



YORKSHIRE GEOLOGICAL SOCIETY

President: Martin Whyte Ph.D

THE UPS AND DOWNS OF SEA-LEVEL: A TRIBUTE TO THE WORK OF W.H.C. RAMSBOTTOM

*Geologist at
Hawsker Bottoms
investigating the Lower
Toarcian mudstones,
a record of a major
Jurassic sea level rise.*



SPEAKERS: BILAL HAQ, NATIONAL SCIENCE FOUNDATION,
WASHINGTON, USA
MIKE SIMMONS, NEFTEX, ABINGDON
TONY HALLAM, UNIVERSITY OF BIRMINGHAM
PAUL WIGNALL, UNIVERSITY OF LEEDS

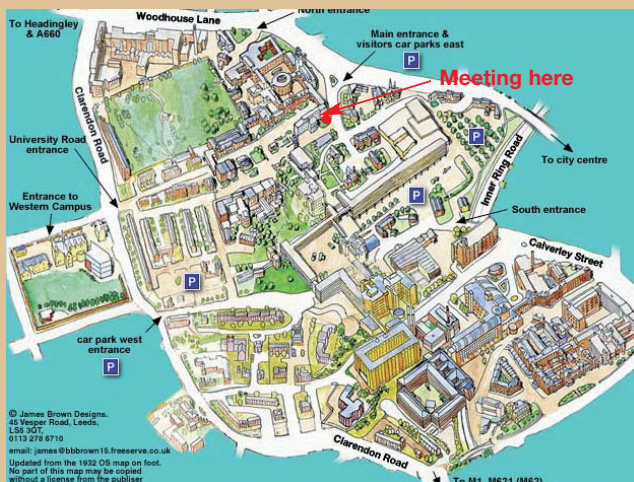
14.00 - 17.00 SATURDAY 20TH JANUARY 2007
RUPERT BECKETT LECTURE THEATRE, UNIVERSITY OF LEEDS

*A joint meeting with the Leeds Geological Association and the School of Earth and Environment,
University of Leeds held in celebration of the bicentenary of the Geological Society of London and the
Local Heroes Programme of the Geological Society and the Geologists' Association.*

THE UPS AND DOWNS OF SEA-LEVEL: A TRIBUTE TO THE WORK OF W.H.C. RAMSBOTTOM

This meeting will focus on the study of sea level change in geological history and will show how pioneering work in the succession of northern England has led to universally applied techniques for studying such changes throughout the world. For example the identification of shall-scale sediment cycles (cyclothems) in "Yoredale" - now Wensleydale - was amongst the first times that such universal styles of sediment organisation had been recognised. Bill Ramsbottom, formerly of the Geological Survey in Leeds, did much of the important modern work on the interaction of sea-level change during the 1960s to 1980s, with the Carboniferous geology of Pennines and Yorkshire Dales providing much of the natural laboratory for his studies. This work pre-empted the sequence stratigraphic revolution of the late 1980s through to present day that now underpins much of the exploration work of the hydrocarbon industry.

- 14.00 - 17.00 SATURDAY 20TH JANUARY 2007
Rupert Beckett Lecture Theatre, University of Leeds
- 14.00 - 14.05 Introduction and Society Announcements
Martin Whyte, President
- 14.05 - 14.50 Can a Meaningful Palaeozoic Eustatic Sea-Level Curve be Constructed?
B. Haq, National Science Foundation, Washington
- 14.50 - 15.20 Global, Synchronous, High-Amplitude, Rapid Sea-Level Change in the Geological Record: Linkage to Extreme Climate Change.
M.D. Simmons, Neflex, Abingdon
P.R. Sharland, R.B. Davies, D.B. Kemp & O.E. Sutcliffe
- 15.20 - 16.00 Tea and Coffee
- 16.00 - 16.30 The Problem of Determining and Understanding the Cause of Short-Term Eustasy in a Greenhouse World
A. Hallam, School of Geography, Earth and Environment, University of Birmingham
- 16.30 - 17.00 Mass Extinctions and Sea-Level Change
P.B. Wignall, School of earth and Environment, University of Leeds
- 17.00 - 17.05 Closing Remarks



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CAN A MEANINGFUL PALAEOZOIC EUSTATIC SEA-LEVEL CURVE BE CONSTRUCTED?

