherwood Gallery at Kew Gardens later in 2010.

Charlie Jarvis HFLS & Pilar de San Pío Aladrén FLS
Natural History Museum, London & Real Jardín Botánico, Madrid

Message from the Executive Secretary

Welcome to the first issue of PuLSe for 2010—the International Year of Biodiversity. We look forward to welcoming you to the day and evening meetings that are being held at the Society to mark this special year. Many and varied events will take place across the globe throughout 2010, communicating the importance of biodiversity issues to the widest possible audience.

Accurate communication of scientific issues is vital; in the article on pp. 4–5, George McGavin explains why he is passionate about communicating science through the media—and how the projects he has been involved with have also had an impact on local communities. Anthony Smith, the sculptor who produced the wonderful sculpture of Young Linnaeus for the Tercentenary in 2007, is currently writing regular installments for his travelog whilst retracing the Beagle voyage as "Artist in Residence"—he writes about his journey on p. 3. Some items from our collections are also on their travels and on display as part of other exhibitions (see p. 7).

This issue also features articles from Fellows telling us about their current research; following the publication of Order out of Chaos, Charlie Jarvis is exploring the work of José Celestino Mútis (p. 1) and Aljos Farjon continues his research on conifers with a new publication to be launched later this year (p. 8). I would like to encourage you to consider contributing an article about your own research or area of natural history interest for a future issue of PuLSe; please submit articles to pulseeditor@linnean.org.

Ruth Temple

© Leonie Berwick

President's Greeting

A belated happy New Year to all of you and welcome to the first 2010 edition of PuLSe. I hope you find the contents of interest, and indeed the programme of lectures published therein. Our Society belongs to the *International Year of Biodiversity—UK partnership* and some of our forthcoming meetings will emphasise the vital importance of this topic. Furthermore, the Society is a founder member of the Chagos Environment Network, and will be supporting the Declaration of a 'no-take' marine reserve in the Chagos Archipelago, an area of outstanding importance for biodiversity conservation.

The Strategic Plan for the future directs us in a positive manner, and I am most grateful to Fellows who have responded to the questionnaire to help the Society fulfil some of its aims. It is important that we look at increasing the size of the Fellowship and I appeal to you all to encourage friends, colleagues and acquaintances who have a real interest in natural history to consider membership.

© Victoria Smith

The generosity of the Wolfson Foundation and the Garfield Weston Trust will enable the refurbishment of the Tower rooms in Burlington House to be completed this year, providing much needed accommodation and facilities. Every effort will be made to raise additional funds, in the region of £500, 000, to purchase and install a lift to make those facilities readily accessible to all. A Development Fund will be set up, and the importance of legacies will be emphasised in raising funds over the long term.

Many recent lectures have been full to capacity and we hope to further this success throughout 2010. We will be experimenting this year in making some lectures available over the internet.

In response to requests from some Fellows a mycology specialist group will be created to facilitate discussion and evaluation of this area of natural history.

I look forward to meeting as many Fellows as possible at planned events in Piccadilly, elsewhere in the UK and overseas throughout the coming year.

Vaughan Southgate

Anniversary Meeting: Update

Please note that the Anniversary Meeting is to be held on 24 May 2010, not 20 May as previously published.

In Darwin's Wake – A Travelog

Anthony Smith read Zoology at Cambridge University before starting a career as an artist. He is a Fellow of the Linnean Society and is currently re-sailing the Voyage of the Beagle on the Clipper the Stad Amsterdam, for a Dutch documentary series (http://beagle.vpro.nl).

Whales

The crew of the Clipper Stad Amsterdam are very blasé about dolphins. Even when we have a dozen or so riding the bow-wave of the ship, and leaping spectacularly, they often only get a cursory glance from the deckhands—they've seen it many times before. But with whales it's different...

We had our first sighting of a whale just three days out of Plymouth, on our way to Tenerife, and we have had many other sightings in the four months since. But every time we see that tell-tale blow-spout, or fin slap, everyone stops what they're doing, and grabs their binoculars or camera. What species is it? Is it coming closer? Will it breach?! I find it thrilling every time.

Interestingly, Darwin wrote very little about whales during the course of his voyage. He must have had countless sightings during the 580 days he spent at sea on board the Beagle, but there are only four or five mentions in his diaries. Sadly, the most frequent use of the word 'whale' in both Darwin and Captain FitzRoy's accounts of their voyage is in the form 'whale-boat', 'whaler', or 'whale-oil'. Whaling was of course a huge industry in the 19th century, and HMS Beagle was frequently coming into contact with whaling ships in even the most remote parts of their voyage.

