

A Registered Charity
No. 220014

Circular 527



YORKSHIRE GEOLOGICAL SOCIETY

President: John Powell Ph.D.

AGM AND PRESIDENTIAL ADDRESS



PRESIDENTIAL ADDRESS:
THE JURASSIC OF THE CLEVELAND BASIN: A REVIEW.
PART 1: THE EARLY JURASSIC SEA
JOHN POWELL Ph.D.

15.30 to 18.00 SATURDAY 3rd DECEMBER 2005

YORK ST. JOHN COLLEGE, LORD MAYOR'S WALK, YORK
Mince pies and tea / coffee available from 3.00pm

AGENDA FOR THE ANNUAL GENERAL MEETING FOR 2005

- 1) Minutes of the last General Meeting held in Lecture Theatre CG85, University of Durham, Durham on Saturday, 5th November 2005.
- 2) Annual Report
 1 General Secretary's Report 1 General Treasurer's Report and Balance Sheet
- 3) Election to Membership
- 4) Election of Officers and other members for the 168th Session, 2006 Council's nominations are given below. The General Secretary should receive additional nominations, except for the Offices of President and Senior Vice President, no later than Thursday 1st December 2005.

OFFICERS	PRESIDENT	John Powell Ph.D.
	VICE PRESIDENT	Professor Pete Rawson. Mike Allderidge MA.
	SECRETARY	Trevor Morse Ph.D.
	TREASURER	Will Watts BSc.
	WEB EDITOR	Professor Patrick Boylan.
	CIRCULAR EDITOR	Keith Park BSc.
	PROGRAMME SEC.	Camilla Nichol BSc.
	EDITORS	Stewart Molyneux Ph.D. Doug Holliday Ph.D.
	MEMBERSHIP SEC.	Christine Jennings-Poole BSc.

COUNCIL MEMBERS

John Aram BSc.	Jonathan Ford Ph.D.	Teresa Graham BSc.
John Knight Ph.D.	Stuart Ogilvy BSc.	Helen Reeves PhD
Peter Robinson BA.	Sheila Rogers	Paul Wignall Ph.D.
Martin Whyte PhD.	Noel Worley Ph.D.	

- 5) Presentation of the MOORE MEDAL to Mr. Michael Faulkner M.Geol.
 The Moore Medal is awarded 'annually to the student from the north eastern universities and colleges who is judged to have produced the best final year undergraduate project or dissertation'.
- 6) Presentation of the FEARNSIDES PRIZE to Dr. Nicola De Paola.
 The Fearnside's Prize is awarded "not more frequently than biennially to a person under 30 years of age on 1st December in the year of the award, who has shown promise in geological research or the geological sciences and who is associated with the north of England by birth, training or locus of research.
- 7) Presentation of the SORBY MEDAL to Dr. Colin T. Scrutton.
 The Sorby Medal is awarded by Council of the Society not more frequently than biennially as "an acknowledgement of either:
 distinguished contribution to geological knowledge of Yorkshire and the north of England, or
 distinguished contributions to geological knowledge by a person associated with Yorkshire and the north of England by birth, training or locus of research".

- 8) Presidential Address 1:
THE JURASSIC OF THE CLEVELAND BASIN: A REVIEW.
PART 1: THE EARLY JURASSIC SEA
Dr. John Powell
- 9) Annual Dinner at Kings Manor
Guest Speaker: Ian Jackson, Director, Information Directorate, British Geological Survey.

THE JURASSIC OF THE CLEVELAND BASIN; A REVIEW. PART 1: THE EARLY JURASSIC SEA

John Powell Ph.D.

