

# OPROLITE

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## DROPPINGS FROM THE GEOLOGICAL CURATORS GROUP

*Coprolite* is compiled and produced by Tom Sharpe, Department of Geology, National Museum of Wales, Cardiff CF10 3NP (tel +44 (0)29 20 573265, fax +44 (0)29 20 667332, e-mail Tom.Sharpe@museumwales.ac.uk). It is published three times a year in March, June and November. Any material for inclusion should be sent to Tom Sharpe by the first of the previous month, i.e. by 1 February, 1 May or 1 October.

**Chairman:** Helen Fothergill, Keeper of Natural History, Plymouth City Museum & Art Gallery, Drake Circus, Plymouth, Devon, PL4 8AJ tel 01752 304774 fax 01752 304775 email Helen.fothergill@plymouth.gov.uk

**Secretary:** David Gelsthorpe, Manchester Museum, Oxford Road, Manchester, M13 9PL tel 0161 2752660 fax 0161 2752676 email david.gelsthorpe@manchester.ac.uk

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**GCG website:** <http://www.geocurator.org>

### Chairman's report

Although 2008 has been a rather eventful and busy year, I found it difficult to remember what I had actually been doing for the GCG. All I can hope is that I've been doing enough! Some of the more relevant work is summarised below:

#### Correspondence

**JISCmail:** We circulated a note to GEM, ESEU, ESTA and SESEF to make them aware of our JISCmail site and how it could be useful to their members. Hopefully this has been taken up – we did get some positive responses from the groups with an expression of interest in any further developments on our website.

**Wren's Nest:** A letter of support for a Heritage Lottery Fund application to enhance the National Nature Reserve at Wren's Nest was requested and sent on 25 March 2008. The bid was successful.

**JCWHS:** A response to request for opinions re: Jurassic Coast World Heritage Site research strategy was sent to Malcolm Hart at Plymouth University on 19<sup>th</sup> March 2008.

**Howard Brunton:** A condolence card was sent on behalf of the GCG. I have, in return, received a card of thanks from Eileen Brunton.

## **Collections at risk:**

**Bristol City Museum & Art Gallery:** The Assistant Curator of Geology left BCMAG taking up a post at the NHM. The post had been acting up to Curator for the past 2 years. This will leave BCMAG without a geological curator for the first time in 180 years. The geology collections are also Designated. GCG wrote a letter requesting information and assurances relating to the advertisement of the vacancies. The post will be held vacant until a museum structure review is undertaken in April 2009, though the current intention is to create a joint curatorial/conservation post for natural science with the possibility of an assistant post. Paul Brown (NatSCA Chair) also wrote a letter expressing concern relating to the future of the biology department as cuts have been proposed. Since then, a Bristol newspaper has reported on some of the concerns and I have received a letter of concern from Unison & Unite in Bristol.

**Other collections – watching brief.** Over the year concern has been expressed over the future of Kendal Museum (hopefully proposed plans for its future partnership with further education college will safeguard collections) and North Lincolnshire Museums where the restructure has left no natural history curator in post (we have been assured that the collections are "safe"). As with any such issues, we will endeavour to watch, listen and apply what pressure we can to ensure the support of the geological curatorial community.

## **Other specialist groups**

**Natural Sciences SSN:** Latest terms of reference relating to the SSN have been circulated and are now on the GCG website. There is a proposal to use the Collections Link website as a way to bring the work of GCG & NatSCA together under the umbrella of the Natural Sciences SSN. Further work needs to be done to establish how the SSN will operate. My hope is that it will be effectively independent of NatSCA & GCG, but with a number of steering group members that are active participants of both groups to ensure that each groups interests are well represented. Quite how the SSN will develop is unclear.

**NatSCA/GCG representative on committee.** I would like to officially welcome Leslie Noe (Thinktank, Birmingham) who has agreed to be GCG/NatSCA representative on both committees and thank Steve Thompson who stood down at the last AGM. This is an extremely valuable role that encourages the two groups to work together. There are too few natural science curators & conservators to miss the opportunity to work closely together for mutual support.

