GeoConservationUK Newsletter

Volume 3, Number 4

10th December 2012

On this day in . . . two Houses and two Learned Societies.

On the same date in 1799 that this *Newsletter* is published the Royal Academy of Arts was founded. Similarly, France formally adopted the metre as its official unit of length in 1799. In 1869 the first road traffic signals came into operation outside the Houses of Parliament; they were modelled after contemporary railway signals, they used semaphore-like arms and were illuminated at night by red and green gas lamps. Now you might be forgiven for not immediately seeing a link between these events unless you are a Fellow of the Geological Society. Burlington House is home to both the Academy and the Society and, with all that publicity for the *Appreciating Physical Landscapes* conference (!!) it should have been an easy one to make. As for the metre, next time you peruse the Society's journal you will see that the imperial foot, yard and mile have given way, even for historical material (when hopefully both measures are given), to their metric counterparts. Oh, and the Houses' connection? Well it's a good example of how a past Government's short-sightedness on matters geological can have a costly long-term impact - cutting corners on the building's stone was a false economy rectified at great expense. Perhaps, like that stone, this Government's negative impact on our national geoheritage and geoconservation through short termism will be corrected by a successor, but it will be some time yet and Big Ben will have to chime for several New Years to come!

E D I T O R I A L

Welcome to the year's final issue. As always I must thank all of the contributors. Should you think at this year end that your region has been 'neglected' I would encourage you to tap away on your keyboard and then email me your story. As the year closes there are still outstanding (in all senses of the term) sites with challenging conservation and access issues; the most significant must be Siccar Point with the unsatisfactory planning outcome for geoconservation and geotourism. It is difficult to reconcile the content and thrust of the national Scottish Geodiversity Charter with the locally derived decision and one wonders if anyone involved in that actually either read or understood its content; fine words are worthless unless translated into appropriate actions. Let my last appropriate editorial action this year to be to wish you a peaceful Christmas and a prosperous New year - I'll raise my glass to you all as Big Ben strikes midnight on the 31st! TOM HOSE

ISSUE CONTENTS

ENGLAND — *Dorset's Important Geological Sites Group*

Geoconservation and Building Conservation Working Together

Members of the DIGS group have recently been involved in identifying suitable stone for conservation work being carried out on the Wolfeton Riding House at Charminster, near Dorchester. This is a 17th century building and the Trustees have been looking for a matching stone so the work can be carried out. The stone needed is Cypris Freestone. A possible source was identified at Poxwell in the former quarries near to the existing DIGS site. Aerial photographs on 'Google Earth' clearly show the irregularities in the landscape where stone was extracted in the historic past.

A digger was brought in to expose the stone and around 7 m3 was planned to be extracted. Stone of the right quality, bed depth and lithology is needed for building conservation purposes. The digger's activity produced new exposures *(see right)* that are likely to be of interest to those with a specialist knowledge of the Lower Purbeck Beds; they might well add to the knowledge gained during the construction of the Weymouth Relief Road.

Some of the exposures might only be temporary as some back-filling will probably be necessary after the stone has been extracted during the week commencing 26th November. However, it is hoped to add any of the remaining new exposures to the DIGS site with the co-operation of the landowner, Mr John Russell. We are very pleased with this result as it shows how the link can be successfully forged between geoconservation and building conservation.

Alan Holiday

ENGLAND — *GeoSuffolk*

Corton Cliff Storm Erosion

A visit to Corton by two GeoSuffolk members during the storm of 21st -23rd September is worth reporting. Whilst the new sea defences were clearly protecting the village well, the cliffs to the north were being spectacularly subjected to active marine erosion; fresh exposures of the Pleistocene sands were clearly seen. However, even at low tide, access along the beach to the base of the cliffs *(see right)* is only possible from the north — from Norfolk!

We were pleased to note a plaque by Waveney District Council, Mackley Construction and Halcrow in the cliff-top viewing area created at the top of Baker's Score. It describes the sea defences and is set into a large block of the Norwegian Larvikite rock used for the sea defences.