Bilal U. Haq

National Science Foundation, Washington, USA

While the mechanism remains elusive, it is apparent that Earth suffered through major sea-level fluctuations during the Paleozoic on scales similar to the eustatic changes of the Mesozoic and Cenozoic. In recent years the accumulation of worldwide sequence stratigraphic data has shed new light on the second- and third-order base-level variations from various regions. These can be clearly distinguished as those caused by tectonic processes and those that cannot be ascribed to tectonics (and were thus most likely eustatic). For example, the Paleozoic record of sea-level change on the Arabian Platform can be unambiguously differentiated into periods influenced by strong diastrophic activity, alternating with periods of tectonic quiescence. Thus, for the Cambrian through early Silurian interval of relative tectonic inactivity, the sea-level record of the basins around the Arabian Plate may represent a meaningful facsimile of eustatic history, while the mid Silurian through Permian interval shows strong local tectonic influences. Such stacked data from various worldwide regions (during periods of tectonic quiescence) could form the basis of a meaningful record of global mean sea-level change for the Paleozoic. The concept of designated reference districts for eustatic events (from areas that meaningfully represent the global mean for certain time intervals) could then be introduced along with the resultant Paleozoic sea-level curve and estimates of the magnitude of eustatic changes.

GLOBAL, SYNCHRONOUS, HIGH-AMPLITUDE, RAPID SEA-LEVEL CHANGE IN THE GEOLOGICAL RECORD: LINKAGE TO EXTREME CLIMATE CHANGE

M.D. Simmons, P.R. Sharland, R.B. Davies, D.B. Kemp, O.E. Sutcliffe

Neftex Petroleum Consultants Ltd, 115BD Milton Park, Abingdon, OX14 4SA, UK (mike.simmons@neftex.com)

Five years ago we demonstrated the occurrence across the Arabian Plate of 63 synchronous Maximum Flooding Surfaces (MFS) during the Late Precambrian – Phanerozoic [1, 2]. Ongoing work, incorporating all the stratigraphy of North Africa and examination of other regions, can now demonstrate the occurrence of 114 such 1st, 2nd and 3rd order surfaces, and intervening sequence boundaries.

Each of our MFS is defined in a Reference Section. This is a location with good sedimentological and/or wireline log evidence for a MFS, supported by biostratigraphy. The biostratigraphy also provides constraint on the correlation of the MFS to its occurrence in other locations. Each of our MFS can be shown to be occurring within the same biozone, or correlative, in different basins across the Middle East and North Africa region. Data from differing fossil groups have been calibrated to the standard zonation for each Period. Sequence boundaries are age-calibrated and correlated in a similar manner via their correlative conformities.

Given the clear synchronicity of these MFS (regardless of order) throughout basins of differing subsidence and sedimentation rates, these surfaces must be eustatic in origin. A challenge now is to explain the driving mechanism(s) behind this eustasy.

Larger 2nd order MFS are often coincident with sudden and extreme environmental change as interpreted from carbon and oxygen isotope excursions. We will illustrate this phenomena with reference to our Cm20 (middle Cambrian), J20 (Toarcian), K80 (early Aptian) and K140 (base Turonian) MFS.

There are essentially two Earth states; these are commonly termed “icehouse”, as at present, where all orders of sea-level change appear mainly due to ice-volume fluctuations driven by orbital forcing, and that commonly termed “greenhouse” where different orders of sea-level change are driven by differing mechanisms but still result from ice-volume fluctuations. As eustatic sea-levels of both “icehouse” and “greenhouse” are ice volume-controlled we feel these terms are misleading and somewhat redundant. There is a threshold beyond which a “greenhouse” state rapidly becomes “icehouse”. The trigger to exceed this threshold is likely to be regional tectonic uplift.