**ICON representative on committee.** A "visitor" to the GCG committee has been proposed: Adrian Doyle (or another ICON member in his absence) has been invited to attend a GCG committee meeting as a representative of Institute of Conservation. We will explore how to work more closely in the future.

**Web developments.** We have created an online resource for images which can be used and shared (with minimal restrictions ... i.e. credits). This, we hope, will act as a shared resource, especially as some of the smaller museums are struggling to meet reproduction fees for the larger museum services.

If you are interested in sharing any geological images, please visit the GCG web pages and view the Flickr site link. I hope that this resource will grow.

I would also like to take this opportunity to thank Hannah Chalk for all her work on developing the website in the past year. We are always looking for more content and would particularly like to develop geology education resources (to download), handy techniques and hints for working or storing collections etc.....

The website is a way to get more people involved in the workings of the group. Let us know if you use it, how you *could* use it and what you can add.

**GCG logo.** After some debate surrounding the group's logo, it was finally decided to re-scan an original green drawing to a higher resolution & stick with what we already have (including missing apostrophe). For those with an interest: I have been informed that originally the apostrophe was left out of the logo due to layout aesthetics!

**Committee.** Finally, thank you to everyone on the GCG committee for their work in 2008 and for helping me to get to grips with the role of Chairman / woman / person / piece of furniture.

Helen Fothergill, GCG Chairman, Plymouth City Museum and Art Gallery

### **New members**

GCG is pleased to welcome the following new members: **Alan O'Connor**, Ireland; **Joseph Botting**, Leeds Museum; **Heather Jackson**, National Museum of Wales; and **Sandra Meunier**, London.

### **Subscriptions**

There are still a few subscriptions outstanding for 2009. If you know that you haven't paid, please send your cheques to me at the address below. Those who don't pay soon will not receive further issues of the journal or newsletter.

**Standing Orders** Currently over 20 members have not contacted their bank to update their standing order to the new rate (£15 UK or £18 overseas) despite numerous reminders. Please make the effort to do this as this loses us money each year. I will continue to invoice everyone for the difference, but I may decide to 'name and shame' you at some point!

Cindy Howells, Department of Geology, National Museum of Wales, Cathays Park, Cardiff, CF10 3NP email [cindy.howells@museumwales.ac.uk](mailto:cindy.howells@museumwales.ac.uk)

### **Newish publications**

*Yorkshire geology* by Paul Ensom, 2009. Wimborne Minster: The Dovecote Press, 192pp. ISBN 978 1 904 34964 8, £22.50

### **NatSCA Note**

Kate Andrews, Principal Heritage Officer, Herefordshire Heritage Service, has written a paper for *NatSCA News* detailing the different processes used for gap filling geological specimens. The paper outlines past gap fillers used (including

lead, wax and plaster of paris). It outlines more recently used gap fillers, and gives details about how to use paraloid, with case study examples.

Andrews, K. 2009. Gap fills for geological specimens - or gap fills with Paraloid. *NatSCA News*. Issue 16. pp. 41 - 45. Please contact Jan Freedman, NatSCA Editor, jan.freedman@plymouth.gov.uk for further information.

### **Exhibitions 2009**

*Darwin: a revolutionary scientist* National Museum of Wales, Cathays Park, Cardiff  
*Darwin the geologist* Sedgwick Museum, Downing Street, Cambridge opens 7 July  
*Dinosaurs in your garden* Wrexham County Borough Museum, County Buildings, Regent Street, Wrexham until 5 July

*Simple Beginnings: The Story of Evolution* Bolton Museum 13 June-7 November  
*Walking with dinosaurs* Thinktank, Birmingham until 31 August

### ***Simple Beginnings: The Story of Evolution***

*Simple Beginnings: The Story of Evolution*, part of the Darwin200 celebrations, opened at Bolton Museum, Aquarium and Archive on Saturday 13 June 2009. The exhibition will be opened by children's TV presenter Johnny Ball.