The Jurassic rocks of the Cleveland Basin (Yorkshire) have been a focus of geological research since the eighteenth century, including the work William Smith, his nephew John Phillips, George Young, John Bird, Martin Simpson, and the Survey geologist Charles Fox-Strangways, to name but a few. Throughout the twentieth century the excellent coastal exposures acted as a magnet for palaeontologists, stratigraphers, sedimentologists and geochemists as a natural geological laboratory, and in recent decades, the Jurassic coastal exposures received increased scientific interest as a result of their analogy with hydrocarbon source and reservoir rocks in the North Sea. Designation of the international Global Stratotype Section and Point (GSSP) for the Sinemurian- Pliensbachian stage boundary in Robin Hood's Bay, the establishment of the Dinosaur Coast, and development of the Rotunda Museum have given the regional geology additional kudos.

Former YGS President Professor John Hemingway treated the Jurassic succession of Yorkshire to an excellent review in 1974, and it has been the subject of a number of regional guides and a wealth of scientific papers. However, many of these texts concentrate on the excellent coastal sections, and it is timely to present an overview of Jurassic sedimentation in the Cleveland Basin, including poorly known data from the western margin of the outcrop. I hope my Presidential



Figure 1

Address covering the Lower Jurassic rocks (this year) and the Middle and Upper Jurassic rocks (2006) will provide an up-to-date overview of the subject, including recent advances in chemostratigraphy, including stable isotope geochemistry - and stimulate further research into outstanding problems.

My first Presidential Address will cover the sedimentation and palaeogeography of the Lias Group (Hettangian to Toarcian age; about 24 myr duration) drawing on research from the well known coastal exposures (Figure 1; cover) and the succession proved in the fully-cored Felixkirk Borehole (Figures 2, 3) located at the western margin of the outcrop. The Lias Group (199.6 to 175.6 Ma) is one of the best examples of shallow marine sedimentation in an epeiric shelf sea setting - part of the Tethys Ocean. It comprises two large-scale, upward coarsening cycles, namely the Redcar Mudstone to Staithes Sandstone cycle, followed by the Cleveland Ironstone to Blea Wyke Sandstone cycle. Within this broad pattern, smaller scale

transgressive-regressive cycles are present with stratigraphically expanded and reduced successions. Detailed ammonite biostratigraphy provides a finely calibrated temporal framework to study the variations in sedimentation that include storm-generated sandstones and limestones ('tempestites'), interbedded with mudstone deposited during fair-weather periods. Hemi pelagic mud, occasionally organic-rich, reflects deeper-water anoxic events that may indicate a response to global climate change.



Figure 2

Detailed analysis of the Redcar Mudstone Formation ('Lower Lias') on the coast and in the Felixkirk Borehole core suggests dispersal of bioclastic and siliciclastic sand from the nearshore to offshore zone by strong storm-surge and ebb bottom currents, followed by colonisation of the substrate by bottom dwellers to create the familiar bioturbated calcareous and siliciclastic 'ribs' that characterise the foreshore in Robin Hood's Bay (Figure 1; cover). In cores, these tempestite beds (Hettangian to Sinemurian) are characterised, by sharp bases that, at outcrop, are often masked by downward penetrating burrows, resulting in their earlier interpretation as upward-coarsening, basin-wide, shallowing events. Rhythmicity on a small scale in the overlying Pliensbachian 'Banded Shales' may be the result of orbitally induced, climatic cycles. Gradational upward coarsening to the Staithes Sandstone Formation marks a transition to sand-rich tempestite deposits, characterised by low angle and swaley cross-lamination, interbedded with sand-starved units (striped siltstones). The sands were probably deposited from sediment-laden, storm-surge and ebb currents in inner and mid-shelf settings; the sandy substrate was, at some levels, extensively bioturbated by deposit feeding organisms that produced a spectacular range of trace fossil assemblages characteristic of shoreface, inner-, mid-, and outer-shelf settings. Intra-basinal tectonics was a controlling factor during deposition of both the Staithes

Sandstone and the Cleveland Ironstone (Late Pliensbachian). The influx of sand is attributed to hinterland uplift and increased sediment flux. More marked intraformational uplift during deposition of the Cleveland Ironstone is manifested in a much attenuated succession in the west of the basin (Felixkirk); southwards, towards the Market Weighton High, the Pecten/Main Seam oversteps unconformably onto progressively older beds to rest on the lower part of the Redcar Mudstone Fm. Ironstone, in the form of berthierine ooids and sideritic mud, was deposited during 5-6 cycles (in coastal exposures) of higher sea-level stands that cut off siliciclastic influx from the low gradient hinterland; regressive, upward-shoaling intervals are marked by interbedded, bioturbated siltstone and fine-grained sandstone.