During periods where terrestrial ice volume is significant, orbital forcing appears sufficient main causation for all orders of sea level change, including the rapid high amplitude 2nd order sea level change evidenced by the 120m sea level rise in the last 15,000 years [3]. Whilst catastrophic methane hydrate disassociation may have played a role in such sea-level rises [4], by contributing to global warming, the initial trigger for the disassociation is almost certainly orbital forcing.

In contrast, supposed “greenhouse” periods of the Phanerozoic have traditionally been viewed as times of little or no ice, with the implication that rapid high amplitude sea level change is not possible. This is not what is indicated by the geological record where such transgressions clearly occur. A further explanation is required. Miller et al. have speculated on the presence of ephemeral polar ice during

“greenhouse periods” [8] and this modelling is supported by increasing empirical and isotopic proxy evidence.

During “greenhouse” periods our hypothesis is that high-latitude and/or high-altitude terrestrial ice sheets were present for most of the time moderated by ‘background’ orbital forcing and plate-tectonic processes, resulting in relatively low-amplitude 3rd order sea-level change. These background processes were periodically amplified by major but short-lived volcanic events releasing greater volumes of greenhouse gases into the atmosphere than were capable of sequestration thus raising temperature, melting ice and increasing sea-levels significantly above background. If temperature rise was sufficient, this in turn triggered catastrophic methane release from gas hydrates [5, 6] which rapidly accelerated global warming into a “runaway reaction”, potentially melting all ice and resulting in a major, rapid but short-lived 2nd order global transgression which we can recognise in the stratigraphy. Sea levels quickly returned to background once volcanic out-gassing was exceeded by the rate of carbon sequestration caused by chemical weathering.

We believe this cycle may occur in significantly less than 1 million years [7] resulting in a ‘spiky’ eustatic curve. Our model currently contains 38 2nd order cycles suggesting that major volcanic events capable of inducing extreme climate change are more common than generally accepted.

Rapid climate change caused by a variety of mechanisms that moderate terrestrial ice volumes remains the only plausible mechanism to generate synchronous, rapid and high amplitude 2nd order changes in sea-level. As noted by Alley et al. [9], climate change can be abrupt, once a given physical threshold has been surpassed. Antarctic ice cores [10] show warming occurs much more quickly than cooling, hence resulting eustatic sea-level curves should be asymmetrical.

References

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THE PROBLEM OF DETERMINING AND UNDERSTANDING THE CAUSE OF SHORT-TERM EUSTASY IN A GREENHOUSE WORLD

Professor A. Hallam

School of Geography, Earth and Environmental Sciences, University of Birmingham, Birmingham B15 2TT.

The great Austrian geologist Eduard Suess was the first person to introduce the concept of global, or eustatic, sea-level changes at the end of the 19th century. Though he cited the so-called Cenomanian transgression of the mid-Cretaceous as an outstanding example, his idea was taken up from early last century most enthusiastically by Quaternary geologists, because the mechanism of glacioeustatic control by the alternate melting and freezing of polar ice caps was well understood. For long periods of time, when evidently there were no polar ice caps, most notably in the Mesozoic and early Palaeogene, though recently an unconvincing claim has been made for glacioeustatic changes extending back into the late Cretaceous (Miller et al. 2005), the underlying mechanisms for eustatic control were not well understood. However, with the success of plate tectonics, this began to change from the 1970s onwards, with the recognition of the relationship of changing rates and areas of seafloor spreading to the volume of ocean ridges, allowing displacement of seawater onto and withdrawal from the continents. This leaves us with a tectono-eustatic, as opposed to glacioeustatic, option to account for global sea-level changes in greenhouse times. The rates of sea-level change by this mechanism are, however, up to several orders of magnitude lower than the glacial alternative. The other possibilities, involving continental collision and sedimentation, plausibly allow only much smaller amounts of change. Yet there have been claims by the Exxon group of geologists, led by Peter Vail, of eustatic control of their so-called 3rd order cycles, lasting from about 1 to 10 myr, based on their analysis of first seismic and then sequence stratigraphy, and independent claims by others based on a combination of facies analysis and fine-scale biostratigraphy, of comparable eustatic changes of up to a few tens of metres over such time periods.