In this exhibition visitors can learn more about evolution. The exhibition explores the impact of Darwin's theory in the 1800s, including here in Bolton. We look at Darwin's supporters and opponents, including Bolton minister Charles Clement Coe, who was pro-Evolution and anti-Darwin. The exhibition includes the first ever public display of Thomas Huxley's Privy Councillor sword. Key concepts are explored using examples from the natural world including wading birds, finches, snakes, snails and humans. We will also feature the divergence of ammonites, focusing on the Gault ammonites from Folkestone collected and prepared by John Griffiths in the 1800s. The final section brings the story of evolution right up-to-date, and shows how the latest discoveries in genetics are finally answering the question of how evolution works.

There will be a wide range of events to accompany the exhibition including three fascinating free evening talks. The highlight is the visit of renowned biologist and geneticist Steve Jones on Thursday 29 October. Professor Jones will be asking *Is Human Evolution Over?* There will also be *An Introduction to Human Evolution* with Dr Una Strand-Vidarsdottir on Thursday 25 June and *The Life and Times of Charles Darwin* with Rev. Michael Roberts on Thursday 23 July. All talks take place at Bolton Museum, Aquarium and Archive from 6 – 7pm (no booking required).

There will be many more talks and events over the course of the exhibition, so check our website [www.boltonmuseums.org.uk](http://www.boltonmuseums.org.uk). *Simple Beginnings: The Story of Evolution* is free and runs until Saturday 7 November.

### **Come and Walk With Dinosaurs at Thinktank in Birmingham**

Thinktank, the Birmingham Science Museum, is currently hosting the BBC's

'Walking With Dinosaurs' exhibition. Walking With Dinosaurs explores the science and technology behind the BBC TV series, including some of the models, puppets and mannequins used in the show. The exhibition begins with an introduction to the Earth and life before the dinosaurs, and includes models of a *Plateosaurus* skeleton, the reconstruction of an *Allosaurus* head, and casts of the skulls of *Tyrannosaurus rex* and *Triceratops*. A new highlight, especially for Birmingham, is a full-size, seven metre long reconstruction of the Midlands dinosaur, *Megalosaurus*. In addition to the exhibition, there are schools and public programmes including a 'Dino-dig', under-8's story telling (Finding Lio the *Liopleurodon*), dinosaur themed LEGO animation workshops and much, much more. Dinosaur themed films are also being shown in the Birmingham IMAX.

The exhibition is open daily until 31 August and is free to Thinktank ticket holders. For further information, or to book, see the Thinktank website at [www.thinktank.ac](http://www.thinktank.ac). and click on the dinosaur.

Leslie Noè, Thinktank

### **Darwin the geologist at the Sedgwick**

Darwin the Geologist is a permanent exhibition scheduled to open on the 7 July 2009 at the Sedgwick Museum, Downing Street, Cambridge. Funded by the Heritage Lottery Fund, this exhibition takes Charles Darwin's story beyond that of his early training as a geologist and examines the specimens he collected and their associated stories from the time of the Beagle voyage. A high percentage of the Beagle collection of rocks will be put on display for the first time. The exhibit will act as a 'biography' of the specimens showing how and where they were collected and how people have interacted with them since Darwin's death. Further details of the ongoing preparations are available on the Darwin Blog: <http://darwinthegeologist.org/>

There is a flash animation at: [http://www.sedgwickmuseum.org/darwin/darwin\\_tools.html](http://www.sedgwickmuseum.org/darwin/darwin_tools.html)

### **Fossil, mineral and gem shows 2009**

**6-7 June Rock 'n' Gem Show, Kempton Park Racecourse**, Staines Road East (A308), Sunbury on Thames, Middlesex Sat 10.00-18.00, Sun 10.00-17.00  
[www.rockngem.co.uk](http://www.rockngem.co.uk)

**20-21 June Rock 'n' Gem Show, Staffordshire County Showground**, Weston Road, Stafford [www.rockngem.co.uk](http://www.rockngem.co.uk)

**12 July Oxford Mineral & Fossil Show**, Exeter Hall, Kidlington, north Oxford 10.30-16.00 admission free 01872 223227

**25-26 July Rock 'n' Gem Show, Elsecar Heritage Centre**, Elsecar, South Yorkshire [www.rockngem.co.uk](http://www.rockngem.co.uk)