The Toarcian succession (Whitby Mudstone Fm. and Blea Wyke Sandstone Formation) continues the second upward coarsening cycle in response to increased subsidence, rising sea-level and an influx of siliciclastic sand. Oxygenated, open marine mud was deposited during the initial deepening phase, followed by bituminous mud, attributed to ocean-water stratification and the establishment of anoxic bottom conditions; in the west of the basin an upward shoaling sequence suggests that water depths were not as great. Recent research on the geochemistry and stable isotope signatures across this early Toarcian interval indicates widespread, global anoxic events possibly attributed to the release of methane hydrate on the ocean floor. The Alum Shale Member represents increasingly oxygenated bottom conditions and an upward coarsening motif with passage to Blea Wyke Sandstone Formation, which is preserved only in the Peak Trough, now known to be an actively subsiding, fault-bounded structure. Basin uplift accompanied by gentle folding in late Toarcian to Aalenian times removed much of the late Toarcian succession so that the Middle Jurassic Dogger Formation (Aalenian), a complex, condensed, shallow water unit rests unconformably on beds as low as the Alum Shale over much of the Basin. What was the nature of this unconformity? Ferruginous sandstone (Dogger Fm.) in coastal exposures

are of opalinum Zone age and, locally, rest unconformably, on the Alum Shale mudstone following a phase of uplift, gentle folding and erosion of the upper part of the Lias Group. Yet soft sediment *Thalassinoides* burrows penetrate downwards from the Dogger, suggesting that the Alum Shale was still relatively unconsolidated mud at the time of deposition of the Dogger sand.

The Lias Group has been an important source of economic minerals including alum, ironstone and jet in the 18th and 19th centuries, but perhaps more importantly it has stimulated exciting scientific research from the days of the Victorian naturalists and the early development of vertebrate palaeontology, to world-class ammonite biostratigraphy, and more recent sedimentological and geochemical refinements that continue to expand our understanding of the evolution of the Earth in Early Jurassic times.

Accompanying figures:

Figure 1. The Lias Group in Robin Hood’s Bay (copyright BGS/JHP)

Figure 2. Shelly ‘tempestite’ bed, Calcareous Shales, Redcar Mudstone Fm. Felixkirk Borehole core (250.70 m depth) (copyright BGS/JHP)

Figure 3. Whitby Mudstone core; Felixkirk Borehole (copyright BGS/JHP)



Figure 3

A WORD FROM THE PRESIDENT

Rocks and time

Some of our members referring to the latest International Geologic Time Scale (Gradstein, Ogg, Smith et al. 2004) may be wondering how the ‘internationally agreed’ chronostratigraphy relates to more familiar UK schemes, especially for the Carboniferous and Ordovician. The revised Geologic Time Scale (GTS), which includes a number of recently defined Global Stratotype Section and Points (GSSPs) or ‘golden spikes’ at key chronostratigraphical boundaries, can be accessed at <http://www.stratigraphy.org>. For Carboniferous workers, particularly in the UK and NW Europe, there are clearly problems in recognising global stages such as the Serpukhovian, Bashkirian, Moscovian, Kasimovian and Gzhelian, and their equivalence with well-recognised units such as the Namurian, Westphalian, Langsettian, Bolsovian etc. The issue really comes down to faunal provincialism and the use of different biostratigraphical markers such as ammonoid (goniatite) faunas in NW Europe, versus conodont/foraminifera based schemes used elsewhere. For the Ordovician, the current situation is even worse, with only three stages currently defined in the new scheme, and the abandonment of series such as the Arenig and Llanvirn.