The Exxon approach to eustasy using sequence stratigraphy has been strongly and persistently criticised by Andrew Miall (e.g. Miall 1997) but has not yet elicited a satisfactory response. Here I focus on the Jurassic system, which I know best, to attempt a critical analysis of the alternative approaches to short-term eustasy, namely sequence stratigraphy and facies analysis in conjunction with fine-scale intra- and intercontinental correlation using ammonites. It is demonstrated that the familiar Exxon global sea-level chart (Haq et al. 1987) is heavily influenced by the original seismic stratigraphy analysis by Vail and Todd (1981) in the North Sea, an area subsequently shown to be strongly distorted from the global picture by regional tectonics. The alternative approach is also vulnerable to the fact that marine regressions on a global scale, as opposed to regional, are much more difficult to demonstrate than transgressions, and in the past episodes of marine sedimentary shallowing have often led to inaccurate interpretations of emergence and regression. The model of Jurassic sea-level change that is now best supported by the evidence is of episodes of short-term sea-level rise being interrupted by stillstands rather than sea level fall during a time of slow overall rise. Several major episodes of regional regression, such as in NW Europe and the Andes, can be clearly demonstrated. Thus serious doubt is thrown on the reality of episodes of short-term oscillations.

Accordingly there is no need to invoke tectonic models invoking within-plate lithospheric stress or stress/density changes to account for 3rd order cycles because such changes are unlikely to have been

global in extent. Likewise, changes in mantle flow can only be regional in extent, though much wider than individual sedimentary basins, which is a shortcoming of the Cloetingh-type models. Precise, quantitative estimates of sea-level changes at given rates are very difficult to make, but two European examples can be demonstrated to suggest that, whereas the early Toarcian sea-level rise, which is certainly eustatic, took place at a speed which is consistent with normal tectoneustatic processes involving ocean ridges, the regression-transgression couplet across the Triassic-Jurassic boundary involved changes too rapid to be accounted for other than by extensive regional tectonics.

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MASS EXTINCTIONS AND SEA-LEVEL CHANGE

Paul Wignall

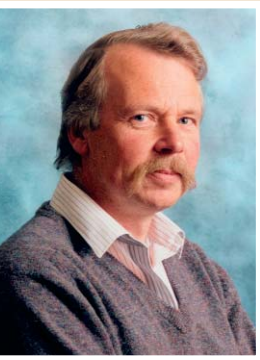
School of Earth and Environment, University of Leeds.

In the early days of mass extinction studies, sea-level changes, and in particular major regressions, were seen as an important cause of such crises. This connection was made most forcibly by Newell (1967) who argued that shrinking epicontinental sea habitat can have a deleterious effect on the organism living in such areas. This is a corollary of the species-area effect in ecological studies and in essence states that the less habitat area available the fewer species there will be. More recent studies have continued to show the link between mass extinctions and high amplitude sea-level change although the spread of anoxic marine waters during transgression is often seen as a more direct connection (Hallam 1989). This is particularly the case for the end-Permian extinction once regarded as the quintessential example of a regression-forced extinction but now seen to correlate with both transgression and anoxia. So what remains of Newell's original regression and extinction hypothesis? The answer is a surprising amount. Thus, several of the biggest extinction events coincide with spectacular global lowstands of sea level with the end-Triassic crisis being a particularly noteworthy example (Hallam & Wignall 1999). The Mid-Carboniferous crisis, first identified by Ramsbottom, also still retains its link with a major sea-level fall (Saunders & Ramsbottom 1985). Such connections are often overlooked in the latest, more "trendy" extinction scenarios that typically invoke phenomenon such as gas hydrate release and meteorite impact.

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A WORD FROM THE PRESIDENT



It is a very great honour to be taking over as your President. I am particularly fortunate in this to be working with an excellent team of Officers and Council Members. Since I came back on Council, I have been impressed by how its organisation has changed, with a new structure of committees and sub-committees. This is not in any way a criticism of past Councils or their undoubted enthusiasm but simply a statement that in the present Council we have, I think, a structure that is very appropriate to the present needs of the Society. It is also a very enabling structure and gives Council Meetings a real vibrancy with the willingness and contribution of Council Members shining through. I hope that we will be able to continue and build on this in the new Council with its mix of serving and newly elected Members.