**8-9 August Rock 'n' Gem Show, Kempton Park Racecourse**, Staines Road East (A308), Sunbury on Thames, Middlesex Sat 10.00-18.00, Sun 10.00-17.00 [www.rockngem.co.uk](http://www.rockngem.co.uk)

**15-16 August Royal Welsh Showground** Builth Wells, Mid Wales [www.rockngem.co.uk](http://www.rockngem.co.uk)

- 5-6 September Newton Abbot Racecourse** Newton Abbot, Devon  
www.rockngem.co.uk
- 12-13 September Farnham Maltings** Bridge Square, Farnham, Surrey  
www.rockngem.co.uk
- 26-27 September Newark Showground** Winthorpe, Newark, Notts  
www.rockngem.co.uk
- 17-18 October Bath & West Showground** Shepton Mallet, Somerset  
www.rockngem.co.uk
- 24-25 October Cheltenham Racecourse** Prestbury Park, Cheltenham, Gloucester  
www.rockngem.co.uk
- 31 October-1 November Kempton Park Racecourse** Staines Road East (A308)  
Sunbury on Thames, West London www.rockngem.co.uk

### **The Quaternary Vertebrate Research Group Conference. University of Bradford 16-17 April 2009.**

The Quaternary Vertebrate Research Group (QUAVER) is affiliated with the Quaternary Research Association. Set up five years ago, the group aims to bring together the fossil vertebrate research community through regular meetings, as well as promoting the findings of different Quaternary vertebrate researchers.

**A cat sized rat** After a welcome and introduction by Professor Julia Lee Thorp, Director of Research at the university, the first talk was from Selina Brace, from Royal Holloway, University of London, who discussed rice rat colonisation in the island chain of the Lesser Antilles. This allowed a look at rice rat radiation and evolution on the small islands, before their demise as human populations invaded. Selina has been examining DNA from museum specimens to work out the affinity of the different species. DNA primers from extinct species are difficult to look at, as the DNA sequence from an extinct species is unknown. So the DNA of closely related species has to be examined. Cladistic analysis based on the DNA sampling, demonstrated that the rice rats split from a common ancestor in South America around 1.5 mya.

**Red deer refugia** Meirav Meiri, also from Royal Holloway, examined the post-glacial recolonisation of Europe by red deer (*Cervus elaphus*). During the Pleistocene, as glaciers spread throughout much of Europe, animals, including humans, had to retreat into refuges. Meirav is examining whether the refuges of the Balkans, Italy and Iberia were true refuges and bottlenecks for different species, using *Cervus elaphus* as a model. Meirav has examined DNA from *Cervus elaphus* specimens held in museum collections. The DNA samples show that there may well have been three refugia, Western Europe, Eastern Europe and Asia, and implies that the red deer were surviving in these three sites during the southernmost advances of the glaciations.

**Badger food** John-Baptiste Mally, from the University of Bordeaux discussed several sites with badger remains and examined the skeletal remain for signs of human activity. In a well illustrated talk, Mally discussed the exploitation and likelihood of small carnivores for their fur and meat. Images of cut marks and bone breakage patterns on specimens found at five sites in France, potentially demonstrate use of

meat. The exploitation of badger fur at these archaeological sites was a little more difficult to see.

**Carbon intake of plants** Julia Lee Thorp, from Bradford, spoke on the taphonomic, taxonomic and isotopic analyses of an Oxygen Isotope Stage 6 (150,000-200,000 years BP) hyena den assemblage from Pinnacle Point, South Africa. The sites were formed mainly by hyenas, illustrated by the large faunal remains, large amount of coprolites, ostrich egg shells and only four flints recovered. Humans may have occupied the site briefly, after the hyenas temporarily left the site. The carbon isotopes from the teeth and bones demonstrated that the herbivores were eating more grasses, demonstrating that the plants hadn't suffered much during this cold and dry climate.