Where does this leave UK workers who wish to have their work internationally recognised, but who need to refer to, say, the Langsettian (Westphalian A) or Duckmantian (Westphalian B) in the Pennine Basin? Well, some help is on the way. Pete Rawson, Colin Waters and I are members of the Geological Society Stratigraphy Commission. We attended a recent meeting at which these issues were raised and discussed with Felix Gradstein, Chairman of the International Commission on Stratigraphy (ICS). The concept of ‘regional’ or ‘secondary standards’ (Cope, 1996) has been broadly recognised as important in allowing the use of regional, and often

more appropriate, chronostratigraphical schemes. I prefer the term 'regional' since I do not regard the NW European Carboniferous scheme as 'secondary'. Needless to say, journal editors are being instructed to use the 'internationally agreed' terms; the Subcommission on Carboniferous Stratigraphy has recently written to our YGS Editors, Stewart Molyneux and Doug Holliday asking for the new scheme to be used in all papers in the PYGS. The Subcommission has, however, produced a table showing the general equivalence of the NW European scheme with the GTS. Although there are difficulties in precise correlation of the two schemes, it does appear that we will still be able to use the familiar terms in published work as long as their relationship with the global scheme is indicated, for example in a table or figure, in the title or at some point in the text. Stewart and Doug will be issuing guidance notes in the May 2006 part of the PYGS. My personal view is that geoscientists working on the Carboniferous of the Pennine Basin or, indeed, elsewhere in the UK will need to relate their work to the existing, workable regional scheme for some time to come. As for the Ordovician - that is another 'can of worms'!

I welcome any feedback on this matter; please contact me by e-mail at: jhp@bgs.ac.uk

Finally, I look forward to seeing many of you at the AGM and Annual Dinner, and take the opportunity to wish you all a Happy New Year!

John Powell

A Geologic Time Scale 2004 by F.M. Gradstein, J. G. Ogg, A. G. Smith et al (2004), Cambridge University Press (see also the International Commission on Stratigraphy, (ICS) web site, above).

Cope, J. C. W. 1996. The role of the Secondary Standard in stratigraphy. *Geological Magazine*, 133, 107-110.

SUBSCRIPTIONS RENEWALS DUE JANUARY 1ST 2006

It's getting to that time of the year again. No, not Christmas, but subscription time.

Subscriptions are due on January 1st 2006 and remain as last year i.e:

Ordinary	£30.00	Associate	£10.00
Over 65	£20.00	Students	£12.00

A "CH" on your circular address label indicates you renew by cheque. Enclosed is information on paying subscription renewals by Direct Debit. It is hoped that you will choose renewing by this method as there is a £2.00 surcharge payable on any subscription in arrears at the end of February, and it saves me sending out reminder letters.

Also enclosed is a Gift Aid forms to those of you who have not yet signed one on the YGS's behalf (marked * on the Circular envelope label). Please think about doing this, as it is a pain free way for the Society to claim money from the taxman, and helps delay the raising of subscription fees.

Please send cheques for the relevant amount and completed forms to Ms Chris Jennings-Poole, 6 Wolsey Drive, Stockton on Tees, TS20 1SY. If you pay by Direct Debit you need take no further action. If you pay by standing order PLEASE check with your bank that it is for the correct amount.

SUMMARY OF ACCOUNTS 2004 - 2005

The following is a brief summary of Society accounts for the year ended 31st August 2005. A full set of audited accounts will be presented to the AGM in December.