But, no matter how good the Council, we also need the Society's members to be involved, to be active and to support activities. Thus, at this time of New Year Resolutions, I would like to challenge you all to resolve to do one more thing for the Society in the coming year than they did last year. This might be attending another meeting, indoor or outdoor, or offering someone a lift to a meeting, or submitting an article to the Circular or a paper to the Proceedings, or encouraging someone else to do so, or passing on to a Council Member an idea for an activity, or enlisting a new member. There are many ways of contributing. If every member could do this one thing, how much we would all benefit and be encouraged to do even more.

For some, the first chance to keep this resolution will come with the January meeting advertised in this Circular and I do recommend it to you all. This meeting, like several others in the coming year, is picking up on the Geological Society of London's Bicentenary Local Heroes initiative. In this case, our local hero - Bill Ramsbottom - had strong associations with the Society; he was President of the YGS and several of his most important papers on Carboniferous sea-level cycles appeared in the Proceedings. To celebrate his work, and what it has led to, we have an international cast of speakers, who will be well worth hearing.

A Happy New Year to you all and remember – Your Society needs you.

NEW COUNCIL MEMBER - JOHN HUDSON

I was born in Derbyshire and came to live in Yorkshire in the 1950s. I am an amateur geologist and my interest goes back some 50 years when I lived at Reighton Gap, right on top of the Speeton Clay. My fossil collecting there during the school holidays led to a wider curiosity about geology. After two aborted attempts to study geology with the Open University I finally began working towards a BSc in geosciences in my 52nd year.

I am a member of the newly formed Rotunda Geology Group based in Scarborough, and also spend the summer season working for the Dinosaur Coast as a freelance guide, another excuse to talk to people about geology.

I have been self-employed in a variety of jobs over the last 30 years, far too numerous to mention, but it has provided me with enough spare time to pursue my other interests.

I am looking forward to my time on council where I am sure my enthusiasm for Yorkshire geology can be put to good use.



NEW MEMBERS

Mr Joseph E. Brown	Knapton, York
Mr Alan Staniforth	Robin Hood's Bay, N. Yorks
Miss Nicola Dods	Bushey, Herts
Miss Alexandra Adams	Rotherham, S. Yorks

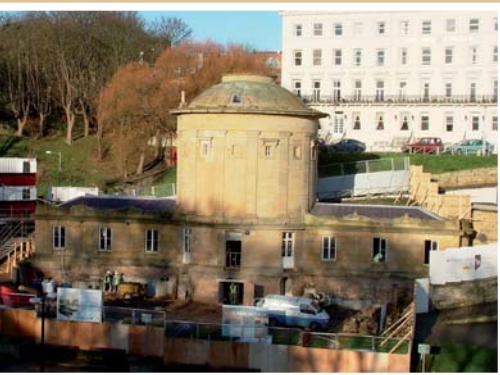
PHILLIPS MEDAL

Dr Mike Romano receiving the YGS John Phillips Medal from Dr John Powell, President, at the AGM in York on 25th November 2006.

Photo: Dr. Noel Worley



ROTUNDA: THE WILLIAM SMITH MUSEUM OF GEOLOGY – A PROGRESS REPORT



The redevelopment of the Rotunda Museum in Scarborough as 'The William Smith Museum of Geology' entered a new and exciting phase with the start of building work on the site in September this year. This followed a massive fundraising exercise led by Lord Derwent, whose direct ancestor, Sir John Johnstone, employed Smith on his Hackness Estate in the 1820's. Over £4 million has so far been raised, including £1.9 million from the Heritage Lottery Fund, £500 000 from the European Regional Development Fund, £350 000 from Scarborough Borough Council and almost £1.4 million from the private sector, including £300 000 from Shell.