Caroline Markham

After © Adrian S. Pye

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ENGLAND — *Buckinghamshire Earth Heritage Group*

Opening Up the Bugle Pit

This year the Group has been much involved with conserving the Bugle Pit SSSI. The Pit is designated for its Portland and Purbeck aged strata and fossils. The site at Hartwell, Buckinghamshire, was once a much larger quarry that was in-filled many years ago. In 1984 a small pit was re-excavated *(see top right)* by English Nature (now Natural England) as it was the only locality at which these rocks could be seen in Buckinghamshire. The site was maintained for a few years with the help of the Open University Geological Society. However, after a while physical access became difficult and it became unsafe and neglected *(see middle right)*. It had been brought to the Group's attention that the Pit's perimeter fence was in danger of collapsing, leaving horses in the surrounding fields vulnerable with the possibility that the Pit could be permanently infilled. Using a combination of 'Rocks and You' lottery funding, a £1000 grant from the Curry Fund, and an offer of continued assistance from Natural England, Group members began clearing the site.

The Group had earlier recognised the potential importance of re-opening this site to allow fresh geological research and geconservation training. It proved to be a major job to clean up the site. Large trees were felled by professionals and ground vegetation was removed and burned by volunteers. New fencing (a double line) was put in place by a contractor to secure the site from inquisitive horses and a very robust set of steps went in to allow access, via the vertical faces.

The Group is currently in the process of making up gabions to add stability to one face, which will also act as seating, and clearing the masses of spoil that have accumulated; a big job but Tony Britten, Phil Clapham, Nicky Muizelaar and Jill Eyers have worked hard. Two new Open University recruits have joined the Group to assist in site logging and preparing a journal paper. Stephen Packer of Millennia SC Ltd., (a Group member) is also looking at the microfossils. Another work day is planned to measure and describe the section, followed by wet sieving the sediment to find microfossils.

Meanwhile, in mid-August, supported by the 'Rocks and You' project funding, there was the joint Group and National Trust 'Geology Week at Stowe' event. Held amidst the Capability Brown landscaped gardens and historic architecture it was a memorable event. During the week more than 1,000 visitors passed through the displays. At times the exhibition area *(see bottom right)* was inundated by excited and excitable children peering down microscopes, handling rocks and fossils, discovering the magic of minerals, and even assembling a 'bag of bones' to make a dinosaur!

Tom Hose

ENGLAND — *Black Country Geological Society*

Geoconservation Work Days

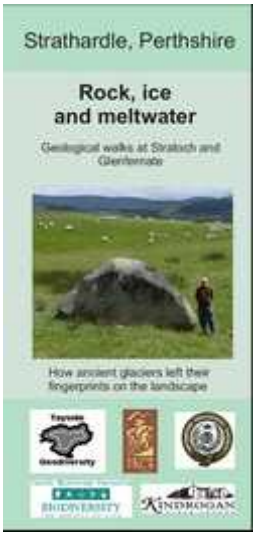
On Saturday 6th October 2012 BCGS members undertook vegetation clearance work *(see below right)* within the East Quarry of Barrow Hill, near Russell's Hall Hospital, Dudley. The East Quarry requires regular vegetation management to preserve the dolerite and Etruria Marl exposures found there. The quarry was last cleared in February 2012 and since then had become heavily overgrown with bramble and other vegetation, which had thrived during the wet summer.

This event marked the start of a series of planned conservation work days, for BCGS members, set for the first Saturday of each month between October 2012 and March 2013. The next organised day was set for Springvale Park on 3rd November 2012, followed by a working day in Barr Beacon Quarry on 1st December 2012. All geoconservation works, involving the BCGS, are being undertaken in collaboration with Paul Stephenson from the Wildlife Trust for Birmingham and the Black Country.