A sort of modern equivalent of whaling can be seen in the whale-watching tourism industry that has built up in locations that are blessed with frequent whale sightings. We were lucky enough to visit one of the great whale hot-spots of the world—Península Valdés in Argentinian Patagonia. This large Peninsula juts some 50 miles into the Atlantic and forms two large, protected bays to the North and the South. These bays have become the mating, carving and nursery grounds for Southern Right Whales. By joining a whale-watching boat, along with dozens of other tourists, we were able to get some spectacular views of these whales, just feet away.

Whilst it was a beautiful and fascinating experience to be so close to these animals, we also learned during our stay on the Peninsula that the future of these whales is not necessarily as certain as their present abundance might imply. Increasing numbers of young whales are being found washed-up on the beach and these casualties are often found to have extremely thin layers of blubber; suggesting that perhaps the young whales are not being sufficiently nourished by their mothers. There is also the rather disturbing news that a large colony of gulls have recently learnt to dive on the backs of whales resting at the surface and peck beak-fulls of blubber from their backs. Some whales have been known to die from infections caused by these wounds.

The Clipper Stad Amsterdam

All images © Anthony Smith

It is a tragic and ironic fact that this large and damaging colony of gulls is being supported primarily by the huge rubbish tip at the nearby town of Puerto Madryn—a town that has grown largely due to the whale-watching tourism industry.

Anthony Smith FLS

To the Ends of the Earth

Dr George McGavin in front of erupting volcano Tarvurvur, Papua New Guinea

Way back in 1984 when I got the job of Assistant Curator of Entomology at the Oxford University Museum of Natural History, I thought I had the best job in the world. Looking after priceless collections combined with teaching and research was everything I wanted and I loved every minute of it. I would be carried out of the magnificent neo-Gothic building in a body bag.

In addition to my university duties outreach and public engagement were becoming *de rigueur* and I was called on, from time to time, to give interviews for radio and television programmes. One day early in 2006 I had a telephone call from the BBC Natural History Unit in Bristol. Would I like to take part in an expedition to Borneo to be filmed for a general audience? These days we hear accusations of dumbing down but let's not make science boring. I have always believed that learning must be fun—education is nothing without entertainment. The role of any educator is to inspire and excite so I was more than happy to sign up for this amalgam of high-octane adventure and science. We assembled a team of biologists, climbers and field-hardened camera crew and set off to Imbak Canyon deep in the steamy interior of Sabah. The logistics involved in taking a large number of people and three tonnes of equipment into a rain forest for six weeks are considerable but there were specialists on the team whose job was just that. My job was to study and collect invertebrates and be prepared to say interesting things about them on camera. In fact the cameras recorded all aspects of the trip—giving the viewers a flavour of what actually being there might feel like. The series was a great success but not obviously to everyone's taste. Some didn't like the music; others complained that there was too much film of the presenters and not enough about the animals. But we feel we achieved our aim of making exciting natural history programmes that would attract and build new audiences.

Banks of Essequibo River, Guyana

In 2007 we chose to film in Guyana, a country the size of the UK but with a human population of less than a million. Because of the very low population pressure, the country's natural vegetation remains largely intact with somewhere in the region of 80% of the land area covered in dense forest. The biodiversity of Guyana is known to be very high with 8,000 species of plants (including 1,000 tree species) of which about half are endemic and more than 2,700 vertebrate species. Our primary job was to film and carry out a rapid biological assessment of the Upper Essequibo Conservation Concession, which is managed by Conservation International Guyana. After a stay at base camp, deep in the rain forest, the team broke into smaller groups to investigate and film animals on the vast savannas of South Rupununi, the region around Kaieteur Falls and the upper reaches of the Rewa River further to the west.

Guyana has one of the least explored rainforests on the planet but it is poised on the brink of changes that could have devastating effects on its rich flora and fauna. Logging and mineral extraction could wreak havoc in habitats that have survived undisturbed for many thousands of years. The resulting three part series, *Lost Land of the Jaguar* was shown in July and August 2007 and viewers were to share cameraman Gordon Buchanan's delight at capturing footage of the elusive jaguar, my unalloyed joy at finding a specimen of the biggest tarantula on Earth (*Theraphasa blondi*) and some thrilling film of caiman, anaconda, giant anteater and harpy eagle.