**A point to remember** Hannah O'Regan, from the University of Liverpool, gave a brief talk about the importance of porcupine sites. The cave porcupine (*Hystrix africaeaustralis*) is the largest rodent in South Africa. Porcupines gather bones from their surroundings, which they bring back to their sites and gnaw on them, until there is not much of the bone left. Generally at archaeology sites, worked bones are firstly attributed to being due to human presence. Faunal remains from five sites in South Africa, which were originally thought to be deposited by hyena and/or human, were in fact accumulated by porcupines. These animals also have an influence on environmental and site reconstruction, as they collect bones from many different habitats, which make it appear as though many different species used the caves.

**A cusp for evolution** James Heywood, from Cambridge University, discussed his research on the dental constraints and ecological potential of ruminants. There are 137 different species of bovids, and only 52 species of cervids. Bovid teeth have less dental constraint than cervids, which may be because they have their dentine fused. This has enabled bovids to have a higher crown than cervids and thus enable them to cope with different environments

**A wing on a prayer** Wendy Howard, from Exeter University, examined bird bone fractures in X-Rays. Wendy first examined natural fractures and found they were all off set on the bone, not clean breaks, with most occurring in the mid-bone region. Experiments were carried out to compare the features of bone breakage; using flint tools to cut through bone, bone broken by hitting it with a pebble, and bone breakage by breaking by hand (all these were done on boiled, cooked and raw bone). The results were very clear with each process producing different fracture characteristics. Those bones cut with a flint tool had the straightest cuts through the bone. Hand broken bones had the fractures slightly offset, with more irregularities. Those bones broken with pebbles were more fractured, and had more than one fragment chipped off the bone.

**Something fishy** Hannah Russ, of the University of Bradford. is examining fish bones at Late Pleistocene sites. Many animals eat fish, and to associate fish with human activity is not examining the evidence fully. Wolves frequently only consume the heads of the fish, near to water and sometimes use caves. Bears fish

during the salmonid spawning, and often consume the body and discard the head. Eagle owls fish during most seasons, taking a variety of fish and they nest in caves. Researchers need to look at the assemblages as a whole. Wolves, bears and eagle owls do eat other things, they do not live exclusively on fish; wolves also eat small, medium and large mammals; bears eat vegetation, small and medium animals, shell fish and insects; eagle owls eat small mammals and amphibians. Wolves and bears would leave similar assemblages, quite distinct from those produced by an eagle owl. Interestingly, human sites may vary too, for example, due to taboos, rituals, processing, and food intolerances.

**Horses in stasis** The final talk was by Eline van Asperen, from the University of York, who examined at the biostratigraphy of horses in Britain and Germany. Different isotope stages showed different sizes and shapes of horses in Britain, which may be due to species variation, or could be due to climate. Steinheim, in SE Germany, has large gravel sites with 4 fauna assemblages represented. The horses at this site show periods of stasis, with one assemblage holding small and slender horse specimens, which are similar to the British slender specimens.

**Mammoth conservation** The second day was very hands on, and really useful to everyone who was there. There was a short talk to start the day by Sonia O'Connor, who worked on the conservation of the Lynford Mammoths, with the assistance of Nigel Larkin. The specimens were to be conserved and prepared for study, taking into account the needs for specialists including faunal studies, analysis and dating. Cleaning the material was all carried out in the lab. Surface deposits were softened with acetone, using wooden tools and soft plastic tools to clean the bone, so as not to scratch any of the bone. It is important to avoid consolidations, and to rejoin only the fresh breaks. It is also important to air the material before packing, to get rid of excess moisture. The packing is for protection of the specimen, but should be packed for ease of access. Any isotopic, or dating analysis was done before the consolidation of specimens.

**Hands on fish skeletons** The first hands-on practical work shop was looking at fish remains, delivered by Dr Andrew 'Bone' Jones, Hannah Russ and Celise Richardson. This was interesting from a museum perspective. We look after so many collections; we are not experts in everything. I haven't even thought about fish remains in our sub-fossil collections, but will have a look! If I do find any, I will be contacting Hannah Russ, who knows her fish and could help me identify them. The practical was good, and demonstrated different ways of displaying fish parts, glued on to card, in resin, and simply in plastic boxes. This was a really good session identifying different fish from different parts and showed how it can be easy to identify the different fish elements.