Andy Harrison

SCOTLAND — *Tayside Geodiversity*

Tayside Geodiversity is a sub-committee of the Edinburgh Geological Society. It has recently completed a report on the geodiversity of the Upper Tay Estuary for the HLF funded Tay Landscape Partnership. The bedrock geology of the area comprises Lower Devonian volcanic and sedimentary strata overlain unconformably by Upper Devonian and Lower Carboniferous sedimentary rocks., The Quaternary deposits and geomorphological features are varied with extensive evidence for glacial, glacio-fluvial, glacio-marine, estuarine and fluvial environments and processes. An outstanding semi-permanent exposure of the 'fossil forest bed' first noted in the 18th and 19th century literature is suggested as an immediate target for listing as a Local Geodiversity Site.



The Partnership aims to celebrate the natural and historic environments of the upper Tay estuary and lower Strathearn in Perthshire. This work for the report forms part of the first of two phases of the Landscape Partnership project, the second receiving the major share of the funding. The report provides a technical description of the geology of the area, as well as an accessible summary (entitled 'From Desert to Ice – the Making of a Landscape'). There is a list of potential Local Geodiversity Sites derived from both a desk-top study and a field survey. The report ends with a summary of site recommendations, with proposals for site maintenance, and for two new geotrails and their associated leaflets. Meanwhile, it is worth mentioning the leaflet Strathardle, Perthshire Rock, ice and meltwater Geological walks at Straloch and Glenfernate that can be downloaded from our website at: http://www.taysidebiodiversity.co.uk/Geodiversity/PDFs/StrathardleGuide2012.pdf

Mark Simmons

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NEWS ITEM — *Some Key GCUK Consultations in 2012.*

Whilst it is not possible, or interesting enough (?!), to list all of the consultations in which GCUK has been involved this year, the following are some of the key ones:

ENGLAND - ***Bracklesham Bay SSSI Consultation****:* In summer 2011, Chichester District Council, without consultation, zoned part of the foreshore for use by kite surfing. We replied in defence of the fossil collectors' historical claim to access with a proposal to move the kite surfing area to the west.

ENGLAND - ***High Peak Moors - National Trust Vision and Plan 2013-2038***

ENGLAND - ***The Natural Choice*** **(defra White Paper):** The new National Planning Policy Framework (for England) and also the Localism Act was implemented. It is a lot better for geoconservation than was expected following the June 2011 White Paper.

ENGLAND - ***Roaches Estate and Sell off of Public Land***.: We responded to this challenge and thankfully The Peak Park selected Staffordshire Wildlife Trust as the future managers of the Roaches estate.

SCOTLAND - ***Scottish Geodiversity Charter:*** This was launched on 6th June.

SCOTLAND - Scottish Borders Planning Application for Drysdale Factory at Siccar Point SSSI

SCOTLAND - Scottish Biodiversity Strategy: The third edition was launched in the spring for consultation and s now being reviewed.

WALES - ***Sustaining a Living Wales; Green Paper on a new approach to natural resource management in Wales:*** Whilst reluctant to enter into deeper analysis since the Association of Welsh RIGS Groups are quite capable of speaking for themselves, we did restate briefly a little about the content of the *Natural Environment Framework* (for Wales) paper.

WALES - ***Natural Resources Wales; Proposed Arrangements for Establishing and Directing a New Body for the Management of Wales' Natural Resources Welsh Government Consultation:*** We asked why the consultation watered down the role of geodiversity so much so that biodiversity appears to be the only natural driver in ecosystems services? In particular geology, geomorphology and geoconservation basically are not usefully mentioned in the text.

UK - ***Soils Educational Site Network****:* We were involved in workshop meetings with the British Society of Soils Science and other interested parties at Cirencester in May and Edinburgh.

NEWS ITEM — *Colwyn Bay*

"...it is a damn sight easier walking on sand than on slippy rocks"

The North Wales Press newspaper recently carried a so-called 'good news' story relating to a proposed coastal management scheme involving the importation of sand. This scheme is intended to provide Colwyn Bay with the first dry beach along the A55 west of Rhyl. There is apparently some local delight at the prospect of losing the "rocky" foreshore, such as the comment made by a local water sports operator that is used to title this piece.