© BBC
Lost Land of the Volcano team in Fogamaiu village, Papua New Guinea

One night in December 2007, after the *Lost Land of the Jaguar* had been broadcast, I was heading home after work when I had a sort of 'road to Damascus' experience. I asked myself what my life was about and what I was doing. The answer came back almost immediately—education. My passion is natural history and sharing the excitement of understanding the natural world with as many people as possible. In an instant I realised that if I gave a tutorial in my office at the Museum I might have an audience of four but on television I could reach four million viewers. I wrote my letter of resignation that night and handed it in the very next morning. Most of my colleagues were supportive but some voiced their concerns. Was I sure I knew what I was doing? Would I regret jumping ship? After all, a full time post at Oxford University was worth hanging on to and the world of media could be fickle. Others were more forthright—'What are you playing at? You must be mad!'


© J Packard - BBC
Theraphasa blondi, Guyana

I left the museum on 12 February 2008 and later that year the NHU team set out to film another series, this time in Papua New Guinea. *The Lost Land of the Volcano*, as the series was titled, was filmed in and around Mount Bosavi, a huge extinct volcano in the Southern Highlands with an extra trip to an active volcanic vent, Tarvuvur, near Rabaul on East New Britain. There are good reasons to film tropical rainforests. They constitute the most biologically diverse habitat on this small planet and the most threatened. Today, these forests cover less than 6% of the total land surface area but contain anything from 60–80% of all the Earth's species. The discoveries made during this series were to eclipse the first two. In the course of the expedition our international team of scientists and filmmakers discovered around 40 new species, including at least 12 new species of frog, two new species of lizards, three new species of fish, one new species of bat and an undescribed, endemic subspecies of the Silky Cuscus. Another mammal and the largest new species of animal discovered during the trip, was a Woolly Giant-rat, found in the forest inside the crater of Mount Bosavi. This find alone was to generate a huge amount of press interest and focus attention on the urgent need for rainforest protection. In this, the International Year of Biodiversity, I hope that conservation organisations and the government of Papua New Guinea will work in partnership with local landowners to ensure that the forests of Mount Bosavi are incorporated into Papua New Guinea's protected area network as soon as possible.

So, besides bringing innovative and exciting natural history programmes with a clear conservation message to an audience of millions, what have we achieved? We have added to our understanding of the natural world and we have helped bring about change. Imbak Canyon, for instance, has now been given fully protected status. I would like to think that we had some input in a groundbreaking deal signed on the 9 November 2009 between Guyana and Norway. Together they have given the world a working example of how partnerships between developed and developing countries can save tropical forests. If this model was built on, by 2015 a 25% reduction in global deforestation and forest degradation could be achieved for less than 25 billion euro. As well protecting hundreds of thousands of species, it would make the biggest single contribution to combating climate change.

Yet for me the real reward is the huge number of letters and emails I have had—especially from children. One in particular from a primary school pupil who told me that he had not known what to do with his life—but that he did now.

Dr George C. McGavin FLS
Honorary Research Associate
Oxford University Museum of Natural History
www.georgemcgavin.co.uk


Bosavi woolly giant rat, Mt Bosavi, Papua New Guinea
© BBC

Did you know . . . ?

Dr Marie Stopes (1880–1958) was a Fellow of the Linnean Society. Dr Stopes is perhaps most famous for her pioneering work in family planning, setting up the UK's first family planning clinic in London in 1921. Her mother, Charlotte Carmichael, was the first woman in Scotland to receive a university certificate; having not been allowed to attend lectures, though taking the same exams as her male counterparts, Charlotte was awarded a certificate rather than a degree. It is thought that this played a role in Stopes' s future interest in feminism.

Born in Edinburgh in 1880, Marie Stopes was awarded a scholarship to attend University College London, earning a B.Sc. in Botany and Geology in 1902. She later obtained her Ph.D. in Palaeobotany from the University of Munich and became a lecturer in the subject at both UCL and the University of Manchester. Controversially, Stopes was also an advocate of eugenics.

Stopes joined the Linnean Society in 1909 with her main interest listed as Botany. Correspondence between Stopes and the Society cover her desire to be referred to as Dr Marie C Stopes, even after her marriage to Reginald Gates, and for any Society lists and papers to be thus adjusted. Additionally, after inquiring into the use of one of the Society's rooms for a medical lecture on human biology, namely "the technique of contraception", the then Secretary of the Society Spencer Savage responded that it was not the custom for the rooms to be used "for propaganda" but that he recognised this was not Stopes' s intention. Stopes replied:

You may rest assured that I would not think of using your rooms for propaganda:
as you yourself will perceive they are not big enough for that!