INCOME (£)	EXPENDITURE (£)
Subscriptions / Gift Aid121,959	Proceedings22,308
Sale of Publications.....4,026	Circulars.....4,562
Interest / Dividends.....1,926	Database2.....600
Donations525	Meetings.....1,074
	Miscellaneous1,651
	30,195
	Cash Deficit.....-1,759
28,436	28,436

ASSETS (£)	CASH ALLOCATION 2005 - 2006 (£)
Bank3.....12,417	For Proceedings22,720
COIF Deposit.....10,496	General Reserve12,002
National Savings Bank Deposit11,809	Total Cash.....34,722
Total Cash.....34,722	
Investments at Valuation15,901	
Total Assets50,623	

NOTES:

1. 2004/05 Gift Aid was not claimed by end of financial year - will be claimed in 2005/06.
2. Only half of normal membership database costs were paid in 2004/05 - balance will be paid in 2005/06.
3. Balance of bank account much higher than normal due to delayed transfer of £10,000 to COIF deposit account.

W B Watts
Treasurer

CALENDARS 2006

YGS Calendars are now available. We have produced a larger amount this year as 2005 was a complete sell out, but please get your orders in as soon as possible to avoid disappointment. As last year, each photograph is taken by a YGS member. Calendars are a bargain at £5.00 + £2.50 p and p if you would like your calendar posting to you rather than collecting it from the next meeting.

ANNUAL DINNER

Remember the Annual Dinner is being held on Saturday 3rd December 2005 at 6.00 pm for 6.30 pm after the AGM. As usual it will be at the King's Manor, York University.

The cost of the tickets will be £27.00. If you have special dietary requirements (vegetarian etc.) please let Stuart know at the time of booking.

Please make cheques payable to Stuart Ogilvy (not the YGS) c/o Yorkshire Museum, Museum Gardens, Museum Street, York, YO1 7FR.

MENU

Timbale of Melon and Berries with a Toasted Coconut Dressing

*Braised Shoulder of Lamb Rolled with Herbs with Dauphinoise Potato and Puy Lentils
Served with fresh seasonal vegetables*

Poached Pear with Ginger Sabayon and Caramel Sauce

Coffee and Continental Chocolates

CIRCULAR FEEDBACK

Many thanks to all those members that took the time and trouble to supply feedback on the circular, it is much appreciated. We always welcome positive feedback and constructive criticism so please keep it coming. This way we can supply the service the majority of members want.

COUNCIL INVOLVEMENT

You still have time to put your name forward if you fancy standing for the Council, one of the committees or a working group.

Please let the General Secretary know as soon as possible (details on the reverse of the circular). It's your society and needs your help.

COUNCIL MEMBERS

Born in Gateshead but raised in Kent, I left an all girls grammar school to study for a BSc (Hons) in Geology in Hull University's all male department in 1963. What a shock to the system! But I survived and my first job was to work in the hydrogeology section of the Water Resources Board in Reading. I then married in 1968 and never had the opportunity to use my geological know how, as I moved around England with my husband's jobs. We eventually landed here in the north-east in 1976, and settled down. I have one daughter, born 1972 and who got married this year, and no husband, as we divorced in 1986.

I spent many years working for local government, as a Terrier Officer and after "early retirement" in 1995 went on to get a PG diploma in Information and Library Management. Since then I held posts as Information Officer, Website Development Officer and Library Management System officer. I officially retired this year and am very busy, doing some of those things that you always mean to get around to do, but never had the time.

I joined the YGS as a student in 1965, and have acted as the Membership Secretary for the past two sessions.