Rhos Point foreshore. © PyeGeotechnics Ltd

Leaving aside for the moment the question as to whether or not the dumped sand will actually remain in place after a significant number of winter storms, what is it that is at risk? Well, parts of this stretch of coast are actively eroding today.

NEWS ITEM — *Colwyn Bay* (cont.)

It lies between the Carboniferous Limestone outcrop of the Little Orme (to the west) and the Rhuallt / Prestatyn promontory (to the east). The 'rocks' that are of apparent concern to the local residents are shingle and boulders derived from a combination of a previous ill conceived coastal defence works, but they are also primarily the remnants of the erosion of the local glacial till.

Porth Erinias foreshore © PyeGeotechnics Ltd

As would be expected, given its provenance, much of the shingle reflects the presence of Carboniferous Limestone, but in no more than 15 minutes, I was able to identify elements of several igneous, metamorphic, and other sedimentary rocks. The shingle banks are also a fascinating habitat in their own right, and the blanketing of the foreshore with (presumably) dredged sand is a prospect that should be viewed with concern by both geologists and ecologists. Perhaps we need to promote real local geotourism! *Keith Nicholls*

NEWS ITEM — *Siccar Point Pipeline Protests*

Late in August, the Scottish Geodiversity Forum was alerted by a local tour-guide to a proposal for an effluent discharge pipeline adjacent to Siccar Point, James Hutton's grand example of an angular unconformity. It is probably the most important geological locality in the world. With the deadline for objections only hours away, and just a handful of objections registered, there was every likelihood that the proposal would slip through the planning process with barely a murmur. The benefit of a national coordinating Forum, with immediate access to a diverse range of well-connected individuals, became obvious that afternoon as word spread rapidly that Siccar Point was "under threat"; within 3 hours, the objections had jumped from 4 to 37. Hundreds more poured in over the following weeks from around the world.

Drysdales, a vegetable processing company and an important local employer, have plans to expand their operation, making the current effluent treatment measure, a reed bed, inadequate. The online planning application described the pipeline route, less than 200m outside the boundary of the Siccar Point SSSI, but lacked information of what would be discharged. A local website was set up and, lacking detailed information, painted a grim picture of granulated vegetable waste smeared along the coastline.

Siccar Point seen from the south-east, with the most famous exposures of the unconformity just hidden from view. The proposed pipeline will discharge into this bay, about 140 metres due east (off image to the right) of the rocky point. Many visitors enjoy the view of the unconformity from the headland (pictured here) without actually descending the steep slope.

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NEWS ITEM — *Siccar Point Pipeline Protests* (cont.)

Many of the objections were brief, simply pointing out the importance of Siccar Point; easy to dismiss by saying that the pipeline was outside the SSSI boundary. The volume of objections however led to more careful scrutiny. The applicant provided more detail, and the Scottish Environment Protection Agency clarified that the discharge licence would be dealt with separately. With well thought-out, heavyweight objections from the Geological Society, GCUK, the Geologists' Association, and kindred bodies the spotlight was firmly on Siccar Point, and the planning department sought the advice of the British Geological Survey.

Grassy slope to the east of Siccar Point. The proposed pipeline will cross this slope diagonally from top right to bottom left. Top of slope is 60m OD at right of image.

Their response reinforced the international importance of Siccar Point, urged caution in a development that will be clearly visible from the Siccar Point headland, and highlighted that the pipeline crosses steep landslide deposits. This rigorous geological input was backed up by the submission of the tenant farmer who testified to its current instability.

BGS's careful, authoritative words contrast sharply with a very poor response from the local office of Scottish Natural Heritage. They, as the statutory consultee, responded early and cursorily, then ducked the ensuing barrage of criticism, refused to consider the wider landscape, ignored the Geological Conservation Review description of the whole coastline section, and kept their focus just on the narrow SSSI boundary. They even stated that they ***"have no concerns that vegetable matter will affect Siccar Point SSSI".*** The Planning Officer's report, released quietly just days before the Planning Committee met on 5 November, puts it pretty clearly ***"Having regard to SNH's statutory role in the assessments of the impacts of the development of national nature conservation assets, their decision not to object to the proposed development . . . is very significant in the determination of this application."*** Unsurprisingly, planning permission was granted, with objectors having no right to speak at the Planning Committee and no right of appeal. Submissions to the Planning Department are still available online at:

http://eplanning.scotborders.gov.uk/online-applications/, search for 12_00929.