© The Linnean Society of London

Thank you for your letter of the 8th. You may rest assured that I would not think of using your rooms for propaganda: as you yourself will perceive they are not big enough for that! The lecture is to be purely technical, on human aspects of physiology.

Yours sincerely,

Marie C. Stopes

© Leonie Berwick

Nominations for Linnean Society Council 2010

The following members of Council will complete their three years' of service and will be retiring at the Anniversary Meeting on 24 May 2010: Prof Pieter Baas, Prof Richard Bateman, Dr Andrew Brown, Dr John David and Dr Max Telford.

Sadly, Prof Patricia Willmer has had to resign from the Council.

This means that there will be three vacancies for Botanists and three vacancies for Zoologists. The following have been nominated to date and Fellows will be asked at the Anniversary Meeting (24 May 2010) to vote for three botanists and three zoologists.

Nominations

Botanists: *Dr Anne-Maria Brennan, Prof Mark Chase, Dr Janet Cubey, Prof Dianne Edwards, Dr David Frodin, Dr Sara Oldfield, Dr Sarah Whild*
Zoologists: *Prof Geoffrey Boxshall, Dr Anjali Goswami, Mr WM Alastair Land, Mr Brian Livingstone*

Any other Fellow who has been proposed by six other Fellows is entitled to stand for election to Council or as an Officer. Written proposals must be submitted to the Executive Secretary (ruth@linnean.org) by 29 March 2010. All nominations will then be posted in the Society's rooms and on the Society's website.

Collections Corner

Loans from the Collections

Occasionally the Society is asked to loan items from its collections for exhibition in other institutions either within the UK or abroad. During the past several years a variety of items have been on display as far away as Australia and Japan and as near as the Natural History Museum (NHM) in London.

The decision to allow a loan is made only after detailed discussion by the Collections Committee and ratification by the Society's Council. As custodians of internationally important material we only lend where the item is vital to the content of the exhibition and where it will not detract from what we can offer to our own Fellows and visitors. A recent request to borrow the Charles Darwin portrait was discussed and then declined due to the importance of the portrait to our own celebrations during Darwin's bicentennial year. When we do have to refuse a loan request, we endeavour to offer an image instead or, as in this case, put the borrower in touch with an institution that holds a copy.

Some items in our collections, such as herbarium specimens, are fragile and careful thought is paid to the effects of added handling, transportation and the demands of a display before agreeing a loan. The care and expertise that can be provided by borrowers varies enormously and these are always important factors when considering a loan.

© The Linnean Society of London

Linnaean cabinet

Borrowing institutions must provide specialised transport and insurance and must demonstrate that they can guarantee adequate security and curation. They must also satisfy any requirements we make for the display environment such as regulated humidity or light filtering. Sometimes items requested are in need of conservation and arranging for this to be financed can be part of the loan agreement.

Having agreed a loan and drawn up a loan agreement, the item is thoroughly inspected before transit. A condition report is produced by our conservator and this is signed by the receiving institution. Sometimes this condition report has to be checked and countersigned at many stages e.g. before transportation, at the airport, on receipt and on setting up the display. This process is then reversed for the return. Often a courier appointed by the Society will travel with the item. This was the case with Linnaeus's pearls which travelled around the world and were accompanied on each leg of the journey either by our Librarian or by our curator from the NHM. The cost of this is always borne by the borrower.

The Society does not charge a fee for the loan of material, but all costs of packing, transport, couriers, insurance, etc. must be paid by the borrower. The borrower must also demonstrate that if an item travels abroad there will be no claim made by any government that may hamper its return. For example, we would require a cast-iron guarantee that any herbarium specimen would not be impounded after exhibition in its country of origin.

Loans are both long and short term; long term loans have included the global tour of Linnaeus's pearls which were

© Janet Ashdown

Conservators check the bust of Banks at the British Museum

displayed in many countries as part of the exhibition 'Pearls' organised and administered by the American Museum of Natural History in New York (2001–2008). Additionally, our fine marble bust of Sir Joseph Banks, among other items, has been on long term loan in 'The Age of Enlightenment' gallery at the British Museum and its condition is checked annually by the Society's conservator.