**Animal CSI** The last practical, delivered by Julia Cussans, was on vertebrate taphonomy. This was a great hands-on session looking at numerous specimens around the lab. It made everyone look at the bones and think about them in terms of when the animal was alive, how it may have been killed and what happened to it after death. Handling the bones, and examining them closely in a fresh light

allowed everybody to think more about the animal as a whole; how it lived and possibly how it died.

This annual meeting was very well organised, with great food and well structured days. I must thank the chair of QUAVER, Hannah O'Regan, for providing me with a bursary to help cover the costs of attending the conference. A big thank you, from everyone who attended, to Hannah Russ and her colleagues for hosting such an excellent conference. It was a great way of seeing what the latest research was happening and how museums are vital to assist with current research. Using the latest DNA techniques or Oxygen Isotope analysis, the latest research can bring new information to light on our museum collections. The next meeting will be in April 2010, at the Natural History Museum, London, which I am very much looking forward to.

Jan Freedman, Plymouth Museum and Art Gallery

## **Forthcoming GCG seminars and workshops**

*Check our website [www.geocurator.org](http://www.geocurator.org) for updates to our seminar programme*

### **22 September 2009 Bristol University, Queen's Road, Bristol GCG Seminar in conjunction with the Society for Vertebrate Palaeontology (SVP)**

Contact: Steve McLean, The Hancock Museum, Barras Bridge, Newcastle upon Tyne NE2 4PT tel 0191 222 6765 fax 0191 222 6753 email [s.g.mclean@ncl.ac.uk](mailto:s.g.mclean@ncl.ac.uk)

### **October 2009 Brussels**

#### **GCG study visit**

Contact: Steve McLean, The Hancock Museum, Barras Bridge, Newcastle upon Tyne NE2 4PT tel 0191 222 6765 fax 0191 222 6753 email [s.g.mclean@ncl.ac.uk](mailto:s.g.mclean@ncl.ac.uk)

### **30 Nov–1 Dec 2009 Great North Museum, Newcastle upon Tyne**

#### **GCG AGM and seminar**

Contact: Steve McLean, The Hancock Museum, Barras Bridge, Newcastle upon Tyne NE2 4PT tel 0191 222 6765 fax 0191 222 6753 email [s.g.mclean@ncl.ac.uk](mailto:s.g.mclean@ncl.ac.uk)

### **11 May 2010 British Geological Survey, Keyworth, Nottingham**

#### **GCG workshop: Digital imaging for geological collections**

Contact: Mike Howe, British Geological Survey, Kingsley Dunham Centre, Keyworth, Nottingham

### **28 June–3 July 2010 London**

#### **Third International Palaeontological Congress**

#### **GCG Seminar: Symposium on collecting, curation and conservation of palaeontological collections.**

Contact: Dr Sarah Long, Department of Palaeontology, Natural History Museum, Cromwell Road, London SW7 5BD tel 0207 942 5558 email [s.long@nhm.ac.uk](mailto:s.long@nhm.ac.uk)

## **Late September 2010 Cambridge**

### **GCG Workshop and Seminar jointly with SVPCA and SPPC**

Contact: Lyall Anderson, Department of Earth Sciences, Downing Street, Cambridge CB2 3EQ tel 01223 333417 email land07@esc.cam.ac.uk

## **October 2010 Field Museum, Chicago**

### **GCG study visit**

There is a proposal for a visit to the Field Museum in Chicago. More details to follow, but it would be help us to gauge interest if expressions of interest could be sent to Helen Fothergill.