What next? At its best, once the scar heals the buried pipeline will be barely visible to visitors and the dirty water discharge will quickly dilute and disappear. At its worst there will be major changes to an unstable slope, continued land-slipping over years damaging the pipeline, solid material from the discharge washing up on shore and significant environmental change to the marine environment. The geological community and local people have been reminded of the immense importance of Siccar Point and its currently lowly status; it deserves much better! World Heritage status has been mooted: a huge amount of work, but surely justified in the longer term. And for the Forum: yes, we can achieve a lot by working together, but we have a long way to go in communicating our geodiversity's importance and value to society.

Angus Miller

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NEWS ITEM — *The Primary Curriculum and Geology*

A draft primary curriculum in mathematics, English and science was published for England by the Department for Education (DfE) in June 2011. It seems that the Department has heeded the recommendations made by the geoscience education community late last year. Relevant parts of the draft science curriculum are shown in the following table:

Programme of Study *Pupils should be taught to:*	**Notes and Guidance**
Year 2 [6-7 year olds]	
Everyday materials Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock	Pupils may study materials additional to those listed in the Programme of Study; for example: in school: brick, sand, paper in school grounds: soil.
Uses of everyday materials Identify and compare the uses of a variety of everyday materials, including: wood, metal, plastic, glass, brick/ rock, and paper/ cardboard.	Examples of uses of materials listed include: brick: walls, steps, buildings, houses. Pupils can apply their knowledge and skills by: comparing the uses of everyday materials in and around the school with materials found in other places (at home, the journey to school, on visits
Year 3 [7-8 year olds]	
Rocks Compare and group together different kinds of rocks on the basis of their simple physical properties Relate the simple physical properties of some rocks to their formation (igneous or sedimentary) Describe in simple terms how fossils are formed when things that have lived are trapped within sedimentary rock.	Ensure pupils understand that different kinds of rocks are found on and under the Earth's surface, and that the properties of different kinds of rocks relate to the way in which the rocks were formed. Pupils can apply their knowledge and skills by: Discussing different kinds of rocks and how their properties make them useful in different ways e.g. granite is hard and polishes to a smooth surface, so makes good work surfaces and monuments; limestone is soft and crumbly and you can draw with chalk; sandstone is an attractive building material but does not weather well because it erodes relatively quickly; jewellery can be made from crystals in rocks. Pupils can set up and perform simple tests on the properties of a variety of kinds of rock, record their findings (using simple scientific language, drawings, labelled diagrams, bar charts or tables), report on their findings including presenting written explanation, and use their results to suggest improvements and predictions for setting up further tests. Discussing the differences between igneous rocks (hard, have crystals in them, found where volcanoes have erupted e.g. granite, basalt) and sedimentary rocks (found where there has been a seabed, made up of layers of sediment squeezed and squashed together, tend to be softer and a bit crumbly e.g. limestone, sandstone and shale). Looking at rocks with a hand lens to decide if they are made of grains or crystals, and whether they have fossils in them. Pupils can observe closely and report on their findings, including presenting written explanation. Discussing the different kinds of living things whose fossils have been found in sedimentary rock: for example, plants, dinosaurs, sea creatures (e.g. ammonites and trilobites). Making: 'biscuit fossils' using crumbled biscuits, syrup, and raisins; a model of igneous rock formation using molten chocolate; or a model volcano using bicarbonate of soda and vinegar. *Teachers should be aware that a third category of rocks, metamorphic, consists of rocks which have been changed through the action of heat or pressure. Pupils are not expected to be taught about this category, but teachers should be prepared to answer questions about the nature of e.g. marble and slate.*

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NEWS ITEM — *The Primary Curriculum and Geology*