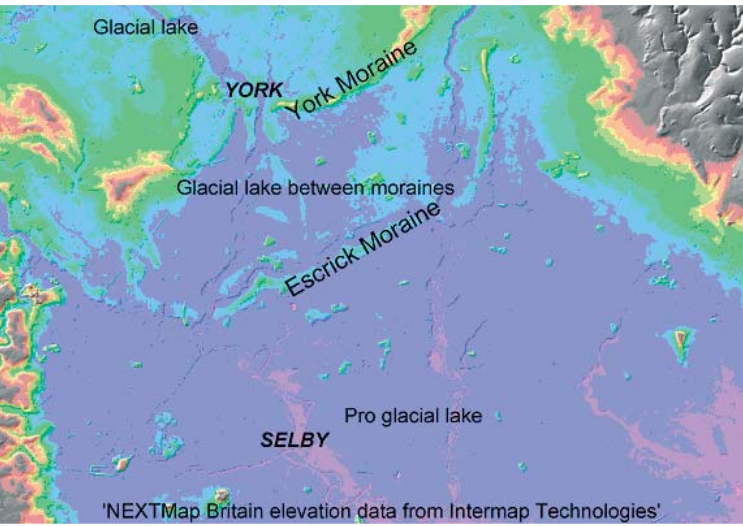
VALE OF YORK FIELD TRIP

Field trip report: Glacial Evolution of the Vale of York, 17th September 2005

Leaders: Anthony Cooper and Mike Hall with help arranging the trip from Jon Ford, Simon Price and Holger Kessler.

Saturday 17th September saw a fine day with 22 participants meeting south of York to examine the glacial sequences. During the last (Devensian) glaciation, ice blocked the Humber estuary and formed a wide glacier coming down the Vale of York from the north. The ice ploughed into a large proglacial lake impounded in the southern Vale of York and the Esdrick Moraine was formed at the ice sheet margin. Wasting of the ice left the Crockey Hill Esker and a subsequent advance formed the York Moraine. Between the York Moraine and the Esdrick Moraine, another glacial lake developed possibly contemporary with the major pro-glacial lake to the south. Further fluctuations of the ice front then led to the formation of lesser moraines across the Vale of York to the north and the impounding of yet another glacial lake to the north of the York Moraine. With the wasting of the ice in the North Sea, the Humber was eventually unblocked and the pro-glacial lakes south of the York Moraine drained. On the beds of the southern pro-glacial lakes, patchy peat was formed and subsequently buried by sand deposits washed into the lake. These were then subjected to wind erosion and redeposition.

Crockey Hill (SE 6270 4640) was the first stop to look at the subtle form of the esker deposit, a low ridge of sand and gravel that can be traced southwards for about 5km. The second locality was Stillingfleet, parking in the village and walking up the steep back slope of the Esdrick Moraine and on to the ridge to get a feel for the elevation (about 30m), width (about 1km) and length (about 40km) of the feature. Here, (SE 5920 4090) glacial erratics were examined on the top of the ridge and the recently abandoned Stillingfleet Colliery was pointed out. Then the party visited the clay pit near Glade Farm (SE6210 4030) and courtesy of the Biffa company were allowed to examine the sequence of laminated clays that comprise the major proglacial lake deposits (Hemingbrough Fm) overlain by the outwash sands (Brighton Sand Formation). Lunch was taken in the Drovers Arms at Skipwith. The first stop of the afternoon was near Skipwith (SE 6690 3780) where the sand deposits were augered through to reveal the thin peat beneath them resting on the lake deposits. Driving east,



the flood plane and wide course of the River Derwent were examined near Bubwith (SE 4671 3672) before heading to the last stop at Holme upon Spalding Moor. Here the thin sand deposits resting on Mercia Mudstone were observed in the field brash as the party walked up Church Hill (SE8150 3880). On top of the hill the capping deposits of sand and gravel containing ventifacts (wind eroded faceted stones) were discussed and the possible significance of these being pre-Devensian (possibly Anglian) in age.

FORTHCOMING YGS EVENTS

As there are some slight changes to the usual programme, we would like to remind members of these changes. As usual these dates will be confirmed as the programme moves forward.

January Meeting (21.01.2006)	Leeds
February Meeting (18.02.2006)	Sheffield
March Meeting (18.03.2006)	BGS, Keyworth
September (was October) (30.09.2006)	Scarborough
October (was November) (28.10.2006)	Hull
November (was December) (25.11.2006)	York (AGM & Annual Dinner).