Contact: Helen Fothergill, Plymouth City Museum & Art Gallery, Drake Circus, Plymouth, Devon, PL4 8AJ tel 01752 304774 email helen.fothergill@plymouth.gov.uk

## **7-8 December 2010 Ulster Museum, Belfast**

### **GCG seminar and AGM**

Contact: Ken James, Ulster Museum, Botanic Gardens, Belfast

## **Other meetings**

### **12-15 June 2009 Penventon Park Hotel, Redruth, Cornwall**

#### **8th International Mining History Congress**

For further information: [www.huss.ex.ac.uk/history/imhc/index.php](http://www.huss.ex.ac.uk/history/imhc/index.php) or contact: Dr Peter Cloughton at [p.f.cloughton@ex.ac.uk](mailto:p.f.cloughton@ex.ac.uk)

### **11-12 July 2009 Sedgwick Museum, Cambridge**

#### **Darwin in the field: collecting, observation and experiment**

This multi-disciplinary conference will focus on Charles Darwin's (1809–1882) practical work in the field and examine the geological, zoological and anthropological data, observations and experiments upon which he built his subsequent theorizing. It will take place at the Sedgwick Museum of Earth Sciences in Cambridge as part of the programme of events to mark Darwin's 200<sup>th</sup> birthday and the 150<sup>th</sup> anniversary of the publication of *On the Origin of Species*. Associated events include a major new HLF-funded exhibition and original research on Darwin's work as a geologist based on the rocks and minerals that he collected on the Voyage of the *Beagle* (1831–1836) now held in the collections of the Sedgwick.

#### **Saturday 11 July**

09.30 Registration & Coffee

10.35 Welcome to the Sedgwick Museum: *David Norman, Sedgwick Museum*

10.45 In Darwin's pocket: *John van Wyhe & Gordon Chancellor, University of Cambridge & University of Essex*

11.20 Darwin's Welsh connections; the making of the naturalist and geologist: *Rev. Michael Roberts, Chirk, North Wales*

11.55 Darwin and the Geological Survey – an unlikely collaboration? *Michael Howe, British Geological Survey, Keyworth*

- 12:30 Live performance by 'Pif Paf' of "Under the Floorboards: a time travelling adventure with the Rev. Adam Sedgwick..."
- 13:15 Buffet lunch
- 14:00 Darwin's igneous geology: *Paul Pearson, University of Cardiff*
- 14:35 Darwin in Glen Roy: The how and why of a "Gigantic Blunder": *Martin Rudwick, University of Cambridge*
- 15:10 Classifying in the field: Darwin, Hooker and the permanence of species: *Jim Endersby, University of Sussex*
- 15:45 From one finding of a few (*Mastodon?*) bones to a general theory of species extinctions: Darwin at Port St. Julian in February 1835: *Jon Hodge, University of Leeds*
- 16:30 Tea / Coffee
- 17:30 – 19:00 Viewing of the new permanent exhibition 'Darwin the Geologist' in the Sedgwick Museum of Earth Sciences

### **Sunday 12 July**

- 09:30 An appreciation of Charles Darwin's fossil collection from the Falkland Islands: *Phil Stone, British Geological Survey, Edinburgh*
- 10:05 Darwin's coral reef collection at the Natural History Museum London: his lost exhibit, Cocos-Keeling atoll transect and subsidence theory of reef development: *Brian Rosen & Jill Darrell (Natural History Museum, London)*
- 10:40 Like a *Megatherium* smoking a cigar: Darwin's *Beagle* fossils in the 19<sup>th</sup> century: *Gowan Dawson, University of Leicester*
- 11:15 Coffee
- 11:45 "I have hardly the means": Charles Darwin, Transoceanic Dispersal, and the Geography of Science: *Michael D. Barton, Montana State University*
- 12:20 Was Darwin's theory of coral reef formation the product of a particular place? *Alistair Sponser, Smithsonian Institution*
- 12:55 Plenary and questions
- 13:15 Close

Conference fee: £60.00 per person, cheques payable to the University of Cambridge. Book by 19 June 2009 to: Department of Earth Sciences, University of Cambridge, Downing St., Cambridge, CB2 3EQ. (Email: [lia23@cam.ac.uk](mailto:lia23@cam.ac.uk))

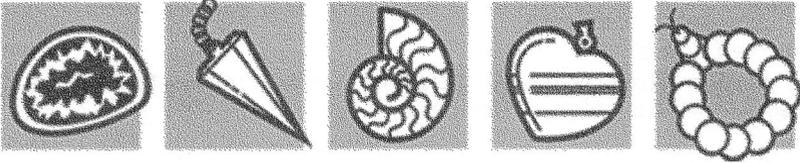
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