Programme of Study *Pupils should be taught to:*	Notes and Guidance
Year 4 [8-9 year olds]	
Classification of living things Identify and name a variety of living things (plants and animals) in the local and wider environment, using classification keys to assign them to groups give reasons for classifying plants and animals based on specific characteristics and how they are suited to their environment.	Pupils can apply their knowledge and skills by: describing and comparing the classification of common plants and animals to living things found in other places (at the zoo; under the sea; at the farm; pre-historic life; extinct plants and animals). Support this work by using the science biographies of Charles Darwin (explained the diversity of life) …
Year 6 [10-11 year olds]	
Evolution and inheritance Explain that evolution happens over time, fossils provide information about living things that inhabited the Earth many years ago; how animals and plants are suited to and adapt to their environment in different ways; and how this leads to evolution.	Building on the topic on Rocks in Year 3, pupils should be introduced to the fossil as evidence for evolution. This can include how they are formed, the types of plants and animals most likely to be preserved as fossils, and how fossils are used to explore the characteristics of prior animals and plants. Pupils can be introduced to the work of palaeontologists. Pupils can apply their knowledge by: discussing how fossils are formed and how they help build a picture of what animals and plants were like, including what we know about dinosaurs.

ESTA and GCUK members will note some erroneous oversimplifications in this draft material, but the DfE has been alerted to these and hopefully, will correct them before final publication. This detailed Earth science content in the draft curriculum is most welcome, as it is a marked increase on the current curriculum. It is certainly likely to mean an increase in the CPD offered by the ESTA primary group and by the Earth Science Education Unit (ESEU), since many current primary teachers will be unfamiliar with this material. A possible reservation to the draft might be that the bulk of the material is aimed at 7-8 year olds, an age when many children might find it difficult to grasp some of the concepts involved, so any CPD provided by ESTA and ESEU will need to be carefully targeted. A second reservation was that the increased Earth science content in the primary curriculum might mean a reduction in the Earth science content of the secondary curriculum – despite the efforts of the geoscience education community to avoid such an outcome.

However, the draft secondary science curriculum document for England has recently been 'leaked' and has then been criticised for being, to paraphrase one commentator, "just a list of content". But it is good to be able to report that this list of content includes Earth science phrases very similar to those of the current KS3 and KS4 science curriculum, even though they are presented in chunks of science clearly labelled as 'biology', 'chemistry' and 'physics'. Should the various drafts eventually see the light of day with the Earth science intact – it seems that the Earth science content, will remain significant, if small – and that all pupils will receive some teaching in Earth science through the national science curriculum. Clearly though, we must 'watch this space', as ever if we are to safeguard the subject and thence ensure a good supply of future geologists and geoconservationists.

Chris King

M E E T I N G S and C O N F E R E N C E S

7th International Symposium ProGeo, Bari, Italy (24-28 September 2012)

The symposium was organised around four main themes:

- ◊ Geosites - to discuss the recent developments in geodiversity assessment methodologies and geosites inventories in Europe and, also, to discuss the legal framework supporting geoconservation strategies
- ◊ Geological heritage and land-use planning - to discuss land-use planning, threats and constraints and to promote the best practices and lessons learned in regional and local land use planning
- ◊ Geoparks and Geotourism - to encourage a possible convergence between geoconservation and geotourism and to discuss sustainable management policies and geosites exploitation within geoparks
- ◊ Co-operation and Education - to improve international cooperation and local initiatives for the education and dissemination of science and to establish links between geoconservation specialists, mainly in Mediterranean area.