ARRAN FIELD COURSE 2006

Tony Benfield (former YGS General Secretary) is running a Field Study course entitled:

“GEOLOGICAL SCENERY ON THE ISLE OF ARRAN”
APRIL 29th to MAY 6th 2006.

Anyone interested contact Tony on 0113 281 2906 as soon as possible.

NEW MEMBERS

Mrs M Price Ilkley, West Yorks

DISASTERS EMERGENCY COMMITTEE APPEAL

Members donations for refreshments at the highly successful Durham meeting on Geohazards and Marine Geology raised £75. The Society has sent a cheque for this amount to the Disasters Emergency Committee Appeal for the Asian Earthquake.

CORRESPONDING SOCIETIES

Contact society representatives for the latest information.

CRAVEN & PENDLE GEOLOGICAL SOCIETY

Yvonne James. Tel: 01282 813 772 or www.cpgs.org.uk

Carboniferous Crinoids of Clitheroe

Speaker: Paul Kabrna, C.Geol.

Friday, 16th December

Oceanographic Changes During the Late Devonian Mass Extinction

Speaker: Dave Bond, Ph.D., University of Leeds

Friday, 20th January 2006

CUMBERLAND GEOLOGICAL SOCIETY

Nigel Courtman. Tel: 01229 861 478 or www.cumberland-geol-soc.org.uk

Members Evening

Details to be announced in December newsletter.

Friends Meeting House, Keswick.

Wednesday, 7th December

The Society Excursion to Cyprus

Nigel Corman and Society Members. Newton Rigg Campus, Penrith

18th January 2006

EAST MIDLANDS GEOLOGICAL SOCIETY

Janet Slatter e-mail: sec@emgs.org.uk or www.emgs.org.uk

Anhydrite to Zinc - a pictorial survey of working mines in the British Isles

Speaker: Paul Deakin. Start: 6.00pm.

Saturday, 10th December

Caves: Dark, Dank Holes in the Ground or Geological Treasure Troves?

Speaker: Dr Andy Farrant, British Geological Survey. Start: 6.30pm.

Saturday, 14 January 2006

HUDDERSFIELD GEOLOGY GROUP

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

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| Annual General Meeting | Wednesday, 5th December |
| Greenhead College followed by a meal at the Croppers Arms, Marsh. | |
| Stuff in the Deep Sea - Hydrothermal Vents and the Origin of Life: | 9th January 2006 |
| Exciting Developments in Geology and Biology | |
| Speaker: Dr Chris Little | |

HULL GEOLOGICAL SOCIETY

Mike Horne. Tel: 01482 346 784 (after 7.30 pm)
or e-mail: m.j.horne@hull.ac.uk or www.go.to/hullgeolsoc

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| Quaternary Wetlands: the muddy time machine | Thursday, 15th December |
| Speaker: Dr Jane Bunting, University of Hull. Evening lecture. | |
| Members' Evening | Thursday, 19th January 2006 |
| Speaker: Diana Roman Ph.D., University of Leeds (formerly of the University of Oregon, USA) | |

LEEDS GEOLOGICAL ASSOCIATION

Anthea Brigstocke (General Secretary). Tel: 01904 626 013.
E-mail: abrigstocke@hotmail.com or www.leedsgeolassoc.freereserve.co.uk

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| AGM and Conversazione | Thursday, 1st December |
| Short talks by members. | |

LEICESTER LITERARY & PHILOSOPHICAL SOCIETY

Chairman: Andrew Swift. Tel: 0116 252 3646 or e-mail: as48@le.ac.uk

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| A Pliocene World as seen through the eye of an Ostracod | Wednesday, 30th November |
| Speaker: Dr Adrian Wood, Coventry University | |
| Surviving Armageddon: Solutions for a Threatened Planet | Monday 5th December |
| Speaker: Professor Bill Maguire, University College London | |
| Parent Body Lecture, to be held at New Walk Museum, Leicester | |