The museum originally housed the collections of the Scarborough Philosophical Society, and featured a strong geology collection, but despite its unique connection with William Smith long ago ceased to display any geology. The redevelopment will restore it to its original purpose, but with 21st century, state-of-the-art techniques complementing the 19th century spaces. The museum initially consisted of a single circular building, the 'Rotunda', which was built under Smith's guidance and opened in 1829. Two wings were added in 1860. When the builders moved in it was discovered that one of the wings had deeper foundations than expected, the other had unexpectedly shallow ones, while the central Rotunda had none! That is now to be underpinned. The garden that was banked up against the basement wall at the front of the building has been removed and a new entrance is being constructed at basement level. This will provide room for a museum shop and toilets. Visitors will then move up a floor via a newly installed lift to the 'orientation space' on the ground floor, from which they can move into either wing or continue upwards to the top floor Rotunda Gallery.



One wing will form **Shell Geology Now**, which will incorporate state of the art displays on various aspects of modern geology

developed in partnership with international experts, including the Speeton Plesiosaur, Dinosaur Footprints, Coastal Erosion and Hydrocarbon exploration. The other gallery will form a **Gateway to the Dinosaur Coast**, with interactive displays allowing the visitor what to see where, and how to identify local fossils. There will also be information about other events, activities and venues that will facilitate exploration of the geology of the coast and how it influences everything that happens on the coast. The main circular Rotunda Gallery will explore Smith's achievements, the birth of geology in Scarborough, early coastal geologists, the building of the museum and why it could all have happened only in Scarborough! The gallery will retain the 'wow' factor with its curved showcases

redisplayed with hundreds of fossils alongside some of the best social and natural history objects in the collections.

In addition to the displays in the museum itself, the adjacent gardens are being redesigned with a geological theme, to incorporate 'fossil' trees such as the auracarians, dinosaurs, and a stone quarry. But we will also be taking geology out to the wider public, through such events as an enlarged Dinosaur Coast programme, loans to schools, and talks by eminent geologists to the Rotunda Geology Group – a newly formed, informal 'friends' group. One aim of this 'outreach' activity that is of particular interest to our supporters from the geological industry, such as Shell, BG, BP, Hanson's, Petro-Canada and Rio Tinto, is to show the huge importance of geology to our everyday life – from our water supply to the aggregates, bricks and minerals upon which we all depend.



Currently, the Scarborough Museums and Art Gallery service is under the control of Scarborough Borough Council. But with the Council's strong and enthusiastic support, an independent Scarborough Museums Trust has been set up, with Lord Derwent as Chairman and Professor Peter Rawson, a past-president of the YGS, as Deputy Chair. The Trust will take over responsibility for running the Rotunda at the beginning of January 2008, when the museum will be reopened. It has just appointed a Chief Executive, Shirley Collier, who is joining us from the Imperial War Museum. Other Museum staff will transfer to the Trust at that time, though ownership of the buildings and collections will remain with the Council. The new museum will enhance Scarborough's cultural quarter, serve as a flagship for geology on Yorkshire's 'Dinosaur Coast' and, we hope, prove a magnet for members of YGS!

Pete Rawson (Scarborough Museums Trust) and Will Watts (Scarborough Museums and Art Gallery Service).

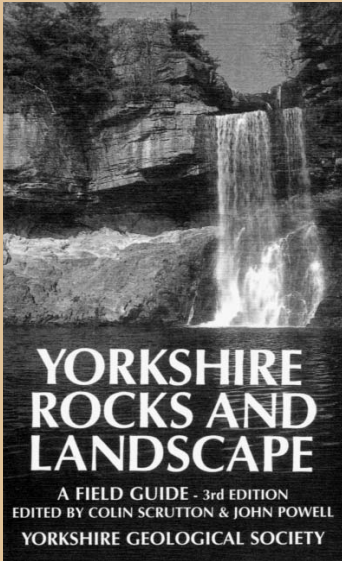
ROTUNDA GEOLOGY GROUP

Following on from Pete Rawson's Progress report on the William Smith museum at the Rotunda, Scarborough. I have been asked to mention a couple of meetings of the Rotunda Geology Group.

Thursday 1st February is a Members' Evening. The group is asking people to bring along their specimens and photographs for discussion. The YGS's very own Pete Rawson will be taking along some Argentinian and Speeton ammonites for examination.

Thursday 1st March - Hugh Torrens will be talking about William Smith in Yorkshire.