There were many relevant talks given relating to geoheritage. Of particular interest were talks on hazard mapping along the Giant's Causeway, a PhD project from Belfast, drawing rocks – a children's project which also considered how field sketches could be improved, the progress of the sites inventory in France and a project on geology along a railway line in Hungary. One particularly good talk was given by a Portuguese MSc student on monitoring a protected site in Azores and the quantitative work being done on this. There were many more diverse talks on all subjects. One of the main points gained from other countries' presentations is that, unlike the UK, much of the preservation of geoheritage only takes place where government, European or state funding is available. There is not a culture of amateur involvement in most countries. Another point raised was that there is not an obvious link to the European grant system for geoheritage. The pre-symposium field excursion took place around the Gargano Peninsula just north of Bari and excellent examples of Chalk *(see above right)* and flint deposition with slumping and faulting disrupting the bedding. *Lesley Dunlop*

NEWS ITEM — *Recent GCUK Emailings to Groups*

The following emails have recently been sent out to groups over the past three months:

19th September 2012 GeoConservationUK Notice of AGM 10 November 2012 - FIRST MAILING
4th October 2012 GeoConservationUK Notice of AGM 10 November 2012 - FIRST MAILING (Reminder)
19th October 2012 GCUK AGM - SECOND MAILING
30th October 2012 GeoConservationUK Chairman's Report 2011-2012 and details of meetings

Please do contact me (at lesley.dunlop@northumbria.ac.uk) if you have not received any or all of them as the contact details we currently hold from your group might now be incorrect. *Lesley Dunlop*

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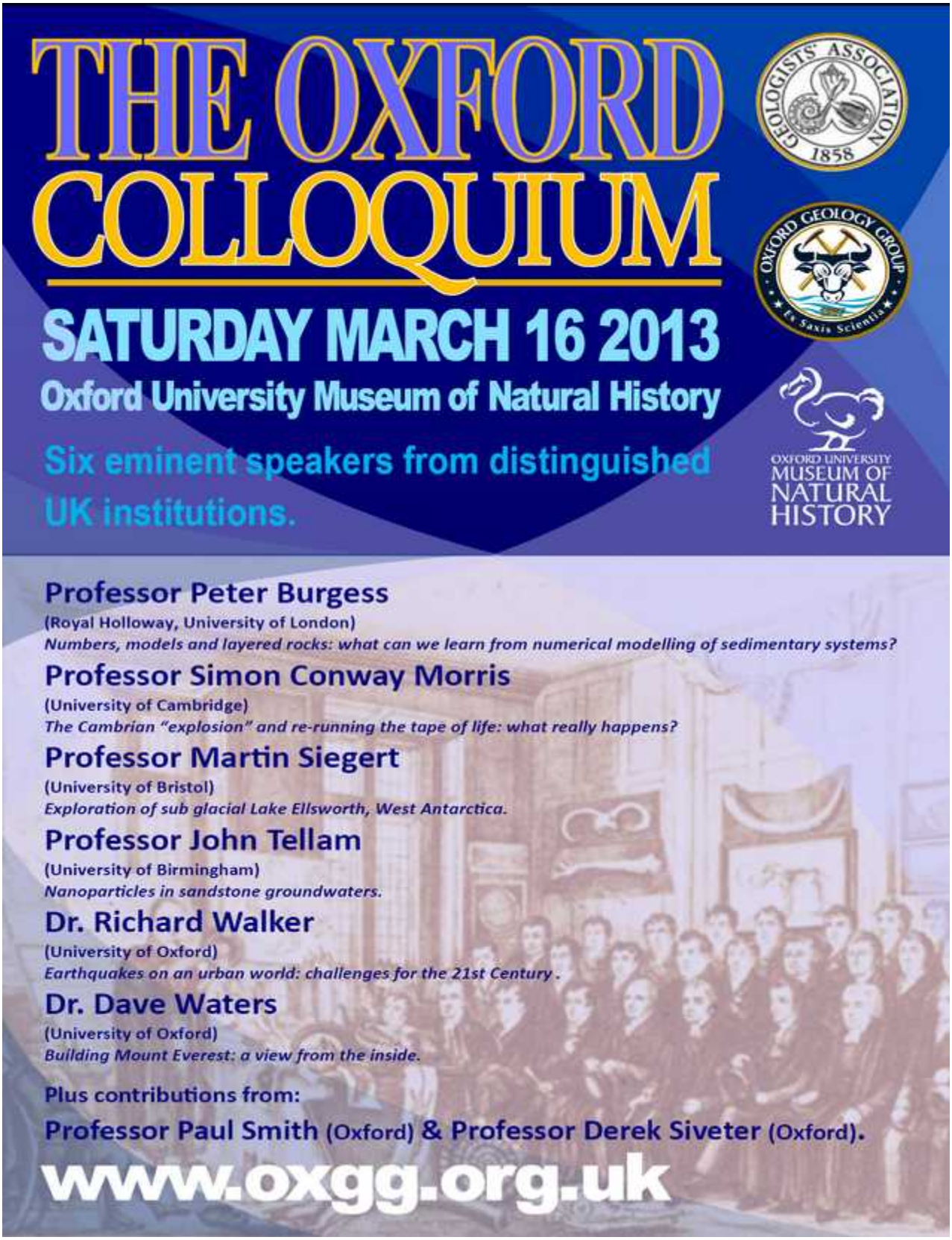
M E E T I N G S and C O N F E R E N C E S