The Society's relationship with the NHM has seen several items displayed in recent exhibitions on short term loan; an original Linnaean herbarium cabinet was used as part of artist Mark Dion's 'Systema Metropolis' (2007) and a letter from Gideon Lincecum to Charles Darwin was a part of 2009's successful 'Darwin Big Idea Big Exhibition'. Our most recent loan was to the Sedgewick Museum of Earth Sciences in Cambridge who borrowed the seal of Robert Brown for the 'Darwin the Geologist' exhibition held as part of Darwin200.

Seal of Robert Brown

© The Linnean Society of London

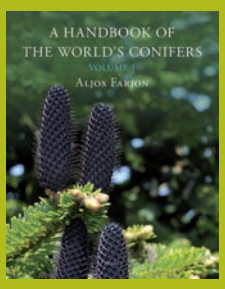
Janet Ashdown and Lynda Brooks FLS

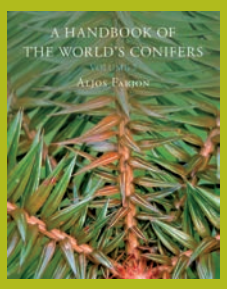
A Handbook of the World's Conifers

Dr Aljos Farjon is a Fellow of the Linnean Society, having previously served on Council, and taxonomist of Gymnosperms. He is also Chair of the IUCN Conifer Specialist Group and is currently, since retirement, Honorary Research Associate at Royal Botanic Gardens, Kew. He has published ten books and over 120 scientific papers including 55 on conifers alone and in 1997 was awarded the highly esteemed Engler Medal in silver from the International Association for Plant Taxonomy (IAPT). More recently in 2006 Dr Farjon was awarded the Veitch Memorial Medal from the Royal Horticultural Society, London.

Dr Farjon's upcoming publication A *Handbook of the World's Confers* will be published in two volumes and encompasses 615 species of conifers, 200 of which are found in the tropics. Nearly 30 years of research have culminated in this authoritative work incorporating information about tropical and Southern Hemisphere species as well as the more traditionally studied European and North American species. A comprehensive monograph and handbook combined, the publication draws on the taxonomy, biology, ecology, distribution and uses of all species of the order.

Fellows of the Linnean Society are being offered a 30% discount if ordering a copy before April, and 20% thereafter. To order your copy and claim your discount go to www.brill.nl, search for the book title and remember to quote Action Number 48197, mentioning that you are a Fellow of the Linnean Society of London.





The Linnean Society of London Student Lecture Series

Following the success of the first student lecture presented by Dr George McGavin, our second lecture specifically for undergraduate and postgraduate students will be given by Professor Steve Jones on 4 March 2010:

Nature, Nurture or Neither: The view from the genes

Many people feel that their fate lies in their DNA; or that their lives and health can be divided into a segment called Nature (the genes) and Nurture (the environment). At this lecture, Professor Jones will show that, from cats to mice to people, nature and nurture always work together and that it is meaningless to try and separate them.

For more information about this special student lecture please contact us on events@linnean.org

Congratulations to . . .

Professor Alastair Fitter who was awarded a CBE in the 2010 New Year Honours List for services to Environmental Science and to Professor Mary Gibby, Director of Science at the Royal Botanic Garden, Edinburgh who was awarded an OBE in the 2010 New Year Honours List for services to Botany.

Forthcoming Events 2010

18th March, 6.00pm	Siphonophores: tangled tentacles or ocean predators? *Gill Mapstone FLS*
15th April, 6.00pm	Annual Biodiversity Lecture *Dr Martin Sharman*
20th–22nd April **Three-day meeting**	Early Events in Monocot Evolution (Joint meeting with Royal Botanic Gardens, Kew) *Paul Wilkin*
29th April, 6.00pm **Evening meeting & book launch**	Anders Sparrman—an enigmatic figure between Enlightenment and Romanticism *Per Wästberg*

More information about these and all of the Linnean Society's events can be found at www.linnean.org or contact Claire Inman on +44 (0)20 7434 4479 ext. 11, email: claire@linnean.org

All articles welcome! Please submit your articles in electronic format to the Editor at pulseeditor@linnean.org. Images are also welcome in high resolution format with appropriate permission and copyright.

The Linnean Society of London, Burlington House, Piccadilly, London W1J 0BF UK
Tel: +44 (0)20 7434 4479 Fax: +44 (0)20 7287 9364
Web: www.linnean.org

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