Both meetings will be held at the University of Hull Scarborough campus and start at 7.30 pm



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Please make cheques payable to Yorkshire Geological Society.

BCRA CAVE SCIENCE SYMPOSIUM

The 18th BCRA Cave Science Symposium will be held on Saturday 10 March 2007 at the University of Huddersfield.

This meeting may be of interest to YGS members, who are welcome to attend.

If you would like to attend please contact BCRA directly on either of the following two internet links

t.faulkner@bcra.org.uk

http://www.bcra.org.uk/detail/cstri_info.html

Or by telephone on +44 (0)1625 531558

CORRESPONDING SOCIETIES

Contact society representatives for the latest information.

CRAVEN & PENDLE GEOLOGICAL SOCIETY

Contact: Paul Kabrna e-mail: paul_kabrna@hotmail.com or www.cpgs.org.uk/
(usual meeting place for indoor lectures: Barden High School, Burnley)

Evolution of the Himalayan Foreland Basin, NW India

Speaker: Yani Najman Ph.D., Lancaster University

Friday, 26th January 2007

The Geology of Asteroids

Speaker: Professor Lionel Wilson, Lancaster University

Friday, 23rd February 2007

CUMBERLAND GEOLOGICAL SOCIETY

Contact: Nigel Courtman, tel. 01229 861 478 or www.cumberland-geol-soc.org.uk

Lecciones de los Andes

Speaker: Dr Andrew Bell

Newton Rigg Campus, Penrith

Wednesday 17th January 2007

Slip, Sliding Away -

The Geomorphology of the Lake District Shallow Landslides

Speaker: Dr Jeff Warburton, Durham University

Tullie House Museum, Carlisle

Wednesday 21st February 2007

EAST MIDLANDS GEOLOGICAL SOCIETY

Janet Slatter, tel. 01509-843.297; e-mail: sec@emgs.org.uk or www.emgs.org.uk
(usual meeting place for indoor lectures: Lecture Theatre B3, Biological Sciences Building, University of Nottingham)

The United Arab Emirates: A Geological Tour Saturday, 13th January 2007
Speaker: Richard Ellison (British Geological Survey)

Foundation Lecture - Trilobite! Saturday, 10th February 2007
Speaker: Professor Richard Fortey FRS

HULL GEOLOGICAL SOCIETY

Mike Horne. Tel: 01482 346 784 or e-mail: m.j.horne@hull.ac.uk or www.go.to/hullgeolsoc
(Usual meeting place for indoor lectures: Department of Geography, University of Hull, at 7.30 pm.
N.B. for security reasons the door is locked at 7.40pm)

Small is Beautiful; Foraminifera and how they've changed our view of the world Thursday, 18th January 2007
Speaker: Mike Rogerson, Hull University (Evening Lecture)

A Geological Perspective on the History and Culture of Yorkshire Thursday, 15th February 2007
Speaker: Dr John Varker, Leeds Geological Association (Evening Lecture)

LEEDS GEOLOGICAL ASSOCIATION

Anthea Brigstocke (General Secretary). Tel: 01904 626 013: E-mail: abrigstocke@hotmail.com or www.leedsgeolassoc.freemove.co.uk (usual meeting place for indoor lectures: Mathematics & Earth Sciences, University of Leeds)

LEICESTER LITERARY & PHILOSOPHICAL SOCIETY

Chairman: Mark Evans; Tel. 0116 225 4904, e-mail: Mark.Evans@leicester.gov.uk, www.charnia.org.uk/
(usual meeting place for indoor lectures: Department of Geology, University of Leicester)

The Joy of RIGS: Recent Work on Leicestershire's Geological Sites Wednesday, 17th January 2007
The National Ice Age Network in the East Midlands
Speaker: Graham Walley, Leicestershire heritage Services

The Sixth Extinction? What Dinosaurs can tell us about the Modern Biodiversity Crisis Monday, 29th January 2007
Speaker: Professor Norm McLeod, Natural History Museum
Parent Body lecture, New Walk Museum, Leicester