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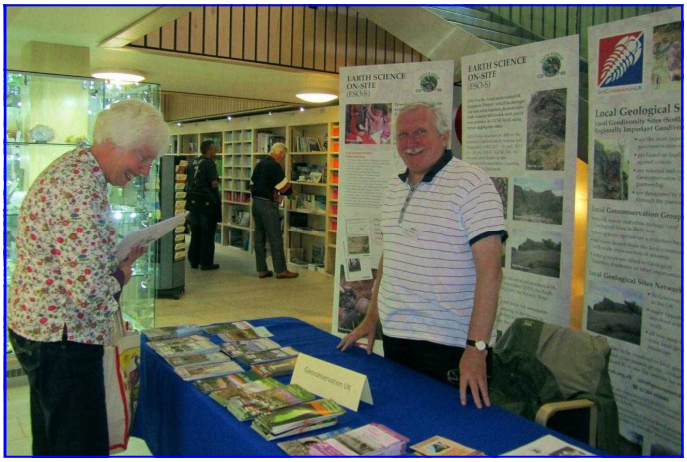
MEETINGS and CONFERENCES

GeoConservationUK acknowledges the support of ***Rockhounds Welcome!*** in the production of this *Newsletter*

ESTA at BGS (28-30 September 2012)

Over 80 delegates attended the 2012 Earth Science Teachers' Association (ESTA) Conference at BGS, Keyworth, Nottinghamshire. The GCUK stand *(see below right)* was in a prominent position, between the bookshop and coffee point! It was good to meet up with chums who helped with the 'Earth Science On-Site' teaching materials, including Maggie and Peter Williams, Elizabeth Devon and Suzie Lydon. There were several other GeoConservation Group people, including Peter Jones, who was manning the University of Derby stand.



© *Hazel Clark*

ESTA Conferences offer a mix of lectures, hands-on activities and fieldwork. Teachers had the opportunity to view the new BGS facilities, plus the amazing Tescoesque rock store. They were able to develop teaching resources based on the Geological Walk - a broad selection of large rocks laid out in the form of a wide and long path in geological succession! Other sessions included a look at web-based BGS teaching resources and 3D modelling, and an innovation from St. Andrews, the popular GeoBus Project — two teachers and a minibus full of Earth science teaching resources can be booked by schools to teach classes at all levels, but sadly only in Scotland! The lectures included an updating on shale gas as a global resource, by Mike Stephenson [BGS] and Mark Anderson [Plymouth] demonstrated student-centred fieldwork using mobile technology at one of his field teaching sites in SW Devon. DIY Fieldwork apps have arrived! More on this next year.

The Conference Dinner was held in the Long Room at Trent Bridge Cricket Ground, much to the envy of my three willow-wielding grandsons! Sunday field excursions were to classic locations - the National Stone Centre, led by Geoff Selby-Sly [NSC & ESTA Primary] and Bradgate Park, led by David Bailey [BGS & ESTA Secretary] and Keith Ambrose [BGS & GCUK]. Both provided challenging teaching scenarios, were very rewarding and the rain held off. A thoroughly good Conference! *John Reynolds*