MANCHESTER GEOLOGICAL ASSOCIATION

Jane Michael. Tel: 0161 366 0595, e-mail: jammymjane@aol.com or www.mangeolassoc.org.uk

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| Lead Mining in the Peak: Preserving the Heritage | Saturday, 10th December |
| Fred Broadhurst, University of Manchester. | |
| Mr. Paul Chandler, PDMHS. | |
| Professor John Barnatt, Peak District Park Planning Authority. | |
| Exceptional Fossil Sites of Germany | Saturday, 14th January 2006 |
| The Hunsrück Slate, Dr John Nudds, University of Manchester | |
| The Solnhofen Limestone, Dr Paul Selden, University of Manchester | |
| The Holzmaden Shale, Dr John Nudds, University of Manchester | |
| Grube Messel, Dr paul Selden, University of Manchester | |

NORTH EASTERN GEOLOGICAL SOCIETY

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

Mountain Ranges of Iran

Speaker: Dr. Mark Allen, University of Durham.
Followed by cheese and wine buffet.

Friday, 9th December

Rifting and Reactivation: Extending the Continental Crust

Speaker: Dr Jonathan Imber, University of Durham

20th January 2006

WESTMORLAND GEOLOGICAL SOCIETY

Mrs P. M. Wilson. Tel: 01539 533 198 or www.wgso.fsnet.co.uk

Members Evening and Jacob's Join

An opportunity for members to share current projects, display samples,
air their queries or give a short presentation.

Wednesday, 21st December

Did the Earth move for you?

The role of Plate tectonics in driving Biological Evolution.
Speaker: Dr Phil Manning, Manchester Museum

Wednesday,
18th January 2006**OTHER SOCIETIES OF INTEREST****EAST MIDLANDS REGIONAL GROUP OF THE GEOLOGICAL SOCIETY**

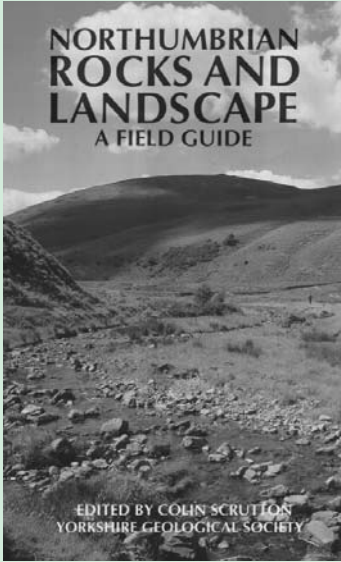
Ed Hough e-mail: eh@bgs.ac.uk

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, e-mail: isla.smail@arup.com



Northumbrian Rocks and Landscape: A Field Guide

Price £9.99 + £2.00 P&P. No postage and packaging if collected at the next YGS indoor meeting.

POSTAL ORDER FORM

Please supply.....copy(ies) of the YGS Field Guide
Northumbrian Rocks and Landscape

I enclose a cheque for £.....inc P&P

Name:

Address:

.....

Tel No:

Order forms and cheques to Dr J H Powell, BGS, Keyworth, Nottingham NG12 5GG. **Please make cheques payable to Yorkshire Geological Society.**



ORDER THE 'NEW' COOL YGS T-SHIRT

See examples at next meeting.

Bring your cheque for £12.00 + £2.50 P&P to the next meeting to order. Save £2.50 and collect at the next meeting.

ORDER FORM

Please supply.....YGS t-shirts in white

Size: S M L XL

Design: YGS logo small / YGS logo large (as above) / Map

I enclose a cheque for £.....inc P&P / I will collect at next meeting.
Delete as applicable.

Name:

Address:
.....

Tel No:

Or, put your order form and cheque in the post to Dr J Powell, BGS, Keyworth, Nottingham NG12 5GG. **Please make cheques payable to YGS.**

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 55 Part 3, May 2005).

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)*.

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