MANCHESTER GEOLOGICAL ASSOCIATION

Jane Michael. Tel: 0161 366 0595, e-mail: jane.michael1@tesco.net or www.mangeolassoc.org.uk
(usual meeting place for indoor lectures: Williamson Building, Department of Geology, University of Manchester)

A Belt of Complication - NW Highlands Saturday, 27th January 2007
Speakers: Professor Graham Park, Tony Prave,
Rob Butler and Kathryn Goodenough

Annual General Meeting & Presidential Address Wednesday, 14th February 2007
Constructive Geology - Ancient & Modern
Speaker: John Price, Manchester Geological Association

NORTH EASTERN GEOLOGICAL SOCIETY

Frank Trowbridge. Tel: 01642 582 786, e-mail: frank.trowbridge@care4free.net or
www.northeast-geolsoc.50megs.com

From Volcanoes to Bird Feathers: Friday, 19th January 2007
Applications of the Micro-Sr Technique
Speaker: Dr. Laura Font, University of Durham

The Use of Gold Mineralogy to Establish Potential Sources Friday 23rd February 2007
of Gold Exploited During the Bronze Age in Ireland
Speaker: Dr Rob Chapman, University of Leeds

NORTH STAFFORDSHIRE GROUP OF THE GEOLOGISTS' ASSOCIATION

Eileen Fraser Tel: 01260 271505 email: fraser@fraserco.co.uk or www.esci.keele.ac.uk/nsgga/
(usual meeting place for indoor meetings: School of Earth Sciences and Geography, University of Keele)

The Beauty and Threat of Indonesia's Volcanoes Thursday, 11th January 2007
Speaker: Dr Ralf Gertisser, Keele University
Start: 7.00pm. School of Earth Sciences and Geography, Keele University

The Volcanic Geology and Bronze Age Minoan Archaeology Thursday, 8th February 2007
of Santorini, Cyclades, Greece
Speaker: Dr Bob Roach, School of Earth Sciences and Geography, Keele University. Start: 7.30pm

WESTMORLAND GEOLOGICAL SOCIETY

E-mail: mail@westmorlandgeolsoc.org.uk , westmorlandgeolsoc.org.uk/
(usual meeting place for indoor lectures: Shakespeare Centre, Kendal)

Amazing Cretaceous Fossils from North East Brazil Wednesday, 17th January 2007
Speaker: Dr. John Nudds, University of Manchester

OTHER SOCIETIES OF INTEREST**EAST MIDLANDS REGIONAL GROUP OF THE GEOLOGICAL SOCIETY**

Ed Hough e-mail: eh@bgs.ac.uk

HUDDERSFIELD GEOLOGY GROUP

Julie Earnshaw (Secretary). Telephone: 01484 311 662 or e-mail: earniehome@ntlworld.com

SORBY NATURAL HISTORY SOCIETY

Ken J Dorning. www.shu.ac.uk/city/community/sorby/secgeo.shtml

YORKSHIRE REGIONAL GROUP OF THE GEOLOGICAL SOCIETY

Isla Smail. Tel: 0113 242 8498 or e-mail: isla.smail@arup.com

SUBMISSION OF PAPERS

Manuscripts for publication in the Proceedings should be submitted to *'The Editors, Proceedings of the Yorkshire Geological Society, Geological Society Publishing House, Unit 7, Brassmill Lane Enterprise Centre, Brassmill Lane, BATH, BA1 3JN'*. Typescripts should be prepared using the updated instructions for authors given on the inside back cover of the latest issue (Volume 56 Part 2, November 2006).

Publication of manuscripts may be expected in the next, or next but one part, following acceptance. The proceedings will be abstracted and/or indexed in, *GeoArchive, GeoRef, Geobase, Geological Abstracts and Mineralogical Abstracts, Research Alert and Science Citation Index Expanded (SCIE)*.

COPY FOR CIRCULAR

Copy deadline for Circular 536 is the 23rd January 2007.

Copy deadline for Circular 537 is the 19th February 2007.

NEXT YGS MEETINGS

The next meetings are Indoor Meetings

17th February 2007 - Sorby and the Development of Scientific Method - Sheffield

24th March 2007 - Engineering Geology through the centuries - Keyworth

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